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ORIGINAL ARTICLE

Trade Liberalization, IMF Conditionality, and Policy Substitution in Developing Countries

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Abstract

Substantial tariff reductions and increased usage of non-tariff measures (NTMs) have been key dynamics of global trade policy in recent decades. We use highly disaggregated data on applied most favored nation tariffs, NTMs, and trade to investigate how International Monetary Fund (IMF) conditionality as a form of external pressure to reduce tariffs contributed to this dynamic in developing countries. Our results show that structural adjustment programs (SAPs) effectively lowered tariffs without increasing the usage of NTMs. A typical three-year program containing tariff conditionality decreased tariff rates in the range of 2.0 to 3.8 percentage points in total. Furthermore, IMF programs reduced NTM initializations significantly. We also show that tariff conditionality was more effective in initiating tariff cuts for countries without previous greater globalization efforts than being a “catalyst” for ongoing liberalization efforts.

JEL CLASSIFICATION

F13, F33, O19, O24

1 | INTRODUCTION

Across the world, countries have liberalized trade policy in recent decades. Average tariff rates in developed countries have decreased from 10.5% in 1990 to 6.8% in 2017 (UNCTAD, 2021).¹ Even more pronounced has been the

¹These figures refer to (unweighted) applied most favored nations (MFN) tariff rates. All tariffs below refer to applied MFN tariff rates. We use the World Bank definition of developed and developing countries.

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decline in developing countries. Starting at relatively high levels because of various import protection policies, low- and middle-income countries reduced average tariff rates significantly from more than 30% to 9.2% in the same period.² Whereas tariff rates have come down, non-tariff measures (NTMs) have become more widespread, a dynamic known as trade policy substitution (Beverelli et al., 2019; Carrère & De Melo, 2011). NTMs serve not only as a public policy measure to secure product safety, among other socially desirable outcomes, but governments also use them for protectionist purposes (Aisbett & Pearson, 2012; Gründler & Hillman, 2021). On balance, however, many countries have become more open regarding overall trade policies in recent decades (Wacziarg & Welch, 2008).

As for the drivers of trade policy liberalization, previous empirical studies have identified a number of relevant factors. Studies examined, for example, the effects of economic crises (Ballard-Rosa et al., 2018; Drazen & Easterly, 2001; Falvey et al., 2012; Pitlik & Wirth, 2003), the spread of policy ideas (Biersteker, 1995; Krueger, 1997; Weymouth & Macpherson, 2012), and democracy on trade flows and trade policies (Barari & Kim, 2022; Mansfield et al., 2000; Milner & Kubota, 2005). A long strand of the literature investigated the effects of external pressures on a country's trade policy that could stem from GATT/WTO³ membership (Allee & Scalera, 2012; Chang & Lee, 2011; Esteve-Pérez et al., 2020; Rose, 2004; Subramanian & Wei, 2007; Tomz et al., 2007), international organizations such as the International Monetary Fund (IMF) and the World Bank (e.g., Boockmann & Dreher, 2003) or tariff commitments in bilateral or regional trade agreements (Hayakawa & Kimura, 2015; Ruckteschler et al., 2022; WTO, 2011).⁴

While these external factors may impact especially tariff protection, some evidence is also found for substitution mechanisms in the face of a limited policy space through tariff liberalization. Kuenzel (2020, 2023) shows, for example, that reducing the tariff overhang, that is, the policy space between the committed MFN bound to the WTO and applied MFN tariff rates, increases the incident of NTMs. Ruckteschler et al. (2022) use a difference-in-difference framework to show that tariff cuts induced by the EU-Morocco trade agreement were compensated with the introduction of NTMs. This was explicitly found true for politically connected sectors in Morocco.

In particular, the IMF included several forms of conditionality in its structural adjustment programs (SAPs) for countries that went through times of economic crisis. While these programs supplied much-needed financial help, they also expected the governments to implement specific structural reforms. Besides the primary goal of a sustainable balance of payments, IMF programs typically also aim at sustainable medium-term economic growth through the adjustment process. Before the IMF streamlined its operations in the 2000s, most conditions concerned the fiscal sector and external debt issues. The IMF also targeted the financial industry and privatizations as other policy areas. These programs frequently also contained various trade reform conditions, such as lowering tariff rates or abolishing NTMs (IMF, 1998; Stuart, 1992).

Many arguments have been made on why the IMF, as a lender-of-last-resort, ties its programs to conditions. Among these reasons are the avoidance of time-consistency problems, an increase in power of reformers in recipient countries, the enforcement of policies that recipient countries would not have chosen themselves, a signal to international markets, and the protection of the funds given by the IMF (Dreher, 2009). Conditionality in SAPs has received much criticism that, in turn, also contributed to the streamlining process of conditionality. Many studies have investigated undesired social outcomes of SAPs (for example, Abouharb & Cingranelli, 2009; Forster et al., 2019; Lang, 2021; Reinsberg et al., 2019). Moreover, conditionality reduces the policy space in which a government can act. For example, Reinsberg et al. (2020) show that the IMF effectively promotes raising tax revenue from consumption taxes instead of trade taxes. Reducing a government's policy space might also lead to a loss of ownership of implemented reforms and, subsequently, non-implementation or even a reversal of reforms (Kentikelenis et al., 2016). Nevertheless, the IMF has considerable influence through its SAP programs, as the countries concerned

²Though tariff levels in developing countries have been even higher before 1990, we do not have consistent tariff data for a larger number of countries before that year.

³We use General Agreement on Tariffs and Trade (GATT) and World Trade Organization (WTO) membership synonymously in this context. For better readability, the term WTO refers to both GATT and WTO membership.

⁴See also Irwin (2023) for a discussion of the relevance of the different international institutions.

are usually in a weak position because of a severe economic or financial crisis. Given that, we intend to analyze the effectiveness of IMF trade reform conditions on changes in tariffs and NTM initialization.

So far, four studies have analyzed the impact of IMF programs on trade indicators.⁵ While Milner and Kubota (2005) focus primarily on the relationship between democratization and trade liberalization in developing countries, they include SAPs as a control variable. As dependent variables, they use average (yearly) tariff rates and the Sachs-Warner openness measure. In contrast to their main finding that a regime change toward democracy is associated with trade liberalization from 1970 to 1999, they cannot establish any impact of IMF program participation. The authors note that tariff data is especially poor until 1992, restricting their sample period for most developing countries to 1992–1999 when using tariff rates.

Boockmann and Dreher (2003) study the effect of World Bank projects and IMF programs in terms of number and size on the composite index of economic freedom. Their sample includes 85 countries observed between 1970 and 1997. The authors find that the influence of World Bank projects on economic freedom is ambiguous, while they do not find a significant impact of the IMF. This result holds when considering the sub-index for freedom to trade internationally.

Wei and Zhang (2010) analyze the effects of IMF trade reform conditions on trade openness and come closest to this paper's investigation. They focus on 1993–2003 and include 99 countries in their analysis, using an augmented gravity model to estimate trade reform conditions on imports. The authors show that trade conditionality by the IMF is – on average – successful in increasing trade openness, that is, trade reform conditions do lead to higher import flows. However, the effects are highly dependent on the respective country's willingness to reform. They also show that mere SAP participation without trade conditionality has relatively small negative effects on trade openness.

In a case study on India, Bown and Tovar (2011) study policy substitution effects of SAP for that country in the 1990s. The authors make use of the Grossman–Helpman model of trade protection. With that model, they can adequately predict the level of protection through tariffs and NTMs set before and after the program. During the IMF program, however, the relationship breaks down. NTMs under investigation are, in particular, anti-dumping measures and safeguards. They conclude that the Indian government replaced high import tariffs with protectionism through NTMs after the IMF program.

In three ways, we add to the previous literature on the impact of IMF trade reform conditions, which has not been exhaustive. Firstly, in contrast to studies that use trade flows, a de-facto outcome measure, we focus on the impact of IMF tariff conditions on de-jure trade policy measures, that is, changes in the applied MFN tariff rate and NTM initialization. Secondly, we use highly disaggregated data on the six-digit level of the Harmonized System (HS-6-digit) on trade, tariffs, and NTM initialization to investigate whether countries comply with conditions on tariff liberalization or rather substitute tariffs with NTMs. No other study has analyzed the effects of SAPs on NTMs in a cross-country time-series dimension. We also examine whether countries roll back IMF-imposed tariff conditions over time. Thirdly, we make use of a relatively new instrument for IMF arrangements and address endogeneity issues. As a bottom line, we are first to analyze the impact of IMF conditions on tariffs and NTMs at a highly disaggregated product level while accounting for endogeneity.

Regarding the outcome of our analysis, we argue that the quantitative impact of IMF trade conditionality is highly relevant to understanding the drivers and the dynamics of this important phase of trade liberalization in developing countries, even though tariff conditionality was discontinued by the IMF after 2009. At the same time, it is also of considerable policy relevance to examine any potential trade policy substitution effects in case of external pressure by the IMF.

We structure the remainder of this paper as follows: The next chapter briefly reviews IMF tariff conditionality as part of SAPs and discusses the (overall) country sample. As we will show, a considerable number of developing countries in our sample were subject to an IMF arrangement with tariff reform conditions. We also explain the different

⁵See Nelson (2016) for a comprehensive literature review on the effects of IMF arrangements on broader economic liberalization.

forms of bindingness the IMF uses to ensure that countries comply with the conditions and present how differently tariff conditions were specified. In Section 3, we explain our empirical identification strategy, introduce the variables of our regression analysis and discuss data issues. The empirical results are displayed and discussed in the two subsequent chapters, namely, the main results in Section 4 and various extensions and robustness checks in Section 5. Section 6 concludes.

2 | IMF TARIFF CONDITIONALITY IN DEVELOPING COUNTRIES

Partly due to severe trade deficits, negative terms-of-trade shocks, and various economic and financial crises in the 1970s and 1980s, many developing countries relied on foreign exchange restrictions, such as exchange rationing, exchange controls or multiple exchange rates, and high trade restrictions (tariffs and NTMs). Given these various challenges and financial constraints, many had to rely on the IMF for financial support. The main focus of IMF programs was on stabilization and macroeconomic stability, and the Fund also attempted to reduce or eliminate exchange rate overvaluations. If such a program was successful, either implemented unilaterally or imposed by IMF conditionality, the country could reduce tariffs and NTMs without worsening its tradable sector's (price) competitiveness. The Fund, therefore, (indirectly) contributed to trade liberalization by enabling countries to dismantle trade barriers (Irwin, 2023).

