Appendix to: Trade-policy dynamics: Evidence from 60 years of U.S.-China trade

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In Appendix A we discuss the firm level data from China used in our model calibration. In Appendix B, we document the robustness of our results concerning short- and long-run responses of trade to tariff changes and the gradual adjustment of U.S. imports from China. In Appendix C, we document the robustness of our results about the annual elasticity of trade to the NTR gap. In Appendix D, we present the results of additional quantitative experiments. In Appendix E we discuss some additional sensitivity relating U.S. sectoral employment to trade policy. Appendices G and H contain the additional tables and figures discussed in the aforementioned sections.

Contents

A Chinese firm-level data

The data for Chinese firms comes from an annual survey of manufacturing enterprises collected by the Chinese National Bureau of Statistics.[1] The dataset includes non-state firms with sales over 5 million RMB (about 600,000 U.S. dollars) and all state firms for 1998–2007. Information is derived from the balance sheet, profit and loss statements, and cash flow statements. The raw data consist of over 125,858 firms in 1998 and 306,298 firms in 2007 and includes sales, export revenues, value added, and number of employees. Firms are classified into industries according to the 4-digit Chinese National Industrial Classification (CNIC). To concord these with our goods classified under the SITC (revision 2) we proceed as follows. First, we apply the concordance between the 2-digit CNIC and the 3-digit ISIC (revision 2) reported in Table G.2, obtained from Xie et al. (2020). Next, we apply the concordance between the 3-digit ISIC (revision 2) and the 4-digit SITC revision 2.[2]

B Robustness: Slow adjustment

The results of the ECM and LP specifications presented Section 2.3 are robust to a number of alternative specifications. For visualization purposes we only present the results corresponding to the ECM. Results of the corresponding local projection results are available upon request.

Shipping costs. Column 2 of Table G.3 reports results from a version of our ECM regression that includes a control for shipping costs (CIF charges).

Sample of countries and goods. Columns 3 to 6 of Table G.3 report the ECM results under different specifications of the sample of goods and countries. In Column 3, we include all goods, including those affected by the MFA. In Column 4, we include all countries, not only those granted NTR status and not part of a bilateral FTA with the United States.

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[1] This data has been widely used to study Chinese manufacturing growth between the late 1990s and 2000s (see, for example, Bai et al. (2023)). We thank Dan Lu for sharing the data with us.

[2] We obtain this concordance from Marc Muendler's website.

Column 5 extends the sample to all goods and countries. Finally, Column 6 only includes goods that had non-zero U.S. imports from China at some point in the period 1974–1979. Overall we find very similar short- and long-run elasticities, although the inclusion of MFA goods slightly increases the short-run elasticity and the diminishes the long-run elasticity.

Level of aggregation. Table G.4 presents the results of our ECM regression applied to more disaggregated datasets: 8-digit TSUSA and the HS-8. The former is available for 1974–1988, while the latter is available for 1989–2008. To facilitate comparison with our baseline results, we also report the results using the 5-digit SITC aggregation over these same time periods. There are two main takeaways. First, in our baseline sample using the SITC classification, the ratio of China's long- to short-run elasticity is smaller when splitting the sample period into two—compare the baseline ratio of 3.5 (Column 1) to that of 1974–88 at 2 (Column 3) and that of 1989–2008 at 2.7 (Column 5). This is consistent with the documented slow adjustment to the 1980 NTR liberalization that extended well into the 1990s. Second, the long- to short-run elasticity ratio is not substantially affected by the level of aggregation, although it slightly increases when using more disaggregate trade flows. This can be seen comparing Columns 2 to 3 and 4 to 5. In all cases, the differences between short- and long-run elasticities are statistically insignificant, while the point estimates of their ratio are slightly larger when using TSUSA and HS-8 level data. These findings indicate that (1) using a more disaggregate level of trade flows, if anything, results in slower adjustment; and (2) it is important to use the long sample period to capture the full extent of the gradual response of trade to changes in tariffs.

C Robustness and extensions: NTR-gap elasticity

The time-varying pattern of the effect of the NTR gap on China's exports to the United States shown in Figure 3 is robust to a range of alternative approaches. Before we report these results, we report the non-time varying average NTR-gap elasticities estimated under the approach of Pierce and Schott (2016) and decompose our baseline results into an extensive and intensive margin.

Pierce and Schott (2016) replication. In Section 2.4, we estimated the NTR-gap elasticities for each year between 1974 and 2007, relative to 2008. Instead, in their seminal article, Pierce and Schott (2016) consider the differences in trade pre- and post-China's WTO accession. Their estimating equation is:

$$v_{jgt} = \beta \mathbb{1}_{\{t<2000 \wedge j=China\}} Gap_g + \sigma \tau_{jgt} + \delta_{jt} + \delta_{jg} + \delta_{gt} + u_{jgt}. \tag{C.1}$$

There are two differences with respect to our approach in (3). First, a single indicator variable for the pre-WTO accession period ($t < 2000$), is used instead of an indicator variable for each year prior to 2008. Second, (C.1) controls for contemporaneous tariff changes by including the current applied tariff rate, τ_{jgt}. Moreover, Pierce and Schott (2016) focus on the sample period between 1992 and 2007. Here we revisit the result of (C.1) when expanding the sample period back to 1974. This requires using 5-digit SITC goods instead of the HS-8 tariff lines used in Pierce and Schott (2016).

Table G.5 reports the results of several versions of this regression. In Column 1, we use the same 1992–2007 sample as in Pierce and Schott (2016) and estimate $\hat{\beta} = -0.9$.[3] In Column 2, we use the full sample period, 1974–2008, and estimate an effect that is almost three times larger. The remaining Columns show that this result holds when using measures of the tariff rates China faced during the 1970s instead of the NTR gap in 1999. Columns 3 and 4 use the statutory NNTR rate as measured by Feenstra et al. (2002) in place of the NTR gap, while Columns 5 and 6 use the average applied duty during 1974–1979 in our trade data. The estimates of $\hat{\beta}$ in Columns 3 and 5 are similar to the estimate in Column 1 using data from 1992–2007, while the estimates in Columns 4 and 6 are similar to the estimate in Column 2 using data from the full sample period.

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[3] Pierce and Schott (2016) estimate a value of -0.5. This difference is due to the fact that our level of aggregation is coarser than theirs.

Like our annual NTR-gap elasticity estimates, these results indicate that the growth in U.S. imports from China in high-gap goods after China gained PNTR access in 2000 is likely to be a delayed effect of the 1980 NTR liberalization as well as a consequence of reduced uncertainty about future trade policy.

Extensive margin effects. In our model, both the slow adjustment to past reforms and the trade dampening effect of uncertainty about future policy are almost entirely driven by firm entry decisions. While it is well-established in other contexts that the extensive margin plays an important role in the response of trade to policy changes, there are no data that would allow us to conclusively measure the role of this margin in the growth of Chinese exports to the United States over our full sample period (1974–2008). Nevertheless, we find suggestive evidence that firms' entry and exit decisions played a large role in the trade patterns we have documented.