Still, the IMF included direct trade conditions in a considerable number of its SAP programs. In our relatively large sample of 115 developing countries and the period 1993 to 2009,⁶ 76 took part in an SAP, and 31 of these programs included conditionality demanding changes in tariff rates.⁷ As shown in Figure 1, tariff conditionality in our sample was especially frequent in the late 1990s and early 2000s. While earlier programs may be underrepresented in our sample because of more frequent gaps in the tariff and trade data, Kentikelenis et al. (2016) find a similar dynamic for overall conditionality and consider 1993–2007 as the most encompassing period of conditionality. Tariff conditionality in our sample fell from a maximum of 17 countries in 2000 to two countries per year in the years 2005 to 2009. Following the IMF streamlining process in the 2000s and the fact that many countries significantly opened their economies for international trade by then, tariff conditionality has been discontinued ever since (Broome, 2015; Kentikelenis et al., 2016).

To present a first impression of the linkage between IMF conditions and tariff rates, Figure 1 also includes the evolution of applied MFN tariffs in our sample. As mentioned in the previous chapter, average applied MFN tariffs have decreased considerably since the early 1990s. While tariff reductions occurred before the years of frequent tariff conditionality, the changes in this particular period appeared large.⁸

Next, we look at the initialization of NTMs in the same period, displayed by the dashed line in Figure 1. While no clear trend for NTM initializations is visible throughout, many NTMs were introduced during programs with tariff conditionality. The general trend of increased usage of NTMs was also more pronounced in the late 2000s. However, this descriptive view of tariffs, NTMs, and tariff conditionality on the macro level may not correspond to possible trade policy substitution on the micro level, especially regarding HS-6-digit lines that experienced more significant tariff cuts. For such an analysis, we need a much more detailed and comprehensive approach.

⁶Before 1993, disaggregated tariff and trade data are not available for many developing countries. Since the NTM dataset that we use only starts in 1995, we have to use this year as the starting point for all regressions using NTM data. We end the analysis in 2009 for two reasons. First, this is the year the IMF ended its last program with tariff conditions. Second, around this time, fears arose that many more NTMs could be initialized as a consequence of the global economic and financial crisis (Evenett & Fritz, 2020).

⁷Table A2 shows a list of these countries and all countries of our sample. All information on tariff conditionality is taken from the MONA database of the IMF (2021b) or the dataset of Kentikelenis et al. (2016).

⁸Note that the average applied MFN tariff rate for all developing countries and the equivalent rate for our sample countries differ for the early 1990s. The main reason for the deviation is that not all countries report trade and customs data for all years. Averages vary accordingly from year to year and from sample to sample. Since our analysis is executed at a highly disaggregated level for a consistent sample, this is not a major concern for our analysis.

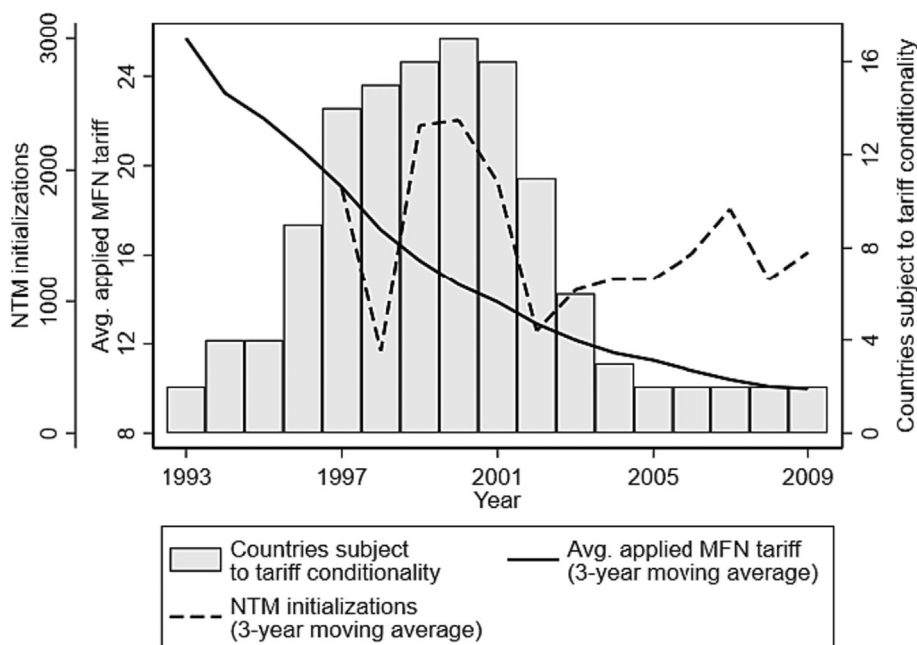


FIGURE 1 Applied MFN Tariffs, NTMs, and Tariff Conditionality, 1993–2009. Notes: The figure is based on our estimation sample. We have used three-year moving averages, calculated as the mean of the two preceding years and the reported year, to reduce larger data fluctuations in the figure. This mainly affects NTM data at the country level. In all subsequent regressions, we use annual data. See Table A1 for data sources.

However, we observe some first descriptive evidence of trade policy substitution when looking at the dynamics of NTM initialization. Figure 2 depicts the dynamics of applied MFN tariffs, represented by the solid line, and NTM initializations, represented by the dashed line, before, during, and following tariff conditionality. We limit the program duration to 4 years for this figure since most programs end in year 4. While tariffs decreased in the years before and (especially) during SAP tariff conditionality, the evolution of the introduction of NTMs looks different. In our estimation sample, a significant spike of cumulative NTM initialization appears during SAPs for countries with tariff conditionality.

While many IMF programs with a tariff component lasted about 3 years, the tariff conditionality was specified quite differently in each SAP. To give a brief overview, we categorize each condition present in our sample into six broader groups. We distinguish between the following categories: (1) structural tariff schedule reforms, (2) implementation of regional preferential tariff agreements, (3) reductions in the average tariff, (4) decreases in the maximum tariff, (5) reductions of tariffs for specific products or product groups, and (6) unspecified conditions. The category of structural tariff schedule reforms usually refers to conditions that require fewer tariff lines. Regional preferential tariff agreements are subject to conditions that correspond to a country's obligations in a regional economic community. In the case of Burundi in 2008 and 2009, for example, the IMF demanded the implementation of the common external tariff of the East African Community. Requirements to reduce tariffs on particular goods, such as intermediates or petrol, are classified as specific tariff changes. While the average and maximum tariff reductions are relatively unambiguous in content, we use an unspecified category for all other conditions if none of the above is identifiable. As an example of this category, the Ethiopian government was asked in 2001 to adopt a plan to decrease trade protection (IMF, 2021b).

Conditionality in SAPs comes in three forms of bindingness: Prior actions, performance criteria, and structural benchmarks. Prior actions are the most binding form. These conditions must be implemented at the beginning of or

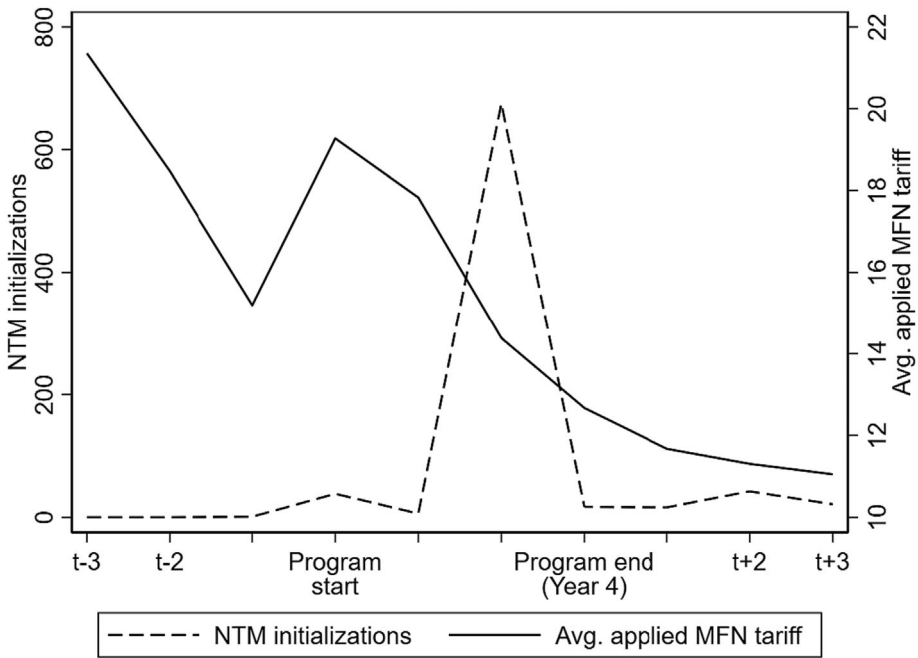


FIGURE 2 Dynamics of applied MFN Tariffs and NTMs under IMF Tariff Conditionality. Notes: The figure is based on countries with tariff conditionality in the estimation sample including NTMs (1995–2009) and is limited to four program years because of the limited observations of program years 5 and 6. $t - i$ represents years before tariff conditionality, and $t + i$ represents years following tariff conditionality. See Table A1 for data sources.

even before a program starts. The IMF can terminate the program if a recipient country fails to implement the condition. Performance criteria are specific and measurable goals regarding issues in the control of the recipient's authorities. While non-compliance may lead to the termination of the program, the IMF can waive that. Conditionality might also take the form of structural benchmarks, which are the weakest form. Non-implementation of a structural benchmark does not lead to automatic termination but will be assessed with the program's overall performance (IMF, 2021a). In our sample, 16 tariff conditions are prior actions, 13 are performance criteria, and 27 are structural benchmarks.

SAPs are very heterogeneous in our sample concerning the specific conditions set and the distribution over different forms of bindingness (Figure 3). The most frequent types were conditions to reduce the maximum tariff rates, average tariff rates, and the number of tariff lines. Furthermore, prior actions were most frequently used concerning the maximum tariff. Performance criteria mainly aimed to reduce the number of tariff lines and contained a decent number of demands for maximum tariff reductions. The IMF tied conditions to reduce the average and maximum tariff rates primarily to structural benchmarks in our sample.

As an example of SAP with tariff conditionality in practice, the 1997 stand-by agreement with Indonesia is quite typical. Following the Asian financial crisis, Indonesia could not hold up the existing currency peg and experienced a severe currency and economic crisis. The program included conditionality on tariff reforms, among other structural adjustment conditions (IMF, 2000). The IMF and the government of Indonesia agreed to reduce tariffs considerably. More specifically, several structural benchmarks on average tariff levels and specific products were included. The IMF (2021b) MONA database reads: "Reduce import tariffs of 15–25% by 5 percentage points; gradually reduce tariffs on chemicals, steel/metal, fishery products to 5–10% by 2003". Indonesia implemented these reductions accordingly.

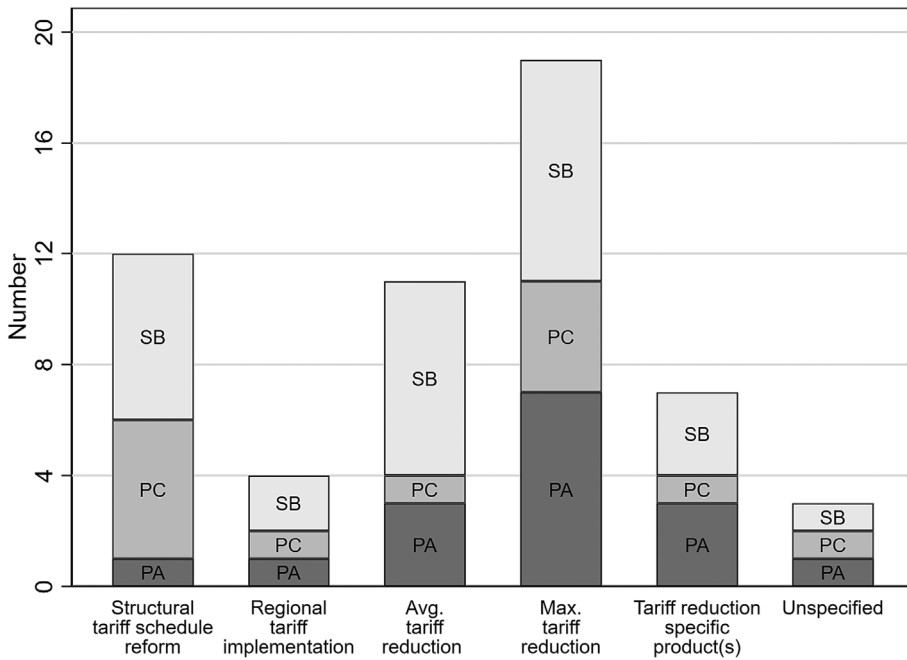


FIGURE 3 Frequency of different conditionality types. Notes: The figure provides information on our estimation sample's three IMF conditionality types. To illustrate the setup of the figure, there were seven prior actions (PA), four performance criteria (PC), and eight structural benchmarks (SB) for reducing maximum tariffs. See Table A1 for data sources.

3 | EMPIRICAL STRATEGY AND DATA

3.1 | Identification strategy

To analyze the trade policy effects of IMF tariff conditionality, we split our analysis into two parts. In the first part, we estimate the impact of tariff conditionality on changes in applied MFN tariff rates. We conduct our analysis using highly disaggregated data on the HS-6-digit level, the most detailed product disaggregation level available in international trade and tariffs on a cross-country level. The HS-6-digit level consists of up to 5,244 sub-headings classifying products. We prefer to analyze the effects of tariff conditionality on tariff changes rather than tariff levels. This better captures the impact of IMF tariff conditionality and aligns with our primary research objective. In terms of our identification strategy, we begin with an estimation of a standard fixed-effects model using the following equation:

$$\Delta \text{Tariff}_{ikt} = \beta_0 + \beta_1 \cdot \text{TC}_{ikt} + \beta_2 \cdot \text{SAP}_{it} + \beta_3 \cdot \text{NTM Initialization}_{ikt-1} + \alpha' \cdot X_{it} + \nu' \cdot Z_{ikt} + \gamma_{ik} + \delta_t + \varepsilon_{ikt} \quad (1)$$

where $\Delta \text{Tariff}_{ikt}$ stands for changes in the applied MFN tariff in the tariff imposing country i at the HS-6-digit product level k in year t , TC_{ikt} is a dummy equal to one if a tariff condition is present (and zero otherwise), SAP_{it} is a dummy that equals one if a country is a participant in an SAP, $\text{NTM Initialization}_{ikt-1}$ is a dummy that equals one if any NTM is initialized in a particular HS-6-digit line (in period $t-1$), γ_{ik} are country-product fixed effects, δ_t are time fixed effects, and ε_{ikt} represents the error term. We also include several control variables X_{it} and Z_{ikt} that vary on a country-year or country-product-year level, respectively. We cluster all standard errors at the HS-2-digit level, as countries have some influence on which sectors are subject to tariff cuts, and lobbying by domestic interest groups is very likely to occur at this level of disaggregation (Gawande & Bandyopadhyay, 2000; Goldberg & Maggi, 1999; Grossman &

Helpman, 1994; Milner & Mukherjee, 2018). Sometimes, the IMF also demands the reduction of (high) tariffs for specific products or even targets specific sectors (see Figure 3).

If the IMF was successful in reducing tariff rates through tariff conditionality, the coefficient β_1 would have a negative sign. The coefficient indicates the yearly average effect of tariff conditionality on all HS-6-digit lines affected. Since there are few cases in which conditionality is specified for specific products, the coefficient can be interpreted (in most cases) as the yearly change in a country's average tariff rate. Using the dummy on SAP participation, we account for indirect effects of IMF program participation, other than strict conditionality. For example, these effects might be reasoned in the IMF's technical advice and other "soft" factors in SAPs to promote trade liberalization (Dreher, 2009). We can thus distinguish the conditionality effects from the "softer" effects of general SAP participation.

There are two other forms of external pressure to liberalize trade policy. The first one refers to World Bank conditionality programs. Unfortunately, we could not include World Bank programs on trade policy in our analysis because of a lack of comparable data. However, we would argue that IMF programs were stricter and much more targeted towards tariff conditionality, which is the focus of our investigation. Also, World Bank trade conditionality programs mainly took place in the 1980s and early 1990s, before our sample period.⁹ The second form of external pressure could stem from WTO membership. The beginning of our sample period constitutes the implementation period of the Uruguay round. During multiple trade negotiation rounds, members of the WTO committed to reducing their tariff rates. However, to account for this type of external pressure by including a dummy on WTO membership is not feasible since our NTM data by definition only covers WTO members. Accession to the WTO could bias our results if IMF tariff conditionality coincides with commitments to lower tariffs in accession protocols. Therefore, we include a dummy for the first two years of WTO membership.¹⁰

As for the country-product-year control variables, we include a dummy for NTM initialization to account for safety-valve type effects (Moore & Zanardi, 2009). Those effects, if existent, would indicate that protection through NTMs might also induce tariff reductions. We use a lag of one period for NTMs to account for endogeneity concerns as well as time lags regarding the implementation. However, including NTMs in our tariff specification significantly restricts the sample because the NTM dataset begins only in 1995 and is limited to WTO members. Furthermore, we only include countries that have reported NTMs at least once. Hence, we will also estimate the specification omitting NTMs that uses our full sample. We control for import pressure in HS-6-digit lines by including import trade shares and for protecting productive sectors by including export shares.

Controls varying on the country-year level include the log of population and the log of GDP per capita to account for a country's population size and income level. As briefly discussed in the introduction, economic or financial crises might also cause changes in trade policy. As a crisis could potentially be a determinant of an SAP, we include four (dummy) variables on the balance of payments (BoP), economic, exchange rate (currency), and inflation crises. Methodologically, we follow Milner and Kubota (2005) on the definitions of BoP and economic crises and Reinhart and Rogoff (2009) on the definitions of currency and inflation crises.¹¹ In line with previous studies, we tested additional control variables. Still, we did not include them in our analysis because of a lack of explanatory power¹² or data at the disaggregated level.¹³

In the second part of our investigation, we examine trade policy substitution effects. More specifically, we estimate a linear probability model to investigate if tariff conditionality and an expected tariff decrease led to a higher probability of NTM initialization. While the nature of the dependent variable would suggest a binary model like probit or logit, we use the linear probability model for two reasons. First of all, the linear probability model is

⁹See World Bank (2006). Still, coinciding World Bank programs employing tariff conditionality would lead to an upward bias of our estimates for IMF conditionality. In this case, the coefficient could be interpreted as influence of structural adjustment programs by external pressures from both Bretton Woods institutions.

¹⁰If we extend the time span of the WTO Accession dummy to first three or four years of membership, the results do not change significantly.

¹¹See Table A1 for the exact definition of all variables and data sources. Table A4 provides descriptive statistics for all variables.

¹²More explicitly, the controls tested are democracy, employment, real effective exchange rate, and inflation.

¹³For example, Herghelegiu (2018) accounts for lobby intensity using data on transnational lobbying at WTO ministerial conferences.

constantly used in the literature (see, for example, Orefice, 2017; Herghelegiu, 2018; Kuenzel, 2020) since binary models with a large number of fixed effects are prone to the “incidental parameter problem” and may lead to biased estimates (Greene, 2012). While solutions for this problem have been proposed (Cruz-Gonzalez et al., 2017), computation is quite challenging for this level of disaggregated data. The use of logistic models would reduce the number of fixed effects that could be included (see, for example, Beverelli et al., 2019). Secondly, the employed instrumentation that addresses possible endogeneity is not straightforward with binary models, and the calculation of marginal effects with fixed effects often depends on variable scaling (Wooldridge, 2010). Consequently, we prefer to use a linear probability model but provide the outcome of logistic regressions as a robustness check at a later stage. The estimation equation reads as follows:

$$\begin{aligned} Pr(NTM\text{Initialization}_{ikt}) = & \beta_0 + \beta_1 \cdot TC_{ikt} + \beta_2 \cdot SAP_{it} + \beta_3 \cdot TC_{ikt} \times \Delta Tariff_{ikt-1} \\ & + \beta_4 \cdot \Delta Tariff_{ikt-1} + \alpha' \cdot X_{it} + \nu' \cdot Z_{ikt} + \gamma_{ik} + \delta_t + \varepsilon_{ikt} \end{aligned} \quad (2)$$

where $Pr(NTM\text{Initialization}_{ikt})$ is the probability of an NTM being initiated in the imposing country i at the HS-6-digit product level k in year t .