We perform the following decomposition of imports into an intensive and extensive margin. For each country-good-year import flow, we compute a proxy for the extensive margin as the number of (product × U.S. district of entry) pairs, where products are defined at the most disaggregated level of observation (TSUSA during 1974–1988, HS-8 during 1989–2008). We define the intensive margin as the total import value divided by the number of (product × entry district) pairs. We then estimate the annual elasticity of each margin of trade to the NTR gap, as in equation (3) of the paper. Figure H.2 shows that the extensive margin clearly plays an important role in the evolution of the overall NTR gap.[4]

China supply effects. Our baseline approach controls for good-specific U.S. demand shocks but not for good-specific Chinese supply shocks, such as export licensing, privatization of

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[4] We validate our extensive margin proxy using data from Colombia, in which we observe exports to the United States at the establishment-product level. Panel (a) of Figure H.3 shows that our extensive margin proxy is highly correlated with the number of firms per SITC good. Similarly, Panel (b) illustrates that our extensive margin proxy is closely related to, and, if anything, underestimates the count of firm-product pairs within each SITC good. It is important to note, though, that while these correlations indicate our approach is likely to yield a good proxy for the extensive margin, caution should be taken in interpreting the results in Figure H.2 as a quantitative decomposition of the contributions of the extensive and intensive margins to the overall NTR-gap elasticity.

state-owned enterprises, or infrastructure development. Note that this would be problematic only if the Chinese supply shocks were systematically correlated with the NTR gap. An additional caveat is that, especially in the early years of our sample period, U.S. imports represent a large share of World trade. In the presence of economies of scale, the opening of U.S. markets to Chinese goods could have spillover effects and increase exports to other destinations, thereby introducing a downward bias in the elasticity estimates. We control for the importance of potentially confounding supply factors, using the World Trade Flows dataset from Feenstra et al. (2005) for 1974–2000 merged with the BACI trade database for 2001–2008 (Centre d'Études Prospectives et d'Informations Internationales, 2023).[5] We estimate

$$v_{ijgt} = \sum_{t'=1974}^{2007} \beta_t \mathbb{1}_{\{t=t' \wedge i=U.S. \wedge j=China\}} Gap_g + \delta_{igt} + \delta_{jgt} + u_{ijgt}, \tag{C.2}$$

where δ_{jgt} controls for exporter supply shocks and δ_{igt} controls for importer demand shocks (and trade barriers). Our coefficients of interest now include the difference in China's exports to the United States versus other destinations as well as the triple difference from our baseline approach. The results are shown in Figure H.4. The solid line plots the response of U.S. imports from China when considering U.S. imports only. This is analogous to (3), but uses the data in the world trade sample. The dashed line is the estimate when we include all trade flows, thus allowing us to include source-good-time fixed effects as, in (C.2). The overall pattern is similar to the baseline; in fact, the differences between the results from this specification and our baseline are not statistically significant.

Level of aggregation. In our baseline sample, we define goods at the 5-digit SITC (revision 2) product level. This allows us to construct a continuous dataset for 1974–2008 using well-established concordances between the underlying product schedules at which U.S. tariffs were

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[5] This dataset is at the SITC 4-digit level. We include the 50 largest exporter countries in 2001 except Hong Kong SAR, China, Canada, Mexico, and the former Soviet Union members. We aggregate the remaining countries into one. We further exclude goods subject to the MFA quotas, as in our baseline. None of these restrictions change the results.

determined, namely the TSUSA product schedule between 1974–1988 and the HS product schedule thereafter. To demonstrate that our results do not depend on product aggregation, we perform two robustness exercises. First, we estimate the NTR-gap elasticities using the product-level aggregation of the tariff lines of the two periods separately. Figure H.5 plots the results of (3) using the two tariff-line product classifications as well as the one obtained under the SITC classification. For 1989–2008, the results using the HS and the SITC classifications (Panel b) are nearly indistinguishable. In 1974–1988, the elasticities in the early years under the SITC classifications are slightly larger than under the TSUSA classification (Panel a). Qualitatively, however, they are very similar.[6] Second, we estimate (3) for the continuous sample period using a new concordance from Acosta and Cox (2022) between the TSUSA and the HS schedules.[7] The NTR-gap elasticities under this approach are reported in Figure H.6. Again, the path of the annual NTR-gap elasticities is similar.

Sample of countries and goods. Table G.8 demonstrates that our estimates of (3) are robust to our baseline sample design. The results are virtually unchanged when we include all countries (Column 2). When we relax the MFA exclusion (Column 3), the estimated annual elasticities of trade to the NTR gap fall by 10–20 percent, but the drop is common across all years, leaving the speed of adjustment and the overall pattern unchanged. Restricting the sample to goods in which U.S. imports from China were non-zero at some point before 1980 also has little effect (Column 4).[8] Finally, Column 5 shows the results when considering U.S. imports from China only. The results illustrate that not controlling for good-specific U.S. demand shocks leads to slightly larger elasticities in the early sample period.

Alternative NTR-gap measures. In our baseline specification (3) we consider the 1999

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[6] We also report robustness to these results in Table G.6 (TSUSA) and Table G.7 (HS-8).

[7] After accounting for the n-to-1, 1-to-n, and n-to-n relations we end up with around 2,800 unique product codes, 40 percent more than our baseline SITC classification.

[8] We have also experimented with extending our sample period from 1974–2008 to include 1970–1973 and 2009–2017. Between 1970 and 1973, Chinese exports to the United States are insufficient to yield significant estimates. However, when we pool over those years, the effect is similar to that in 1974. Extending the sample period until 2017 yields an additional increase of around −1 percentage points in the elasticity of trade to the NTR gap.

NTR gap as our measure of the 1980 liberalization/tariff risk to facilitate comparison with Pierce and Schott (2016). Recall that this gap is defined as the NNTR rate, established by the 1930 Smoot-Hawley Trade Act, minus the MFN rate in 1999, the year before China joined the WTO. To illustrate that most of the variation is due to the NNTR rate we have estimated (3) defining Gap_g as the NNTR rate only. The results are reported in Column 1 of Table G.9. Using the NNTR rate yields annual gap elasticities about 10–20 percent smaller in the first years, but the gradual nature of the adjustment is unchanged. To show that the NTR gap is very related to the size of the 1980 liberalization (as already illustrated by Figure 4) we have also estimated (3) defining Gap_g as the average applied tariff rate to China during 1974–1979. The results yield elasticities that are about 5–15 percent smaller than in the baseline and converge to zero (or statistical insignificance) slightly faster in the last five years before PNTR access (Column 2 of Table G.9). Finally, we considered a time-varying version of the NTR gap, in which we define Gap_g as the NNTR rate minus the average tariff applied to all countries with NTR status that are not part of a free trade agreement with the United states. Again, the results are similar to our baseline and reported in Column 3 of Table G.9.

Additional trade-cost controls. Our baseline estimation (3) departs from Pierce and Schott (2016) by excluding applied tariff rates τ_{jgt} because the NTR gap is highly correlated with pre-1980 applied tariffs (Figure 4). Columns 4–5 of Table G.9 report the results when we include shipping cost and applied tariff rates. Both specifications leave the estimated coefficients virtually unchanged.

Anticipation 1979. Figure 1 shows that Chinese exports to the United States grew strongly in 1979, but Figure 3, which shows the elasticity to the NTR gap fell in 1979, indicates this increase was smaller for high-gap goods than low-gap goods. As emphasized by Khan and Khederlarian (2021), the weak growth for goods whose tariffs were about to decline the most could reflect anticipatory behavior by importers. To control for this possibility, we estimate a version of (3) including the lead change in applied tariffs ($\Delta\tau_{jg,t+1}$). This control is only relevant in 1979 because changes in applied tariffs in other years were minimal (see Figure 2). Column 6 of Table G.9 reports the results. Including the lead change smooths the response of trade flows to the NTR gap around 1979 (we no longer see a drop in the elasticity), but has no effect in other years.

D Robustness: Quantitative analysis

In this section, we conduct seven additional quantitative experiments. In the first, we estimate upper and lower bounds for our trade-policy probabilities by calibrating our model to match the confidence intervals of our gap-elasticity coefficients instead of the point estimates. In the second, we study the sensitivity of our results to the parameters that govern exporter life-cycle dynamics, which play important roles in determining the long-run effects of trade reforms and the length of transitions. In the third, we study a version of the model in which there is no parameter heterogeneity across sectors. In the fourth, we study a version of the model without exporter life-cycle dynamics at all to further illustrate the role of gradual adjustments. In the fifth, we study a version of our model in which changes in the probability of switching trade policy regimes are unanticipated instead of anticipated. In the sixth, we provide some additional results that illustrate how the trade-policy transition probabilities are identified from the NTR-gap elasticities. In the last, we compare the results of our model to a model-free Bayesian learning exercise.

Bounds for our estimates of trade-policy probabilities. To estimate a path of expectations about future U.S. trade policy towards China, we have calibrated the probabilities of switching between policy regimes in our model to match our point estimates of the annual elasticity of trade to the NTR gap. In our empirical analysis, we also reported 95-percent confidence intervals around these point estimates. Here, we use these intervals to derive upper and lower bounds for our estimated probabilities.

Leaving all other parameters unchanged, we re-calibrate our model's trade-policy probabilities, once to match the lower bound of the confidence interval shown in Figure 3, and once more to match the upper bound. The former yields a lower bound for the probability of switching from NNTR to MFN and an upper bound for the probability of switching back from MFN to NNTR, while the latter yields the reverse.[9] The results are shown in Figure H.7.

Our bounds for the probability of switching from NNTR to MFN tariffs (shown in light blue in the figure) are about 13 percentage points below/above than our main point estimate. Our bounds for the probability of switching back from MFN to NNTR tariffs (shown in light red) are about 14–17 percentage points below/above our estimate during the 1970s, but this interval shrinks quickly starting in the mid 1980s as this probability falls. By the time of China's WTO accession in 2001, the bounds for this probability are only a few percentage points away from the point estimate. Whether one uses the point estimates reported in the main text or the bounds estimated in this appendix, the probability that the 1980 reform would be reversed was initially very high, began to fall rapidly in the mid 1980s, and was quite low in the years before and after WTO accession.

Sensitivity to exporter life-cycle parameters. We have estimated the parameters that govern exporter life-cycle dynamics—the high iceberg trade cost that applies to new entrants, ξ_{gH}, and the probability of switching to the low iceberg cost, $\rho_x i$—to match empirical facts that we have estimated. These parameters are particularly important because they play crucial roles in determining how much trade responds to changes in policy in the long run and how long these responses take to materialize in the absence of policy uncertainty. To study the sensitivity of our results to these parameters, we perturb each of these parameters and re-estimate the trade-policy transition probabilities, $\omega_t(s, s')$.

Figure H.8 shows our results in alternative calibrations in which we use different values of

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[9] Recall that a higher probability of gaining MFN status pushes the gap elasticity during the 1970s upward, while a higher probability of losing MFN status pushes the gap elasticity downward after the 1980 reform.

the high iceberg cost, ξ_{gH}, while Figure H.9 shows the results in alternative calibrations with different values of the iceberg cost transition probability, ρ_{ξ}. Panel (a) in each of these figures shows that in the absence of trade-policy uncertainty, the NTR-gap elasticity would follow a materially different path than in the benchmark calibration, both in terms of the level in the 1970s (which is closely related to the long-run effect of trade policy) and the speed of adjustment. Nevertheless, panel (b) shows that the estimated trade-policy probabilities in these alternative calibrations are very similar to the benchmark probabilities. Qualitatively, our main results—that the likelihood of losing NTR status was initially very high in the early 1980s, fell dramatically during the late 1980s, and did not change materially when China joined the WTO in 2001—hold up in all of these alternative calibrations.

The role of realistic exporter life-cycle dynamics. A different way to study the role of gradual adjustment than the accounting exercise we conducted in Section 5.3 is to examine how our estimates of trade-policy transition probabilities differ in an alternative model, with no exporter life cycle, in which trade adjusts more quickly. In this *fast-adjustment model*, we replace the stochastic variable trade cost with a constant variable trade cost. Thus, a new exporter immediately exports at its full scale, and aggregate trade responds quickly to a change in policy. In this model, which is similar to the model used by Handley and Limão (2017), we find much larger estimates of the non-renewal probability and a much smaller likelihood of transitioning from NNTR to MFN.

In Figure H.11, we plot the elasticity of trade to the NTR gap in the benchmark and fast-adjustment model, with and without TPU. The elasticities in the fast-adjustment model without TPU converge to zero faster than in the benchmark model without TPU. This implies that, in the fast-adjustment model with TPU, higher probabilities of switching back to the NNTR regime are required to match the observed elasticities—in fact, the simple dynamic model requires this probability to be one in 1980–1981 (Figure H.11). This is because the fast-adjustment model places less weight on slow adjustments, and thus more weight on policy expectations, in accounting for the dynamics of U.S. imports from China.

The role of sectoral heterogeneity. In our calibration, we grouped goods into fifteen sectors and allowed the parameters that govern the dynamics of exporting firms to vary across sectors. There are no clear relationships between these parameters and the NTR gap, which indicates that this sectoral heterogeneity is unlikely to play a large role in our results. To demonstrate this, we compare our benchmark model to an alternative model in which we turn off this sectoral heterogeneity. In the *one-sector model*, demand elasticities, non-tariff trade costs, and productivity dispersion are the same for all goods. We calibrate these parameters to match aggregate exporter-dynamics statistics from China (i.e., we compute these statistics for the entire dataset, rather than sector by sector).