We closely follow the estimation in the first part concerning the variables of primary interest and the control variables, but we replace lagged NTM initialization with lagged changes in tariff rates. We also include an interactive term, the tariff conditionality dummy times the lagged changes in tariff rates, to examine trade policy substitution effects causal to tariff conditionality. A negative coefficient for the interactive term indicates that tariff reductions under tariff conditionality led to an increased probability of NTM introduction. The coefficient for the tariff conditionality dummy itself shows the effect of tariff conditions on the probability of NTM introduction without tariff changes in a particular tariff line. Therefore, this coefficient would capture the possible effect of tariff conditionality not leading to tariff reductions or a tariff reduction in one particular HS-6-digit line on another HS-6-digit line unaffected by tariff changes.

We capture any “soft effects” or possible NTM conditionality by including the SAP variable. While we would have preferred to include a dummy for IMF conditionality on NTMs, this proved infeasible. We filtered the conditionality databases for conditions on NTMs, but this has been somewhat challenging because of the more imprecise nature of possible keywords. Furthermore, IMF conditions often do not prohibit NTM initialization but rather demand their removal. But data on NTM removal are very sparse, as only the initialization of NTMs is mandatory to be reported to the WTO. Hence, our analysis focuses on NTM initialization and omits the investigation of NTM conditionality.¹⁴

3.2 | Endogeneity

Estimating the effect of IMF conditionality on tariff changes and NTM initialization may lead to biased results because of endogeneity. We would expect tariff conditionality to impact trade protection levels and, vice versa, higher trade protection to affect tariff conditionality for countries in SAPs. Furthermore, simultaneity could be problematic. Whereas an economic crisis might lead countries to change their trade policy (Milner & Kubota, 2005), the same crisis might also determine participation in an IMF program. We attempt to address simultaneity issues by including the four crises indicators.

To address reverse causality concerns, we follow Stubbs et al. (2020) and employ the IMF liquidity ratio in our instrumental variable (IV) approach. More specifically, the applied shift-share type instrument consists of two parts: a common shock measure and weights for the individual units representing differences in the exposure to the shock (Borusyak et al., 2022; Goldsmith-Pinkham et al., 2020). In the particular context of the paper, the instrument

¹⁴Still, we tried to use all information available and attempted to model NTM conditionality. This led to very similar results for the variables of primary interest.

consists of the IMF liquidity multiplied by the overall country's average rate of tariff conditionality in SAPs. The first part exploits the relationship between the relative abundance of IMF liquidity and the intensity of conditionality in SAPs as the shifting part. Lang (2021) shows that the IMF is more generous in times of high liquidity, imposing fewer conditions. Hence, the probability of tariff conditionality is higher when a country takes part in an SAP during low IMF liquidity. The excludability of the instrument is ensured, considering that SAP program countries have no control over the IMF liquidity in a significant way. Moreover, the instrument can mitigate concerns that governments could use the external pressure by the IMF and time unpopular reforms to be part of programs as long as they cannot perfectly manage their SAP entry and cannot predict considerable changes in IMF liquidity well.

The shifting part is weighted with the exposure shares, which are the long-run propensities of tariff conditionality during the sample period in this context. Treatment through the shifting variable is weighted by a country's length of treatment with tariff conditionality during the sample. Country-specific characteristics possibly prone to simultaneity are no longer driving the results of tariff conditionality. In summary, our identification is based on countries' responses to the different stringency of IMF conditionality because of an exogenous shock to IMF liquidity and weighted by the probability of a country's participation in a SAP. Finally, Bun and Harrison (2019) point out that the interaction of an exogenous with an endogenous variable gives consistent estimates under mild assumptions. This result further motivates the choice of this shift-share instrument, and the bottom line is that the composite instrument is relevant and excludable.¹⁵ However, a limitation of our approach is the lack of a suitable second instrument for SAP participation. This means that we can only interpret the impact of tariff conditionality on tariff changes and the initialization of NTMs as causal. We estimate the following fixed-effects models separately for tariff changes and NTM initialization using two-stage least squares, analogous to the previous models:

$$\Delta Tariff_{ikt} = \beta_0 + \beta_1 \cdot \widehat{TC}_{ikt} + \beta_2 \cdot SAP_{it} + \beta_3 \cdot NTM\ Initialization_{ikt-1} + \alpha' \cdot X_{ikt} + \nu' \cdot Z_{it} + \mu_{ik} + \delta_t + \varepsilon_{ikt} \tag{3}$$

$$Pr(NTM\ Initialization_{ikt}) = \beta_0 + \beta_1 \cdot \widehat{TC}_{ikt} + \beta_2 \cdot SAP_{it} + \beta_3 \cdot \widehat{TC}_{ikt} \times \Delta Tariff_{ikt-1} + \beta_4 \cdot \Delta Tariff_{ikt-1} + \alpha' \cdot X_{it} + \nu' \cdot Z_{ikt} + \mu_{ik} + \delta_t + \varepsilon_{ikt} \tag{4}$$

$$\widehat{TC}_{ikt} = \lambda_0 + \lambda_1 (IMF\ Liquidity_t \times \overline{TC}_{ik}) + \alpha' \cdot X_{ikt} + \nu' \cdot Z_{it} + \gamma_{ik} + \theta_t \tag{5}$$

where \widehat{TC}_{ikt} is the instrumented value for tariff conditionality, $IMF\ Liquidity_t$ are all IMF liquid resources divided by liquid liabilities for year t, and \overline{TC}_{ik} is the country-sector-specific average of tariff conditionality, γ_{ik} are country-product fixed effects, and θ_t are time fixed effects. Depending on whether tariff liberalization or NTM Initialization are the dependent variable, $NTM\ Initialization_{ikt}$ or $\Delta Tariff_{ikt-1}$ respectively are included in \widehat{TC}_{ikt} .

3.3 | Data

We construct the tariff conditionality dummy based on the IMF (2021b) MONA database, which tracks conditionality in SAPs. Thirty-one of the 115 developing countries in our sample¹⁶ participated in SAPs containing tariff conditionality over the period 1993 to 2009.¹⁷ We filtered all conditions and kept those demanding changes in tariff

¹⁵See also Stubbs et al. (2020) and Lang (2021) for more detailed explanations of the instruments and identification strategy.

¹⁶In our analysis, we include all developing countries as of 1995 that provide sufficient data for the dependent and independent variables.

¹⁷Note that this period refers to the maximum period under investigation. Once we include NTM data, we have to begin the analysis in 1995 (see below for NTM data limitations) and the sample reduces to 90 developing countries with 21 being affected by tariff conditionality.

rates.¹⁸ We complement the IMF data with the database constructed by Kentikelenis et al. (2016), as both datasets exhibit a few gaps. Trade data is taken from the CEPII (2021) BACI dataset. The BACI dataset uses the methodology laid out by Gaulier and Zignago (2010), who mirror, clean, and harmonize trade data originally from UN COMTRADE.

For (simple average) applied MFN tariffs on the HS-6-digit product level, we use the UNCTAD (2021) TRAINS databank (via World Bank WITS). In contrast to effectively applied bilateral tariffs, we prefer to use applied MFN tariffs, since IMF conditionality is aimed at the general structure of a country's tariff schedule. Furthermore, all of the NTM initializations we consider in our analysis are multilateral measures. We encounter gaps in the tariff data, particularly in the 1990s. Apart from the original tariff data, we also use an interpolated series to ensure our sample is as large as possible. We will report results estimations for the original data as well as for an interpolated series. Following Teti (2020), we use the WTO logic of countries only reporting policy changes and set missing tariffs to their last observed value. Without this interpolation, our sample's total number of observations would decrease by 33%.

Like all other variables, our identification approach also requires panel data for various NTMs. However, data on NTM usage starting in the 1990s and a larger number of countries is rare. While the Global Trade Alert database (Evenett & Fritz, 2020) constitute a significant advancement in coverage and information, this dataset is not available as early as our sample. Furthermore, the UNCTAD (2018) TRAINS NTM dataset using de-jure information from legal texts in force gathered from an active collection covers a wide range of different types of NTMs (UNCTAD, 2017). However, the data were collected at only particular points in time for each country and is available for only a limited number of countries because of the time required for active searches.¹⁹ We use the *wiiw*²⁰ NTM dataset provided by Ghodsi et al. (2017). This dataset consists of NTM notifications of the WTO Integrated Trade Intelligence Portal (I-TIP) database on the HS-6-digit product level and is complemented by the Temporary Trade Barriers Database by Bown (2016).

WTO I-TIP is passively collected as all WTO member countries have to notify the WTO if they initialize SPS or TBT; this database has comprehensive coverage of countries and full coverage in time.²¹ The WTO also indicates if an SPS or TBT was subject to a Specific Trade Concern (STC). Information on STCs allows us only to include SPS and TBT measures that raise concerns among trading partners and are therefore considered trade restrictive. While there is consensus that non-technical measures can be considered de-facto restrictive measures (Hergheliegiu, 2018), this is not true for technical measures. SPS and TBT may also imply better product information or enhance the quality of goods. If so, trade flows could increase (Beghin et al., 2015; Carrère & De Melo, 2011). Consequently, we exclude all SPS and TBT without STC from our analysis to focus on those NTMs that are more likely to reduce trade. However, there might be NTMs that still do not get notified. Even though they are required to do so, some countries do not notify (Disdier & Fugazza, 2020). We exclude countries that do not report any NTM in the dataset to prevent a bias from countries not reporting.

The Temporary Trade Barriers Database covers temporary measures like anti-dumping measures, safeguards, and countervailing duties. The *wiiw* dataset offers the additional advantage of HS-6-digit product codes being matched to NTMs in the raw I-TIP data.²² A total of 18,655 HS-6-digit lines are subject to at least one NTM being initialized in our interpolated estimation sample. 7,585 of those product lines were subject to quantitative restrictions, 8,797 to STCs of technical barriers to trade, 1,859 to safeguards, 457 to special agricultural safeguards, and only a few to tariff-rate quotas. No SPS measure was subject to an STC for our sample and, therefore, included in the analysis.

¹⁸See Table A3 for the keywords and categories that we use as a filter.

¹⁹See also Disdier and Fugazza (2020) for an in-depth discussion of panel datasets on NTMs.

²⁰*wiiw* stands for the German abbreviation of the Vienna Institute for International Economic Studies.

²¹The WTO notification data is a widely used dataset in panel data analysis on NTMs (see, for example, Aisbett and Silberberger (2021), Beverelli et al. (2019), and Orefice (2017)). However, the choice of this database limits our analysis to WTO members and 1995 as the starting year for all regressions that include NTM data.

²²Kuenzel (2023) points out that many SPS and TBT get only notified on the HS-4-digit level and the minority of SPS and TBT even get notified on the HS-2-digit level. We will stick to the highest disaggregated level since estimations on the HS-4-digit level lead to similar results.

While our sample period covers a considerable number of SAPs containing tariff conditionality, particularly the spike of programs in the late 1990s and early 2000s, we cannot include those implemented in the late 1980s and early 1990s. As Irwin (2023) notes, this period marked the beginning of trade liberalization in many developing countries. At the same time, the IMF implemented several SAPs (partly with tariff conditionality). Whereas our results cannot be generalized for the entire period of trade liberalization, we capture an important part of it.

4 | MAIN RESULTS

To begin with, we present the results of the estimations of the effects of tariff conditionality on tariff changes in Table 1. We report the estimated coefficients for the fixed-effects (FE) regressions in columns (1), (2), and (3) and those for the IV regressions in columns (4), (5), and (6). For both econometric methods, the respective first columns (1 and 4) show the results for the original tariff series, whereas the respective second and third columns (2, 3, 5 and 6) refer to the results for the interpolated tariff series. Lastly, columns (3) and (6) present the results when dropping NTMs from the equation and extending the sample period to 1993. The results indicate that tariff conditionality in SAPs leads to a statistically significant decrease in tariff rates. The point estimates range from an average reduction of 0.532 percentage points per year (fixed-effects regression without tariff interpolation and NTMs) to a decrease of 1.653 percentage points per year (IV regressions without tariff interpolation but including NTMs). Being part of an SAP reduced tariff rates by 0.601 and 0.695 percentage points a year, even without tariff conditionality (columns 1 and 4). However, the SAP participation dummy turns insignificant once we interpolate the tariff data (columns 2 and 5) and even turns marginally positive when we drop NTMs and extend the sample period (columns 3 and 6). These results imply that tariff conditionality in SAP programs has a stronger impact on tariff reductions than other indirect effects of SAP participation.

As for the IV regressions, we present the corresponding first-stage regression results and test statistics in the Appendix (Table A5). Every specification shows significant coefficients in the expected direction with a high correlation regarding the tariff conditionality indicator. As the C statistics reject the hypothesis of exogeneity of the instrumented variable at a 10% level for most tariff regressions, we encounter endogeneity in these regressions and prefer the IV approach. The Sanderson-Windmeijer F-tests for under-identification and the Kleibergen-Paap tests for weak instruments can be rejected.

Regarding the influence of NTM initialization, we find no significant effect. During the first two years of accession to the WTO, countries significantly reduced their MFN tariffs. However, the estimated WTO coefficient size is somewhat smaller than tariff conditionality, and the estimates are not robust in column 5. Our results also show that countries more often turned to protectionist policies in times of balance of payment and currency crises, which is consistent with our expectations. The results differ in reaction to an inflation crisis or economic crisis, as we do not find an overall significant (and robust) impact of these further indicators.²³

Trade flow shares had no significant influence on tariff changes. While coefficients for import shares (mainly) show a negative sign and export shares a positive sign, the results are insignificant at conventional threshold levels.²⁴ Country-product and time fixed effects capturing various time-invariant and time-specific effects, including an existing comparative advantage in a particular group of products or shocks in a particular year, could explain this finding.²⁵ We find that developing countries with a larger population size and higher income per capita levels are more protective regarding tariffs.

Since tariff interpolation increases our sample considerably, columns (5) and (6) are our preferred model specifications. To calculate the overall impact of a typical SAP program, we use the point estimate of these specifications

²³Note that we have to take the results for economic crises with caution, due to the very low incidence of economic crises in our sample.

²⁴We also run regressions with trade levels, growth rates as additional or alternative explanatory variables and, alternatively, log-level trade flows, but the results are similar.

²⁵It is beyond the scope of this study to analyze the trade share variables in more detail.

TABLE 1 Baseline results – change in tariffs.

	(1) Δ Tariff FE	(2) Δ Tariff FE	(3) Δ Tariff FE	(4) Δ Tariff IV	(5) Δ Tariff IV	(6) Δ Tariff IV
Tariff Conditionality	−0.653*** (0.12)	−0.719*** (0.10)	−0.532*** (0.07)	−1.653*** (0.35)	−1.271*** (0.18)	−0.653*** (0.16)
SAP Participant	−0.695*** (0.06)	−0.058 (0.05)	0.084* (0.05)	−0.601*** (0.06)	0.004 (0.06)	0.105** (0.05)
NTM Initialization _{t-1}	−0.142 (0.32)	0.406 (0.32)		−0.147 (0.32)	0.391 (0.32)	
Imports Share	−1.862 (2.83)	0.502 (1.95)	−2.413 (1.67)	−1.643 (2.83)	0.447 (1.95)	−2.420 (1.67)
Exports Share	1.967 (1.92)	0.653 (1.23)	0.997 (1.53)	1.950 (1.91)	0.649 (1.23)	0.998 (1.53)
WTO Accession	−0.917*** (0.18)	−0.193* (0.11)	−0.456*** (0.07)	−0.678*** (0.20)	−0.116 (0.11)	−0.451*** (0.07)
ln (Population)	2.682*** (0.50)	4.610*** (0.38)	3.593*** (0.35)	2.460*** (0.46)	4.449*** (0.37)	3.594*** (0.35)
ln (GDPpc)	1.433*** (0.26)	2.078*** (0.23)	1.500*** (0.19)	1.585*** (0.27)	2.098*** (0.23)	1.489*** (0.19)
BoP Crisis	0.303*** (0.07)	0.316*** (0.05)	0.428*** (0.06)	0.376*** (0.07)	0.335*** (0.05)	0.430*** (0.06)
Economic Crisis	0.419 (0.50)	0.159 (0.45)	0.908*** (0.22)	0.333 (0.51)	0.132 (0.45)	0.902*** (0.22)
Currency Crisis	0.374** (0.15)	0.351*** (0.11)	0.307*** (0.08)	0.333** (0.16)	0.332*** (0.11)	0.303*** (0.09)
Inflation Crisis	0.121 (0.10)	0.099 (0.08)	−0.022 (0.06)	0.183* (0.10)	0.128 (0.08)	−0.020 (0.06)
Observations	3,578,550	5,450,235	7,473,575	3,578,550	5,450,235	7,473,575
Tariff Interpolation	No	Yes	Yes	No	Yes	Yes
Period	1995–2009	1995–2009	1993–2009	1995–2009	1995–2009	1993–2009
K-P F Statistic 1st Stage				1,220	1,811	4,647
R ²	0.031	0.025	0.032	0.001	0.001	0.001

Notes: Time and country-product fixed effects are always included. Standard errors clustered by country-HS-2-level in parentheses. K-P F statistic is the Kleibergen-Paap F-statistic.

* $p < .1$, ** $p < .05$, and *** $p < .01$.

(−0.653 in column 6 and −1.271 in column 5) and multiply it by the typical duration of such a program (three years).²⁶ SAP tariff conditionality then reduces tariffs in a range of some 2.0 to 3.8 percentage points in total, which is a sizable quantitative effect. Overall, our estimates for the size and relevance of tariff conditionality are in line with

²⁶Since the dummy variable for SAP participation is not significant in column 5 and even positive (but rather small) in column 6, we do not include it in the impact calculation. For the IV results without tariff interpolation (column 4), where both variables tariff conditionality and SAP participation are statistically significant, we cannot add them together to calculate their joint causal impact on tariff reductions. For this, we would need an additional instrument for the SAP variable. Of course, this does not apply to the correlations in the fixed-effects regressions.

previous calculations of the sources of tariff level reductions in developing countries. For example, according to calculations by Martin and Ng (2017), the total decline in developing countries' average tariff rates from 1983 to 2003 from 29.9 to 11.3% was due to regional trade agreements (1.9 percentage points or some 10% of the total reduction), GATT/WTO commitments (4.5 percentage points or 24%) and unilateral liberalization (12.3 percentage points or 66%), which includes participation in IMF/World Bank trade programs and country-specific commitments as part of the WTO accession process.

Next, we turn to the estimations on NTM initialization to investigate the evidence on policy substitution. The results show that IMF programs had a diverging impact on NTM initialization (Table 2). Whereas mere participation in an SAP decreased the likelihood of an HS-6-digit line being affected by NTM initialization, the tariff conditionality coefficient within these programs shows a probability-increasing impact on NTM initialization in the fixed-effects regression with interpolated tariff data. But that outcome is not robust for the original data series or once we control for endogeneity of tariff conditionality.²⁷ We do not find evidence for one-to-one trade policy substitution in HS-6-digit tariff lines since the interaction coefficient of tariff changes with tariff conditionality is statistically insignificant. Even if we look at the relative size of the estimated coefficients in the interpolated fixed-effects regressions, the coefficient of SAP participation dominates the tariff conditionality effect. However, the SAP participation results must be taken with caution as they do not identify the relationship causally.