Figure H.10 compares the results in the one-sector model to the benchmark results. The probability of gaining NTR status during the 1970s in the one-sector model is about 12 percent, less than half of the probability in the benchmark model. In the absence of policy uncertainty, the NTR-gap elasticity during the 1970s is smaller—closer to the actual data—in the one-sector model than in the benchmark. This means that less anticipation of gaining NTR status is needed to fit the data during this period. Conversely, the probability of losing NTR status from 1980 onward is higher in the one-sector model than in the benchmark during the 1980s, but there is no material difference from the late 1980s onward.

Overall, these results show that sectoral heterogeneity in the technological primitives that determine exporter behavior does not play a large role in driving our results. Ignoring this heterogeneity would lead us to overstate the likelihood of losing NTR status in the early 1980s, but would not affect our main findings that this likelihood fell dramatically during the late 1980s and changed little when China gained PNTR status in 2001.

Unanticipated changes in regime-switching probabilities. We have assumed that firms in our model know the entire path of probabilities of switching between trade policy regimes. In this section, we assume the trade-policy regime follows a Markov process as in the benchmark, but that in each period, firms believe the current transition probabilities will remain in force forever—firms are surprised each period when these probabilities change. In this version of the model, we recalibrate the transition probabilities to match the annual NTR gap coefficients while leaving all other aspects of the calibration unchanged. As in the first alternative, the realized path of tariffs is the same as in the benchmark, so any differences in outcomes are due to differences in firms' expectations.

Panel (b) of Figure H.12 shows the calibrated transition probabilities in this version of the model (labeled "surprises") are very similar to the benchmark probabilities. The initial probability of losing MFN status in 1980 is slightly higher but falls slightly quicker thereafter. This suggests that our approach provides tight bounds on these probabilities and on their economic effects.

Identification of policy transition probabilities from NTR-gap elasticities. Here we provide some additional results that illustrate how the trade-policy transition probabilities are identified from the NTR-gap elasticities. Recall that the probability of gaining NTR status during the 1970s, $\omega(2,1)$, is identified from the average NTR-gap elasticity during this period, and that the probability of losing NTR status in period t, $\omega_t(1,2)$, is identified by the NTR-gap elasticity in period $t+1$.

To show how this identification works in practice, Figure H.13 shows how the NTR-gap elasticity path in the model changes when we increase each probability by 1 percentage point, one probability at a time. In each panel of the figure, the elasticity used to identify the probability in question is shown in red, while the other elasticities are shown in blue. Y-axis scales are omitted to emphasize which elasticities are relatively more affected by each probability, rather than the magnitude of these effects. The first panel of the figure shows how the NTR-gap elasticities change when the probability of gaining NTR status, $\omega(2,1)$, increases. This shifts the entire elasticity path upward, but the elasticities during the 1970s, which are used to identify this probability, change the most. The remaining panels show how the elasticities change when the probability of losing NTR status in a given year, $\omega_t(1,2)$, increases. In each case, although the entire elasticity path shifts downward, the effects are local, in the sense that the elasticity in period $t+1$ used to identify this probability shifts the most, and elasticities further back or further forward shift less. This illustrates the essence of how our identification strategy works.

To get a clearer sense of the identification, it is helpful to conduct the same exercise in the *surprises* model studied above. In this model, the probability of losing NTR status in period t only affects the NTR-gap elasticities in period $t+1$ onward; it cannot affect the elasticities in prior years because the year-to-year transition probability changes are unanticipated. The results are shown in Figure H.14. One can clearly see now how the identification proceeds sequentially. First, the probability of losing NTR status in 1980, $\omega_{1980}(1,2)$, is identified from the NTR-gap elasticity in 1981, because the probabilities from 1981 onward have no effect on this moment. Then, having pinned this parameter down, we can use the NTR-gap elasticity in 1982 to identify $\omega_{1981}(1,2)$, because the probabilities from 1982 onward do not affect this moment. We proceed in this way forward in time until finishing the identification by pinning down $\omega_{2006}(1,2)$ from the NTR-gap elasticity in 2007. Since the estimated probabilities in this version of the model are very similar to our benchmark estimates, the economic intuition above still largely holds in the benchmark model, even though it does not hold exactly. This is confirmed by the "locality" of the effects of the probabilities on elasticities close in time to the moments used for identification discussed above.

Bayesian learning. The path of trade-policy expectations that is consistent with the growth of Chinese exports to the United States reflects complex geopolitical events that are beyond the scope of our analysis. In our model, firms do not update their beliefs about the probabilities of switching between regimes; they simply take the probabilities that are "announced" by the modeler. Here, we ask how the probabilities we obtain from our calibration exercise compare with the posterior beliefs that a Bayesian agent would form after observing the economy remain in the MFN regime year after year from 1980 onward. Surprisingly, this alternative approach to forming beliefs about future trade policy yields a path of trade-policy expectations that falls at a rate roughly consistent with our estimates.

We focus on the probability of losing MFN status after the 1980 liberalization, $\omega(1,2)$. We assume Bayesian agents have beta-distributed prior beliefs about this probability when the liberalization occurs in 1980:

$$p^{prior}(\omega(1,2)|a,b) = \frac{\Gamma(a+b)}{\Gamma(a)+\Gamma(b)}\omega(1,2)^{a-1}(1-\omega(1,2))^{b-1}. \tag{D.1}$$

The parameters a and b of this distribution control the mean and the degree of confidence in this value. For example, $a = b = 1$ is the uniform distribution that has a mean of 0.5 but places equal weight on all possible values of $\omega(1,2)$, whereas the beta distribution with $a = b = 5$ has the same mean but is tightly concentrated around that value. This conjugate prior distribution is convenient because the mean posterior after observing n successive periods in which MFN status is retained is given by the simple expression $a/(a+b+n)$.

We consider a range of priors that all have the same mean as the initial 1980 probability in the model but with more or less dispersion around this value. This setup allows us to determine whether agents in our model "learn" faster or slower than a Bayesian agent would. For each $b = 1, 2, \ldots, 5$, we set a so that the mean prior, given by $a/(a+b)$, equals 0.72. The prior with $b = 1$ represents an agent with little confidence in this value, whereas the prior with $b = 5$ represents a highly confident agent. Panel (a) of Figure H.15 plots the density functions of each of the prior beliefs that we consider.

Panel (b) plots the model-implied probabilities of losing MFN status against the evolution of the mean posteriors associated with each of these priors as agents observe successive periods in which MFN status is retained. During 1980–1985, the Bayesian posteriors fall faster than our model-implied probabilities, which is consistent with the delay in growth in the NTR-gap coefficient during the early 1980s documented in Section 2.4. After 1985, however, this pattern is reversed, and by the late 1990s, the model-implied probability of losing MFN status is lower than all of the posteriors.

E Additional results on employment effects

In this section, we report some additional results on the effects of trade policy and trade on employment. We start by showing our results are robust to using other measures of employment. We then show how employment depends on industry import and export shares.

We combine several datasets to conduct our analysis. We use the industry-year level trade data for 1958–1971 from Feenstra et al. (2002) and augment it with country-industry-year level data for 1972–2018 from Schott et al. (2008). For tariffs, we use Feenstra (1996) from 1972 to 1994 and add data for 1995–2018 using Schott et al. (2008). Figure H.19(a) shows a minor break in the gap elasticity around the switch periods.

Figure H.16 plots the distribution of NTR gaps by quartile of average Chinese import share and domestic sales share during 1995–1999. There is substantial variation in the spreads across the quartiles. Importantly, industries with higher Chinese import shares tend to have larger and less dispersed gaps. We would have expected the opposite: industries facing large NTR gaps should have smaller import shares as TPU suppresses entry by Chinese firms. This suggests that these industries with large NTR gaps and large import shares are industries in which China has a comparative advantage. As we write in the main text, it is important to allow the elasticity of employment to the NTR gap to vary with import and export exposure, lest we attribute employment declines in high gap industries to multilateral China supply factors.

Figure H.17 plots the gap elasticity using several alternative measures and using our structural and reduced form equations. In the Panel (a), we show that the estimated effects on employment are a bit larger if we use production workers or production hours. The effects on sales are a bit smaller. Our model-consistent approach finds no effects prior to the lifting of the embargo in 1971. Panel (b) reports the gap elasticity using the reduced-form regression. All measures show a large increase from 1958 to 1974 and then a collapse around 2000. Most series peak in 1996.

Figure H.18 shows how the effects on employment depend on import penetration and domestic sales share. The Panel (a) shows that the effects on employment are concentrated in the sectors where China had the largest import penetration. The median sector is unaffected. Panel (b) shows that variation in the employment effects owing to domestic sales was modest in comparison to the variation from import penetration.

Industry trends. We now take a broader view of trends in variables that are correlated with the NTR gap that could influence both our theoretically-consistent regression (20) and our reduced-form specification (21). Figure H.19 plots the elasticity of several key variables to the NTR gap from 1958–2018. Figure H.19(a) plots the dynamics of exports, imports, and the applied tariff; note that we are plotting total industry-level imports, not just imports from China. The applied tariff series, which starts in 1974, falls with the NTR gap as high-gap industries also had relatively large tariff declines. These differential reforms seem to end around 2001. U.S. imports and exports rose more in high-gap industries, and this growth is particularly pronounced in imports. Imports grew faster from 1982 to 2001 but, since then, it has mostly been in line with other goods. The faster growth in imports is to be expected given the tariff declines.

Figure H.19(b) plots the dynamics of employment and domestic absorption. These series generally move together, with employment and domestic absorption growing robustly in the early years of the sample. Since the late 1990s, employment and domestic absorption have fallen sharply. The relative growth in high-gap industries in the early part of the sample is about half as large as the decline at the end of the sample. Obviously, the growth in the early part of the sample cannot be attributed to China, since China was still under embargo. Moreover, the dynamics of these series since the late 1990s—modest movements in trade coupled with the large movements in domestic absorption—suggest that there may be other industry-level shocks that are more important in accounting for differences in employment across sectors. Without a multisector general-equilibrium model, however, which is beyond the scope of this paper, it is not possible to say more.

Figure H.20 compares our estimates of β_t with trade and employment data. With employment data, the NTR-gap elasticities are about twice as large as those from the import data. The employment data shows that the substitution is much later than in the trade data. To reconcile these findings, we remove several of the fixed effects from our trade regression that are omitted from our employment regression. We estimate (3) with only time fixed effects and product-country fixed effects. With these minimal fixed effects, import substitution towards high-gap goods that is almost twice as large as the baseline trade estimate, and coincides, both quantitatively and temporally, with our estimates from the employment data. That the estimates from the trade data can be made consistent with the estimates from the employment data by omitting standard fixed effects points to some concerns with using employment to identify the effects of Chinese trade policy.

F U.S. trade policy towards China

The discussion in section 5.1 is based on a series of reports that provide summaries of key changes in trade and trade policy (USITC, 1970–1990). For further background reading, see: special reports on China and the U.S.S.R. (USITC, 1977a; 1977b); a report on China's development and its impact on the U.S. economy (USITC, 1985); a series of reports published by the U.S. Department of Commerce (U.S. Department of Commerce, 1977–1985); a series of declassified studies on potential trade with China going back to the 1950s (CIA, 1950–1980); and the White House Historian's "History of Foreign Relations."

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G Additional tables

Table G.1: Summary statistics for NNTR and NTR tariff schedules

						Applied Duties			
		NNTR Rate		U.S. Export Share		1979		2001	
	SITC 1-Digit	Mean	Std.	1979	2001	China	NTR	China	NTR
0	Food and live animals	16	14	13	1	15	4	3	2
1	Beverages and tobacco	48	45	0	0	49	14	3	2
2	Crude materials, inedible, except fuels	11	17	17	1	6	1	0	0
3	Mineral fuels, lubricants and related	1	1	25	0	1	0	1	0
4	Animal and vegetable oils, fats and waxes	11	7	1	0	4	2	2	2
5	Chemical and related products	29	15	14	2	20	5	3	2
6	Manufactured goods	36	17	12	10	38	7	2	2
7	Machinery and transport equip.	34	11	0	40	33	5	1	1
8	Misc. manufactured articles	39	23	17	45	40	7	3	2
9	Commodities and transactions, n.e.c.	33	24	1	0	28	3	1	1
10	Average	29	21			28	6	2	2

Table G.2: Product-sector concordance

		CNIC	ISIC Rev.2
1	Food, beverage and tobacco	13-16	311-314
2	Textile, clothing, leather and footwear manufacturing	17-19	321-324
3	Wood and straw products	20	331-332
4	Paper and printing products	22-23	341-342
5	Energy products and chemicals	25-28	351-354
6	Rubber and plastic products	29-30	355-356
7	Non-metallic mineral products	31	361, 362, 369
8	Base metal manufacturing	32-33	371, 372
9	Calendered metal manufacturing	34	381
10	Other machinery and equipment manufacturing industry	35-36	382
11	Computer, electronic and optical products	40-41	385
12	Electrical equipment manufacturing	39	383
13	Vehicle manufacturing	37	384
14	Furniture and other manufacturing	21, 24, 42, 16	390, 332
15	Non-manufacturing	others	others

Notes: This concordance follows Xie et al. (2020).