There is no evidence for trade policy substitution outside SAPs for our sample, as we estimate insignificant coefficients for the change in the tariff variable. This outcome is in contrast to some of the results of previous studies. For example, Feinberg and Reynolds (2007) find evidence for policy substitution in the aftermath of the Uruguay round for developing countries.²⁸

Concerning the relatively small coefficients for all variables in Table 2, we have to remember that the changes in probability refer to a single HS-6-digit line. Calculating the expected values for the overall sample shows that these numbers can have a sizable impact. Furthermore, these numbers only refer to SPS and TBT subject to STCs and temporary trade barriers. Taking the estimated coefficient in our preferred specification in the fourth column (−0.007) into account, SAP participation is associated with a reduction in the expected number of HS-6-digit lines affected by NTMs initiated by 14,610 for our sample, which is by no means negligible.²⁹

The crises dummies indicate the implementation of protectionist policies during an inflation crisis for the NTM estimations. The opposite is true for the balance of payments crisis indicator, which takes a negative sign and is statistically significant. The import and export share variables did not significantly impact NTM initialization. Developing countries that are more populated tended to have more protectionist trade policies as they initialized more NTMs, while income per capita has no significant impact. Lastly, developing countries that have only recently joined the WTO are more reluctant to initiate NTMs.

Apart from policy substitution effects in the form of switching tariffs to NTMs, countries may roll back IMF-imposed reforms over time. Authorities might decrease tariffs to get much-needed assistance from the IMF but increase tariffs again when the program ends. One could argue that the reason for such a trade policy reversal could be the urgent need for financial assistance but different policy preferences in the medium or long term. This suspicion has been raised by Coate and Morris (2006) and empirically shown by Bown and Tovar (2011) on the country level.

We account for this form of policy reversal by examining the dynamics of the effects of tariff conditionality during the program. We include dummy variables for each year of conditionality and the three years prior to and following tariff conditionality (Table 3). We choose to analyze the three years prior to and following the programs since this is equal to the usual program duration and the coefficient for tariff changes becomes insignificant in year 3 following the program. The estimation results in Table 3 must be interpreted with some caution as multicollinearity is

²⁷Note that the Kleinbergen-Paap F Statistic is signaling a weak instrumentation for the IV estimation with interpolated tariff data. Furthermore, the C-test of the first stage in Table A5 (appendix) rejects the hypothesis of endogeneity for the analysis with interpolated tariffs.

²⁸See also Niu et al. (2020) for more recent evidence on trade policy substitution effects.

²⁹We calculate this number by multiplying the number of observation subject to SAPs (2,087,121) with the coefficient of SAP participation from column 4. Tariff conditionality and the interaction between tariff conditionality and the change in tariffs are not considered, as the coefficients are insignificant.

TABLE 2 Baseline results – initialization of NTMs.

	(1) NTM Init. FE	(2) NTM Init. FE	(3) NTM Init. IV	(4) NTM Init. IV
Tariff Conditionality	0.001 (0.00)	0.003*** (0.00)	−0.005 (0.00)	0.002 (0.00)
SAP Participant	−0.012*** (0.00)	−0.007*** (0.00)	−0.012*** (0.00)	−0.007*** (0.00)
Δ Tariff _{t-1}	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
TC × Δ Tariff _{t-1}	0.000 (0.00)	0.000 (0.00)	−0.001 (0.00)	−0.000 (0.00)
Imports Share	−0.010 (0.03)	0.001 (0.01)	−0.009 (0.03)	0.001 (0.01)
Exports Share	−0.002 (0.01)	0.011 (0.01)	−0.003 (0.01)	0.011 (0.01)
WTO Accession	−0.008** (0.00)	−0.004** (0.00)	−0.008** (0.00)	−0.004** (0.00)
ln (Population)	0.049*** (0.01)	0.019** (0.01)	0.049*** (0.01)	0.019** (0.01)
ln (GDPpc)	0.003 (0.01)	0.002 (0.01)	0.004 (0.01)	0.001 (0.01)
BoP Crisis	−0.005*** (0.00)	−0.003*** (0.00)	−0.005*** (0.00)	−0.003*** (0.00)
Economic Crisis	0.005** (0.00)	0.001 (0.00)	0.005** (0.00)	0.001 (0.00)
Currency Crisis	0.002 (0.00)	−0.000 (0.00)	0.002 (0.00)	−0.000 (0.00)
Inflation Crisis	0.013*** (0.00)	0.008*** (0.00)	0.013*** (0.00)	0.008*** (0.00)
Observations	3,285,194	5,189,380	3,285,194	5,189,380
Tariff Interpolation	No	Yes	No	Yes
Period	1995–2009	1995–2009	1995–2009	1995–2009
K-P F Statistic 1st Stage			26.55	3.49
R ²	0.145	0.114	0.006	0.003

Notes: Time and country-product fixed effects are always included. Standard errors clustered by country-HS-2-level in parentheses. K-P F Statistic is the Kleibergen-Paap F-statistic.

* $p < .1$, ** $p < .05$, and *** $p < .01$.

likely with the increased number of coefficients covering tariff conditionality. At the same time, we cannot control for endogeneity in this setting because of the lack of more than one instrument and have to rely on the fixed-effects results.³⁰ Still, there are some notable trends. One of them is that larger reductions in tariff rates will be made later

³⁰Note that in the regressions reported in Table 3 and in all subsequent regressions, we use interpolated tariff data and the period 1995–2009 to be able to include NTM data. For better readability of this table and the following tables, we do not present the control variables. But they are always included.

TABLE 3 Timing.

	(1) Δ Tariff FE	(2) NTM Init. FE
Prior Conditionality		
t-3	0.672** (0.27)	0.005*** (0.00)
t-2	-0.610*** (0.21)	0.005*** (0.00)
t-1	-2.653*** (0.32)	-0.002 (0.00)
During Conditionality		
Year 1	-0.480* (0.28)	0.004*** (0.00)
× Δ Tariff _{t-1}		-0.000* (0.00)
Year 2	-0.561*** (0.17)	0.001 (0.00)
× Δ Tariff _{t-1}		-0.000 (0.00)
Year 3	-1.920*** (0.23)	0.008*** (0.00)
× Δ Tariff _{t-1}		0.000*** (0.00)
Year 4	-0.795*** (0.11)	0.002** (0.00)
× Δ Tariff _{t-1}		-0.000*** (0.00)
Year 5	-1.204*** (0.13)	0.001 (0.00)
× Δ Tariff _{t-1}		-0.000** (0.00)
Year 6	-0.026 (0.18)	0.004*** (0.00)
× Δ Tariff _{t-1}		-0.000 (0.00)
After Conditionality		
t + 1	0.002 (0.16)	-0.000 (0.00)
t + 2	-0.514*** (0.09)	0.001** (0.00)
t + 3	-0.182*** (0.05)	0.001 (0.00)

(Continues)

TABLE 3 (Continued)

	(1) Δ Tariff FE	(2) NTM Init. FE
Observations	5,450,235	5,189,380
Tariff Interpolation	Yes	Yes
Period	1995–2009	1995–2009
R ²	0.026	0.114

Notes: Time and country-product fixed effects and all controls are included.

Standard errors clustered by country-HS-2-level in parentheses.

* $p < .1$, ** $p < .05$, and *** $p < .01$.

in the program. This finding is unsurprising as countries cannot change large parts of their trade policy immediately. Governments need time to draft and implement these changes. We find no evidence of reversing changes in tariffs after an SAP program has come to an end. These results suggest that SAP country governments are either committed to the agreed tariff reductions or may intend to rely on the IMF in the future (in case of another crisis). Coefficients prior to the program are significant, but they switch signs, indicating more remarkable trade policy changes of countries in crisis before turning to IMF support. The large negative coefficient in the year before an SAP could also resemble tariff changes because of prior actions and in anticipation of the program.

A similar trend in the importance of program years is seen for the increased probability of NTM initializations. The most significant difference is the large and positive coefficient in the first program year. Although some coefficients for the interaction representing direct policy substitution are statistically significant, they are not economically significant.

5 | EXTENSIONS AND ROBUSTNESS CHECKS

Following the baseline results, we now turn to two extensions and several robustness checks. As the first extension, we explore the effects for the different categories of bindingness in IMF tariff conditions in more detail, whether conditionality comes in the form of prior actions, performance criteria, or structural benchmarks. Since we do not have three different instruments at our disposal, we must again rely on the fixed-effects estimates. The results show that performance criteria were associated with the largest and most persistent tariff reduction effect (Table 4). A tariff condition specified as a performance criterion was associated with reducing tariff rates by 2.352 percentage points. This result aligns with our findings from Table 3, as performance criteria allow for a more extended implementation period compared with prior actions but are more binding than structural benchmarks.

Structural benchmarks did not decrease tariff rates on average. Lastly, as the most binding and immediate form of conditionality, prior actions show some 0.577 percentage points tariff reduction during the program. The content of those conditions might provide a possible explanation for the overall slightly smaller effect of prior actions compared with performance criteria. As discussed above, many prior actions demanded a reduction in the maximum tariff. Since this may only affect a few tariff lines, the scope for a reduction in the average tariff rate was limited.

As the second extension, we investigate whether tariff conditionality induced trade liberalization or acted as a “catalyst” that accelerates ongoing trade liberalization processes. We use data on de-facto economic globalization to analyze this question by Gygli et al. (2019). The index consists of data on de-facto trade and financial globalization. We model the latest globalization efforts of countries by constructing a five-year change of the index. Then, we subtract the sample mean of the changes in de-facto economic globalization from countries' five-year change, thereby accounting for global trends towards free trade. Table 5 shows the results for our main variables of interest, now

TABLE 4 Extension — conditionality bindingness.

	(1) Δ Tariff FE
Tariff Conditionality	
Prior Action	−0.577** (0.28)
Performance Criterion	−2.352*** (0.28)
Structural Benchmark	−0.040 (0.08)
SAP Participant	−0.053 (0.05)
Observations	5,450,235
Tariff Interpolation	Yes
Period	1995–2009
R ²	0.025

Notes: Time and country-product fixed effects and all controls are included. Standard errors are clustered by country-HS-2-level in parentheses.

* $p < .1$, ** $p < .05$, and *** $p < .01$.

TABLE 5 Extension — globalization.