Table G.3: Slow adjustment with ECM — robustness

	Baseline	Shipping	All Goods	All Countries	Full	Balanced
$\mathbb{1}\{j \neq China\}\Delta\tau_{jgt}$	-2.06***	-2.06***	-1.90***	-2.24***	-2.40***	-1.95***
	(0.14)	(0.14)	(0.11)	(0.13)	(0.10)	(0.15)
$\mathbb{1}\{j = China\}\Delta\tau_{jgt}$	-2.44***	-2.44***	-2.63***	-2.48***	-2.89***	-2.44***
	(0.40)	(0.40)	(0.41)	(0.40)	(0.40)	(0.42)
$\mathbb{1}\{j \neq China\}v_{jg,t-1}$	-0.47***	-0.47***	-0.47***	-0.45***	-0.45***	-0.44***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\mathbb{1}\{j = China\}v_{jg,t-1}$	-0.36***	-0.36***	-0.38***	-0.36***	-0.37***	-0.32***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
$\mathbb{1}\{j \neq China\}\tau_{jg,t-1}$	-1.73***	-1.73***	-1.75***	-1.93***	-2.23***	-1.56***
	(0.11)	(0.11)	(0.09)	(0.10)	(0.08)	(0.12)
$\mathbb{1}\{j = China\}\tau_{jg,t-1}$	-3.00***	-3.00***	-2.71***	-3.04***	-2.84***	-2.74***
	(0.31)	(0.31)	(0.26)	(0.30)	(0.25)	(0.28)
Shipping Costs_{jgt}			-3.20***			
			(0.04)			
Long-run China	-8.23***	-8.23***	-7.21***	-8.36***	-7.71***	-8.67***
	(0.82)	(0.82)	(0.67)	(0.81)	(0.67)	(0.85)
Lon-run Others	-3.70***	-3.70***	-3.71***	-4.27***	-5.00***	-3.55***
	(0.24)	(0.24)	(0.20)	(0.23)	(0.19)	(0.28)
Long-/Short-run China	4.0	4.0	3.79	3.73	3.21	4.45
Long-/Short-run Others	1.52	1.52	1.41	1.72	1.73	1.45
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj
N	733,470	733,470	929,251	808,601	1,024,577	459,202
Adjusted R^2	0.26	0.26	0.29	0.26	0.26	0.25

Notes: The table reports estimates of (1). The short-run elasticity is captured by the coefficient on $\Delta\tau_{jgt}$. The long-run elasticity is the coefficient on $\tau_{jg,t-1}$ divided by the coefficient on $v_{jg,t-1}$. The *Shipping* model includes shipping charges. The *All countries* model includes all countries, the *Full* model further includes goods affected by the MFA quotas, and the *Balanced* model is restricted to goods with non-zero U.S.-China trade before 1981. Standard errors in parentheses are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table G.4: Slow adjustment with ECM — robustness, continued

	1974–2008	1974–1988		1989–2008	
	SITC	TSUSA	SITC	HS-8	SITC
$\mathbb{1}\{j \neq China\}\Delta\tau_{jgt}$	-1.82***	-1.89***	-1.99***	-3.47***	-1.52***
	(0.14)	(0.12)	(0.19)	(0.16)	(0.18)
$\mathbb{1}\{j = China\}\Delta\tau_{jgt}$	-2.22***	-1.67***	-2.18***	-2.06***	-1.97**
	(0.40)	(0.28)	(0.42)	(0.56)	(0.88)
$\mathbb{1}\{j \neq China\}v_{jg,t-1}$	-0.48***	-0.78***	-0.66***	-0.61***	-0.55***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$\mathbb{1}\{j = China\}v_{jg,t-1}$	-0.37***	-0.75***	-0.62***	-0.52***	-0.46***
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
$\mathbb{1}\{j \neq China\}\tau_{jg,t-1}$	-1.49***	-2.26***	-1.78***	-3.00***	-1.45***
	(0.11)	(0.14)	(0.19)	(0.16)	(0.19)
$\mathbb{1}\{j = China\}\tau_{jg,t-1}$	-2.94***	-2.96***	-2.89***	-3.62***	-2.15**
	(0.31)	(0.27)	(0.40)	(0.43)	(0.84)
Shipping Costs$_{jgt}$	-2.88***	-3.35***	-3.13***	-3.27***	-2.89***
	(0.04)	(0.03)	(0.06)	(0.03)	(0.06)
Long-run China	-7.93***	-3.94***	-4.64***	-7.02***	-4.72***
	(0.81)	(0.36)	(0.62)	(0.83)	(1.83)
Lon-run Others	-3.12***	-2.90***	-2.69***	-4.89***	-2.64***
	(0.24)	(0.18)	(0.29)	(0.26)	(0.34)
Long-/Short-run China	4.36	2.08	2.33	2.02	3.11
Long-/Short-run Others	1.41	1.74	1.23	2.37	1.34
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj
N	733,470	965,641	250,344	1,648,276	478,606
Adjusted R^2	0.29	0.40	0.38	0.32	0.31

Note: This table reports estimates of (1) using the TSUSA and HS-8 product schedules for the available sample periods. For comparison, we also report the results using the SITC product classification for the respective sample periods. Column 1 reports our baseline estimate for the period 1974–2008 using 5-digit SITC products. Columns 2 and 3 use the sample period 1974–88, and Columns 4 and 5 1989–2008. Column 2 uses 7-digit TSUSA aggregation and Column 4 uses the 8-digit HS level. Standard errors in parentheses are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table G.5: NTR-gap elasticity — Pierce and Schott (2016) specification

	NTR Gap		Statutory NNTR		Applied NNTR	
$\mathbb{1}\{^{t>2000}_{j=China}\}NTRGap_g$	-0.67***	-2.07***				
	(0.21)	(0.26)				
$\mathbb{1}\{^{t>2000}_{j=China}\}NNTR$			-0.51***	-1.63***		
			(0.19)	(0.25)		
$\mathbb{1}\{^{t>2000}_{j=China}\}AppNNTRg$					-0.42**	-2.04***
					(0.21)	(0.31)
τ_{jgt}	-3.85***	-3.76***	-3.85***	-3.76***	-3.80***	-3.79***
	(0.14)	(0.11)	(0.14)	(0.11)	(0.18)	(0.12)
Period	'92–'07	'74–'08	'92–'07	'74–'08	'92–'07	'74–'08
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj
N	703,190	1,245,003	703,804	1,246,136	365,163	740,504
Adjusted R^2	0.84	0.78	0.84	0.78	0.86	0.79

Notes: Columns are estimates from variations of (C.1). Column 1 estimates the effect of the NTR gap on Chinese imports after PNTR access using the same period as Pierce and Schott (2016), but at the SITC aggregation level (see equation 5 in Pierce and Schott 2016). Column 2 uses our sample period from 1974 to 2008. Columns 3 and 4 estimates use the statutory NNTR rates instead of the NTR gap. Columns 5 and 6 use the applied NNTR rate calculated as the average applied rate on Chinese goods between 1974 and 1979 instead of the NTR gap. Standard errors in parentheses are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table G.6: NTR-gap elasticity — TSUSA, 1974–88

	Baseline	All Countries	Avg. NNTR, 1974–79	Tariffs
$\mathbb{1}\{^{t=t'}_{j=China}\}X_g$				
1974	-4.27***	-4.23***	-3.93***	-2.99***
1975	-3.86***	-3.81***	-3.53***	-2.57***
1976	-3.73***	-3.69***	-3.44***	-2.43***
1977	-3.84***	-3.80***	-3.52***	-2.51***
1978	-3.33***	-3.27***	-2.88***	-2.03***
1979	-3.81***	-3.78***	-3.45***	-2.51***
1980	-2.66***	-2.61***	-2.21***	-2.45***
1981	-1.84***	-1.79***	-1.72***	-1.70***
1982	-1.99***	-1.93***	-1.82***	-1.94***
1983	-2.20***	-2.15***	-1.90***	-2.16***
1984	-2.11***	-2.05***	-1.79***	-2.08***
1985	-1.40***	-1.35***	-1.03***	-1.37***
1986	-0.98***	-0.93***	-0.66***	-0.95***
1987	-0.51**	-0.47**	-0.30	-0.50**
τ_{jgt}				-1.89***
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj
N	486,725	500,641	701,141	486,725
Adjusted R^2	0.80	0.80	0.80	0.80

Note: Columns are estimates of (3), except that (i) goods g are 7-digit TSUSA products, instead of the SITC products of our baseline; and (ii) the average 1974–1979 applied tariff on China is used as Gap_g instead of the NTR gap (not available for TSUSA). Column 1 uses our baseline sample design that excludes NNTR and NAFTA countries as well as goods that were subject to quota removals under the MFA. Column 2—*All Countries*— includes all countries. Column 3—*Average NNTR, 1974–79*— uses applied tariffs to all communist countries to calculate the NNTR rate, instead of applied tariffs to China only. Column 4—*Tariffs*—includes tariffs in (3) and, as expected, the coefficient diminishes in the early years. Standard errors are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table G.7: NTR-gap elasticity — HS-8, 1989–2007

	Baseline	No Tariffs	All Countries	Full	Balanced
$\mathbb{1}\{_{j=China}^{t=t'}\}X_g$					
1989	-3.41***	-3.44***	-3.33***	-2.23***	-3.37***
1990	-2.84***	-2.87***	-2.75***	-1.90***	-2.79***
1991	-2.20***	-2.24***	-2.11***	-1.53***	-2.13***
1992	-1.62***	-1.66***	-1.52***	-1.08***	-1.62***
1993	-1.05***	-1.10***	-0.95***	-0.80***	-1.10***
1994	-1.19***	-1.25***	-1.15***	-1.05***	-1.17***
1995	-1.07***	-1.10***	-0.96***	-0.98***	-1.28***
1996	-0.85***	-0.88***	-0.78***	-0.82***	-0.86***
1997	-1.00***	-1.02***	-0.94***	-0.94***	-1.04***
1998	-0.99***	-1.00***	-0.96***	-1.08***	-0.86***
1999	-0.64***	-0.64***	-0.60***	-0.87***	-0.59***
2000	-0.48***	-0.49***	-0.47***	-0.86***	-0.35
2001	-0.51***	-0.53***	-0.49***	-0.97***	-0.34*
2002	-0.29*	-0.31*	-0.28*	-0.58***	-0.22
2003	-0.30*	-0.30*	-0.31**	-0.53***	-0.33*
2004	-0.32**	-0.32**	-0.30**	-0.50***	-0.26
2005	-0.30**	-0.30**	-0.29**	-0.04	-0.16
2006	-0.28**	-0.28**	-0.29**	-0.11	-0.23
2007	-0.16	-0.16	-0.17	0.01	0.02
τ_{jgt}	-3.72***		-4.38***	-4.85***	-4.47***
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj
N	2,029,931	2,029,931	2,322,408	2,939,229	1,210,855
Adjusted R^2	0.77	0.77	0.77	0.77	0.78

Note: All estimates are obtained using (3), except that (i) goods g are 8-digit HS products, instead of the SITC products of our baseline; and (ii) τ_{jgt} is included on the right hand side of (3), as in Pierce and Schott (2016). Column 1 uses our baseline sample design that excludes NNTR and NAFTA countries as well as goods that were subject to quota removals under the MFA. Column 2—*No Tariffs*—excludes tariffs from the regression. Column 3—*All Countries*—includes all countries and Column 4—*Full*—further includes all goods. Column 5—*Balanced*—uses only products with non-zero U.S. imports from China in 1989 and/or 1990. Standard errors are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table G.8: NTR-gap elasticity — alternative samples

	Baseline	All Countries	Full	Balanced	Only U.S.-China
$\mathbb{1}\{{}^{t=t'}_{j=China}\}X_g$					
1974	-9.72***	-9.64***	-8.44***	-9.57***	-12.26***
1975	-9.48***	-9.48***	-8.01***	-9.31***	-12.52***
1976	-10.63***	-10.58***	-7.75***	-10.48***	-13.01***
1977	-10.47***	-10.42***	-7.54***	-10.32***	-12.45***
1978	-10.57***	-10.54***	-7.33***	-10.41***	-12.90***
1979	-10.82***	-10.80***	-7.22***	-10.68***	-12.65***
1980	-9.19***	-9.18***	-5.87***	-9.03***	-10.94***
1981	-7.32***	-7.31***	-4.47***	-7.23***	-8.99***
1982	-7.63***	-7.61***	-4.57***	-7.38***	-9.25***
1983	-7.66***	-7.62***	-4.19***	-7.35***	-9.31***
1984	-6.33***	-6.32***	-3.68***	-6.56***	-7.67***
1985	-7.28***	-7.25***	-4.40***	-6.84***	-8.40***
1986	-6.95***	-6.97***	-3.99***	-7.00***	-7.77***
1987	-6.27***	-6.23***	-3.66***	-6.25***	-6.84***
1988	-4.95***	-4.90***	-3.10***	-4.71***	-5.53***
1989	-4.13***	-3.99***	-2.49***	-3.65***	-4.97***
1990	-3.41***	-3.24***	-2.42***	-3.04***	-3.90***
1991	-2.69***	-2.59***	-2.04***	-2.46***	-3.05***
1992	-2.19***	-2.09***	-1.68***	-2.45***	-2.44***
1993	-1.77***	-1.62***	-1.26***	-1.95***	-1.78***
1994	-1.56***	-1.60***	-1.50***	-1.97***	-1.71***
1995	-1.58***	-1.53***	-1.72***	-1.67***	-1.65***
1996	-1.48***	-1.45***	-1.67***	-1.30**	-1.54***
1997	-1.57***	-1.62***	-1.65***	-1.36***	-1.69***
1998	-1.26***	-1.28***	-1.65***	-0.52	-1.12**
1999	-1.01**	-1.08**	-1.54***	-0.86*	-1.02**
2000	-0.64*	-0.72*	-1.40***	-0.64	-0.40
2001	-0.15	-0.23	-1.04***	-0.13	0.01
2002	-0.49	-0.56	-1.07***	-0.50	-0.22
2003	-0.89***	-0.99***	-1.30***	-0.61*	-0.54
2004	-0.27	-0.35	-0.85***	-0.22	0.03
2005	-0.52	-0.61*	-0.49*	-0.09	-0.29
2006	-0.26	-0.38	-0.35	-0.48	-0.20
2007	-0.09	-0.13	-0.16	0.21	0.15
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	jt, gj
N	890,190	978,716	1,245,003	544,441	30,163
Adjusted R^2	0.78	0.79	0.78	0.80	0.78