	(1) Δ Tariff FE	(2) Δ Tariff IV	(3) NTM Init. FE	(4) NTM Init. IV
Tariff Conditionality	−0.689*** (0.09)	−1.198*** (0.18)	0.003*** (0.00)	0.002 (0.00)
SAP Participant	−0.075 (0.05)	−0.008 (0.06)	−0.007*** (0.00)	−0.007*** (0.00)
Δ Globalization	0.032** (0.01)	0.008 (0.02)	0.000 (0.00)	0.000 (0.00)
TC × Δ Globalization	0.197*** (0.05)	0.341*** (0.07)	−0.001*** (0.00)	−0.001* (0.00)
TC × Δ Tariff _{t-1}			0.000 (0.00)	0.000 (0.00)
Observations	5,439,851	5,439,851	5,184,362	5,184,362
Tariff Interpolation	Yes	Yes	Yes	Yes
Period	1995–2009	1995–2009	1995–2009	1995–2009
K-P F Statistic 1st Stage		722.48		2.42
R ²	0.025	0.001	0.114	0.003

Notes: Time and country-product fixed effects and all controls are always included. Standard errors clustered by country-HS-2-level in parentheses. K-P F Statistic is the Kleibergen-Paap F-statistic.

* $p < .1$, ** $p < .05$, and *** $p < .01$.

including our globalization measure and interactions of this measure with the tariff conditionality dummy. As in Tables 1 and 2, we report fixed-effects and IV estimation results for changes in tariffs and NTM initialization with all controls included.

We find no robust difference for tariff changes of more globalizing countries. Interestingly, however, these countries reduced their tariff rates significantly less during IMF programs with tariff conditionality as the interaction leads to a significant positive effect. Similarly, we find no different general relationship between globalizing and NTM initialization. In contrast to tariff changes, more globalizing nations showed more restraint in initializing NTMs when subject to tariff conditionality during an SAP. We conclude that tariff conditionality forced less globalizing countries to lower their tariff rates rather than encourage already underway liberalization efforts.

Finally, as robustness checks, we perform non-linear regressions of the logistic model. The results are shown in Table A6. We drop the variable economic crisis in these estimations since only a few observations have a positive outcome. Furthermore, the instrumentation in a two-stage procedure is not feasible with non-linear models (Wooldridge, 2010). Overall, the logistic estimations confirm the tariff conditionality and SAP results. We now obtain slightly different results for control variables. However, these are not our variables of primary interest and do not change the implications of our results.

6 | CONCLUSIONS

External pressure can be an important driver of trade liberalization. This paper examined the impact of IMF tariff conditionality on changes in trade policy instruments in the form of tariff reductions and NTM initializations. Regarding the main results of our analysis, we find significant effects for tariff conditionality and smaller (and less robust) effects for mere SAP participation. A typical three-year lasting SAP with tariff conditionality led to a decrease in MFN applied tariff rates in the range of 2.0 to 3.8 percentage points in total. The most effective form of conditionality to reduce tariffs was performance criteria. This form is more binding than structural benchmarks but gives more implementation time than prior actions. We do not find robust evidence of tariff conditionality leading to a higher probability of NTMs being initialized overall. This holds also when considering tariff substitutions causal to tariff decreases in a particular HS-6-digit line with IMF tariff conditionality. Rather, participation in SAP programs is associated with a decrease in the probability of an NTM being initialized. Tariff conditionality imposed by the IMF often did not function as a “catalyst” for countries already globalizing but rather as an initiator of trade liberalization for countries that have globalized to a lesser degree so far. Additionally, we find that changes in trade policy because of external pressure need time to be implemented and are not reversed following the ending of an SAP.

Given these results, the IMF initiated or facilitated trade openness through SAPs, particularly in programs with a tariff component. External pressure in the form of IMF trade conditionality was quite effective in reducing the – at the time – relatively high barriers to trade in many developing countries. Moreover, there is very little evidence of sizable trade policy substitution effects or a rollback of reforms when the SAP ended.

On the other hand, our results have to be viewed with caution. Three limitations do not allow us to generalize our results regarding the effectiveness of IMF trade conditionality. The first one refers to the fact that we could not control for World Bank programs with trade conditions. In the case of simultaneous Bank and Fund programs in a given country, our results refer to the overall impact of tariff reductions implemented under the conditions of both institutions. The second one relates to the period under consideration. Since our analysis started in 1993, we cannot capture trade liberalization efforts (unilaterally or with IMF conditions imposed) in the late 1980s and early 1990s.

The third limitation refers to the drivers of trade liberalization other than international organizations. While our results indicate that the IMF was effective regarding reductions in tariffs, it could well be the case that governments intended to reduce trade protection levels unilaterally but could not do so because of strong special interests inside the country. In these circumstances, the IMF might have been rather an amplifier or an anchor for trade liberalization. Our results for the effectiveness of IMF trade conditionality could thus include both unilateral trade liberalization

efforts and pressure by the Fund. In that sense, our results support the argument by Irwin (2022) that many trade liberalization reforms were undertaken unilaterally. But among the three international institutions supporting trade liberalization (the World Bank, the IMF, and the GATT/WTO), the IMF was likely to be most effective in supporting or driving trade liberalization in many developing countries (Irwin, 2023). Despite the above limitations, our analysis provides the first quantitative evidence of how effective IMF trade conditionality was in an important phase of trade liberalization in developing countries.

As for future research areas, it would be worthwhile to complement our findings with comprehensive country case studies. While there is a general trend towards dismantling trade protection, the timing and extent of tariff dismantling varies considerably at the country level. Such additional analysis could shed more light on the specific drivers of trade liberalization. Although we do not find trade policy substitution effects for all developing countries in our sample, this may not be true for specific developing countries and sectors. Again, detailed case studies could provide further insights into these issues.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A

TABLE A1 Definition of variables and data sources.

Variable	Description	Source
Tariff Conditionality	Dummy = 1 if a country participates in an SAP containing at least one tariff liberalization condition in a given year	IMF (2021b) and Kentikelenis et al. (2016)
- Prior Action	Dummy = 1 if a country participates in an SAP containing at least one tariff liberalization condition in the form of a prior action in a given year	IMF (2021b) and Kentikelenis et al. (2016)
- Performance Criterion	Dummy = 1 if a country participates in an SAP containing at least one tariff liberalization condition in the form of a performance criterion in a given year	IMF (2021b) and Kentikelenis et al. (2016)
- Structural Benchmark	Dummy = 1 if a country participates in an SAP containing at least one tariff liberalization condition in the form of a structural benchmark in a given year	IMF (2021b) and Kentikelenis et al. (2016)
SAP Participant	Dummy = 1 if a country participates in an SAP for at least 5 months in the respective year	Kentikelenis et al. (2016)
Tariff	Simple mean average applied MFN tariff for HS-6-digit line (annual average)	UNCTAD (2021)
Tariff (interpolated)	Simple mean average applied MFN tariff for HS-6-digit line (annual average). Interpolation following Teti (2020), that is, missing tariffs are set to the last observed value	UNCTAD (2021)
NTM Initialization	Dummy = 1 if the NTM in corresponding HS-6-digit line was initiated	Ghodsi et al. (2017)
WTO Accession	Dummy = 1 for the first two years after a country joined the WTO/GATT	WTO (2023)
Imports Share	Imports in specific HS-6-digit line as a share of a country's total imports in a respective year. Missing values are interpreted as zeros	CEPII (2021)
Exports Share	Exports in specific HS-6-digit line as a share of a country's total exports in a respective year. Missing values are interpreted as zeros	CEPII (2021)
Population	Total population in million	World Bank (2021)
GDPpc	GDP per capita (in constant 2010 US\$)	World Bank (2021)
BoP Crisis	Dummy = 1 if balance of payment crisis in a respective year: less than the equivalent of three months' worth of imports in international reserves; following Milner and Kubota (2005)	World Bank (2021)
Economic Crisis	Dummy = 1 if economic crisis in a respective year: GDP per capita decreases by 15% or more; following Milner and Kubota (2005)	World Bank (2021)
Currency Crisis	Dummy = 1 if currency crisis in a respective year: annual depreciation in excess of 15% vs the US dollar; following the definition of Reinhart and Rogoff (2009)	World Bank (2021)
Inflation Crisis	Dummy = 1 if inflation crisis in a respective year: annual inflation rate of 20% or higher; following definition of Reinhart and Rogoff (2009)	World Bank (2021)
Δ Globalization	Economic Globalization de facto (0–100); absolute changes in the index over the last five years minus the average change in the index for all countries in our dataset	Gygli et al. (2019)
IMF Liquidity	IMF liquid resources divided by liquid liabilities	Lang (2021)

TABLE A2 Country list.

Afghanistan ¹	Chile	Guyana	Moldova ³	Sierra Leone ²
Albania	China	Haiti	Mongolia	Slovakia
Algeria ¹	Colombia	Honduras	Morocco	Slovenia
Angola ²	Congo, Rep. of	Hungary	Mozambique	Solomon Islands ²
Antigua & Bar.	Costa Rica	India	Myanmar	South Africa
Argentina	Croatia	Indonesia	Namibia	Sri Lanka ³
Armenia	Czech Republic	Jamaica	Nepal	St. Vincent & Gren.
Azerbaijan ¹	Dominica ²	Jordan	Nicaragua	Sudan ¹
Bahrain	Dominican Rep.	Kazakhstan ¹	Nigeria	Suriname
Bangladesh	Ecuador	Kenya	North Macedonia	Tajikistan ¹
Barbados	Egypt	Kyrgyz Rep.	Oman	Tanzania
Belarus ¹	El Salvador	Laos ¹	Pakistan	Thailand
Belize	Estonia	Latvia ³	Panama	Trinidad & Tob.
Bhutan ¹	Eswatini	Lebanon ¹	Papua New Guinea	Tunisia
Bolivia	Ethiopia ¹	Libya ¹	Paraguay	Türkiye
Bosnia & Herz. ¹	Fiji	Lithuania ³	Peru	Uganda
Botswana	Gabon	Madagascar	Philippines	Ukraine ¹
Brazil	Gambia	Malawi	Poland	Uruguay
Bulgaria	Georgia	Malaysia	Russia ¹	Vanuatu ¹
Burundi	Ghana	Maldives ²	Saint Kitts & Nevis ²	Venezuela
Cabo Verde ¹	Grenada	Malta	Saint Lucia	Vietnam ³
Cambodia ³	Guatemala	Mauritius	Saudi Arabia	Yemen ¹
Cameroon	Guinea	Mexico	Seychelles ¹	Zambia

Notes: Countries subject to SAPs with tariff conditions are highlighted. There are two reasons for a country being observed in the sample starting in 1993 but not in 1995: ¹ Country is not part of WTO in our sample period, or only one period is observed after accession. ² Country is part of the WTO in our sample period, but we do not observe any NTM initialization being reported. ³ IMF program began before WTO accession or before data availability in 1995. Therefore, the country is “treated” for the former sample while in the control group for the latter.

TABLE A3 Filter for tariff conditionality.

	IMF MONA	Kentikelenis et al. (2016)
Step 1 Keep Categories	“Trade Policy”, “Trade System”	“External Sector”, “Revenues and Tax Issues”
Step 2 Filter for Tariff Conditions	“Tariff”, “Customs Duty”, “Trade Liberalization”	
Step 3 Clean Dataset (Exclude)	“Port Tariff”, “Suez Canal Tariff”, “Export Tariff”, “Trucking Tariffs”, “Non-Tariff”; “Tariff Exemptions”, “Import Duty Exemption”, “Import Surcharge”, “Refrain from Raising”, “Complete a Study”, “Comprehensive Review”, “Task Force”	

Note: The remaining filtered conditions were controlled for consistency.

TABLE A4 Summary statistics.

	Observations	Mean	Standard Deviation	Minimum	Maximum
Sample 1995–2009					
Tariff	4,056,589	11.31	20.27	0	3,000
Tariff (interpolated)	5,450,235	11.94	20.66	0	3,000
Δ Tariff	3,601,839	−0.39	9.15	−2,997	2,997
Δ Tariff (interpolated)	5,450,235	−0.47	8.40	−2,997	2,997
Tariff Conditionality	5,450,235	0.07	0.26	0	1
SAP Participant	5,450,235	0.38	0.49	0	1
NTM Initialization	5,450,235	0.003	0.06	0	1
WTO Accession	5,450,235	0.02	0.13	0	1
GDP per capita	5,450,235	5,429	5,132	219	23,201
Population	5,450,235	54.09	177.46	0.078	1,331
Imports Share	5,450,235	0.00	0.00	0	0.83
Exports Share	5,450,235	0.00	0.00	0	0.92
BoP Crisis	5,450,235	0.36	0.48	0	1
Economic Crisis	5,450,235	0.001	0.03	0	1
Currency Crisis	5,450,235	0.12	0.32	0	1
Inflation Crisis	5,450,235	0.09	0.29	0	1
Δ Globalization	5,439,851	−0.08	1.61	−7.6	7.72
Sample 1993–2009					
Tariff	4,993,577	11.61	19.28	0	3,000
Tariff (interpolated)	7,473,575	12.59	20.38	0	3,000
Δ Tariff	4,209,540	−0.39	8.59	−2,997	2,997
Δ Tariff (interpolated)	7,473,575	−0.48	7.90	−2,997	2,997
Tariff Conditionality	7,473,575	0.08	0.28	0	1
SAP Participant	7,473,575	0.36	0.48	0	1
WTO Accession	7,473,575	0.03	0.17	0	1
GDP per capita	7,473,575	5,251	4,994	187	23,201
Population	7,473,575	56.25	183.86	0.044	1,331
Imports Share	7,473,575	0.00	0.00	0	0.83
Exports Share	7,473,575	0.00	0.01	0	0.98
BoP Crisis	7,473,575	0.37	0.48	0	1
Economic Crisis	7,473,575	0.002	0.05	0	1
Currency Crisis	7,473,575	0.13	0.34	0	1
Inflation Crisis	7,473,575	0.12	0.32	0	1
Δ Globalization	7,448,269	0.05	1.78	−7.6	7.96

Notes: The summary statistic corresponds to the baseline estimation sample in columns 2 and 5 and columns 3 and 6 in Table 1. Population is displayed in millions.

TABLE A5 Instrumental variable estimations – 1st stage.

	(1) Table 1 (4)	(2) Table 1 (5)	(3) Table 1 (6)	(4) Table 2 (3)	(5) Table 2 (4)	(6) Table 5 (2)	(7) Table 5 (4)
$\overline{TC} \times \text{IMF Liquidity}$	-0.490*** (0.01)	-0.553*** (0.01)	-0.620*** (0.01)	-0.489*** (0.02)	-0.540*** (0.01)	-0.551*** (0.01)	-0.538*** (0.01)
SAP Participant	0.074*** (0.01)	0.085*** (0.01)	0.137*** (0.01)	0.063*** (0.00)	0.076*** (0.00)	0.083*** (0.00)	0.074*** (0.00)
$\Delta \text{ Tariff}_{t-1}$			0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)	0.001*** (0.00)
$TC \times \Delta \text{ Tariff}_{t-1}$			-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)	-0.001*** (0.00)
NTM Initialization _{t-1}	-0.009* (0.00)	-0.029*** (0.01)				-0.027*** (0.01)	
WTO Accession	0.228*** (0.02)	0.107*** (0.01)	0.044*** (0.01)	-0.065*** (0.01)	0.049*** (0.01)	0.102*** (0.01)	0.044*** (0.01)
In (Population)	-0.161*** (0.06)	-0.137** (0.06)	0.069* (0.04)	-0.037 (0.07)	-0.119** (0.06)	-0.136** (0.06)	-0.117** (0.06)
In (GDPpc)	0.160*** (0.02)	0.048** (0.02)	-0.036** (0.01)	0.084*** (0.02)	0.070*** (0.02)	0.036 (0.02)	0.062*** (0.02)
Imports Share	0.192 (0.18)	-0.079 (0.15)	-0.046 (0.12)	0.212 (0.17)	-0.094 (0.15)	-0.079 (0.15)	-0.094 (0.15)
Exports Share	-0.003 (0.06)	-0.001 (0.06)	0.016 (0.05)	0.015 (0.08)	-0.004 (0.07)	0.000 (0.06)	-0.003 (0.07)
BoP Crisis	0.072*** (0.01)	0.029*** (0.00)	0.021*** (0.00)	0.039*** (0.01)	0.026*** (0.00)	0.028*** (0.00)	0.026*** (0.00)
Economic Crisis	-0.053*** (0.01)	-0.013** (0.01)	-0.016** (0.01)	-0.054*** (0.01)	-0.014** (0.01)	-0.013** (0.01)	-0.014*** (0.01)
Currency Crisis	-0.029*** (0.00)	-0.027*** (0.00)	-0.024*** (0.00)	0.012 (0.00)	-0.016*** (0.00)	-0.027*** (0.00)	-0.016*** (0.00)

TABLE A5 (Continued)

	(1) Table 1 (4)	(2) Table 1 (5)	(3) Table 1 (6)	(4) Table 2 (3)	(5) Table 2 (4)	(6) Table 5 (2)	(7) Table 5 (4)
Inflation Crisis	0.055*** (0.01)	0.047*** (0.00)	0.022*** (0.00)	-0.008 (0.01)	0.043*** (0.00)	0.040*** (0.00)	0.038*** (0.00)
Instrument						0.006*** (0.00)	0.004** (0.00)
× Δ Globalization						0.000 (0.00)	0.000 (0.00)
Δ Globalization						0.000 (0.00)	0.000 (0.00)
Observations	3,578,550	5,450,235	7,473,575	3,285,194	5,189,380	5,439,851	5,184,362
Tariff Interpolation	No	Yes	Yes	No	Yes	Yes	Yes
Period	1995-2009	1995-2009	1993-2009	1995-2009	1995-2009	1995-2009	1995-2009
Sanderson-Windmeijer F-Test (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Kleibergen-Paap statistic (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
C-Test (p-value)	0.001	0.004	0.439	0.088	0.405	0.005	0.571

Notes: Time fixed effects and country-product fixed effects are included. Standard errors clustered by country-HS-2-level in parentheses. TC stands for trade conditionality. *i* refers to the lag length used in respective estimation.
 p* < 0.1, *p* < .05, and ****p* < .01.

TABLE A6 Logit robustness checks.

	(1) NTM Init. Table 2 (1)	(2) NTM Init. Table 2 (2)	(3) NTM Init. Table 5 (3)
Tariff Conditionality	0.054 (0.15)	4.382*** (0.08)	1.467*** (0.17)
SAP Participant	-2.238*** (0.03)	-2.101*** (0.03)	-2.170*** (0.03)
Δ Globalization			0.006 (0.01)
TC \times Δ Globalization			-1.290*** (0.05)
Δ Tariff _{t-1}	0.006*** (0.00)	0.004*** (0.00)	0.004*** (0.00)
TC \times Δ Tariff _{t-1}	-0.039** (0.02)	0.021* (0.01)	0.030* (0.02)
WTO Accession	-0.885*** (0.09)	-0.629*** (0.09)	-0.616*** (0.09)
ln (Population)	-0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)
ln (GDPpc)	-0.003*** (0.00)	-0.002*** (0.00)	-0.002*** (0.00)
Imports Share	-36.455 (26.40)	-37.913 (23.74)	-32.055 (24.02)
Exports Share	-7.895 (15.16)	-8.597 (12.35)	-8.200 (13.97)
BoP Crisis	-2.126*** (0.07)	-2.339*** (0.06)	-2.326*** (0.06)
Currency Crisis	-1.675*** (0.05)	-1.639*** (0.04)	-1.679*** (0.04)
Inflation Crisis	2.069*** (0.04)	2.038*** (0.04)	2.064*** (0.04)
Observations	154,073	211,509	211,427
Tariff Interpolation	No	Yes	Yes
Period	1995–2009	1995–2009	1995–2009
Prob. > chi2	0.000	0.000	0.000

Notes: Time and country-product fixed effects are included. Standard errors in parentheses. Economic Crisis dropped because of too little variation. TC stands for trade conditionality.

* $p < .1$, ** $p < .05$, and *** $p < 0.01$.