Notes: This table reports the annual NTR-gap elasticities under alternative sample designs. All estimates are obtained using (3). Column 1 corresponds to our baseline estimates reported in Figure 3. Our baseline sample includes China and all countries with NTR, except when they enter a free trade agreement (e.g. Canada after 1989), and all goods except those included in the Multi-fiber Agreement (MFA). Column 2—*All countries*—includes all countries. Column 3—*Full*—further includes MFA-goods. Column 4—*Balanced*—includes only the goods with non-zero U.S. imports from China before 1981. Column 5—*Only U.S.-China*—includes only U.S. imports from China. Standard errors are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table G.9: NTR-gap elasticity — additional robustness

	Alternative gap measures			Other trade costs		
	NNTR	Applied	Time-Varying	Shipping	Tariffs	Anticipation
$\mathbb{1}\{^{t=t'}_{j=China}\}X_g$						
1974	-7.92***	-8.97***	-8.02***	-9.68***	-7.89***	-9.52***
1975	-8.22***	-9.03***	-8.54***	-9.27***	-7.47***	-10.02***
1976	-9.27***	-9.14***	-9.60***	-10.27***	-8.23***	-10.63***
1977	-9.28***	-8.94***	-9.45***	-10.48***	-8.43***	-10.69***
1978	-9.27***	-9.00***	-9.36***	-10.45***	-8.31***	-9.91***
1979	-9.43***	-9.07***	-9.64***	-10.44***	-8.46***	-9.77***
1980	-8.28***	-7.59***	-8.63***	-9.11***	-8.83***	-8.91***
1981	-6.33***	-6.40***	-6.66***	-7.01***	-6.84***	-7.25***
1982	-6.92***	-6.64***	-7.20***	-7.29***	-7.13***	-7.44***
1983	-6.63***	-6.25***	-6.85***	-7.49***	-7.39***	-7.23***
1984	-5.57***	-5.83***	-5.55***	-6.19***	-6.10***	-6.70***
1985	-6.71***	-5.82***	-6.77***	-6.98***	-6.90***	-7.08***
1986	-6.30***	-5.48***	-6.27***	-6.89***	-6.84***	-6.68***
1987	-5.83***	-5.04***	-5.59***	-6.16***	-6.13***	-5.99***
1988	-4.68***	-3.78***	-4.40***	-4.77***	-4.74***	-4.62***
1989	-3.70***	-2.84***	-3.27***	-3.99***	-3.97***	-3.82***
1990	-3.18***	-2.54***	-2.67***	-3.35***	-3.31***	-3.32***
1991	-2.34***	-1.82***	-1.77***	-2.72***	-2.66***	-2.44***
1992	-1.90***	-1.51***	-1.31**	-2.21***	-2.16***	-2.13***
1993	-1.44***	-1.46***	-0.82	-1.78***	-1.72***	-1.66***
1994	-1.22***	-1.40***	-0.62	-1.48***	-1.42***	-1.46***
1995	-1.40***	-0.94*	-0.79	-1.55***	-1.50***	-1.45***
1996	-1.29***	-0.89*	-0.69	-1.47***	-1.38***	-1.38***
1997	-1.43***	-0.98**	-0.83*	-1.48***	-1.46***	-1.37***
1998	-1.31***	-0.55	-0.68	-1.23***	-1.21***	-1.20***
1999	-0.97**	-0.86**	-0.30	-0.95**	-0.94**	-0.85**
2000	-0.65*	-0.53	0.02	-0.65*	-0.65*	-0.27
2001	-0.26	-0.07	0.45	-0.19	-0.19	-0.23
2002	-0.49	-0.09	0.24	-0.47	-0.47	-0.43
2003	-0.88***	-0.33	-0.15	-0.78**	-0.80**	-0.59*
2004	-0.22	0.21	0.51	-0.24	-0.25	-0.37
2005	-0.67**	0.45	0.02	-0.50	-0.50	-0.51
2006	-0.26	-0.16	0.46	-0.26	-0.25	-0.39
2007	-0.13	0.39*	0.61*	-0.14	-0.14	-0.07
log Shipping Cost$_{jgt}$				-3.11***	-3.09***	
τ_{jgt}					-2.56***	
$\Delta\tau_{jg,t+1}$						1.07***
FE	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj	gt, jt, gj
N	891,167	508,882	891,167	890,190	890,190	726,464
Adjusted R^2	0.78	0.80	0.78	0.79	0.79	0.79

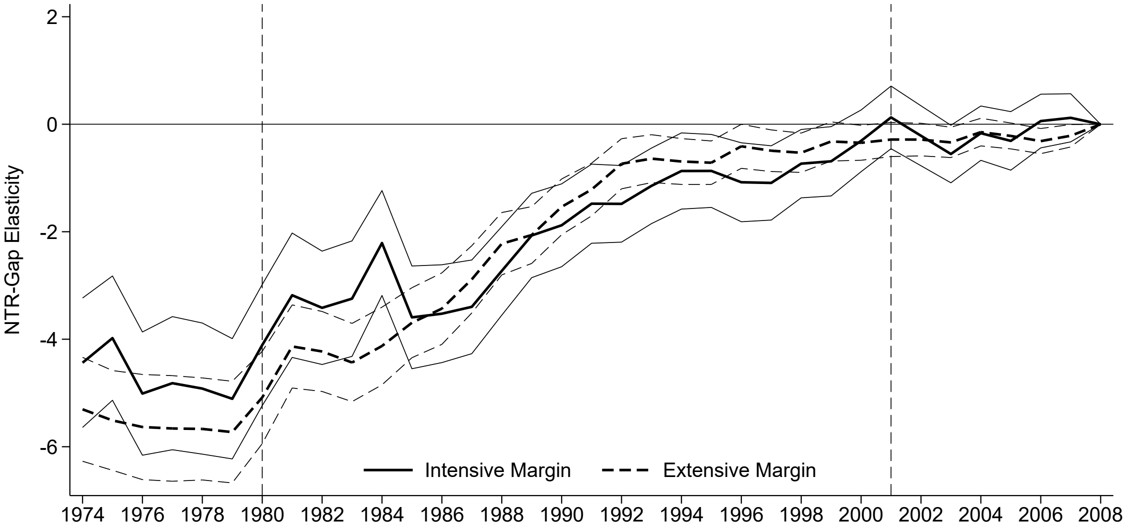
Notes: This table reports the annual NTR-gap elasticities estimated by (3) under alternative specifications of the gap measure, additional trade cost controls, and control for anticipatory effects. Column 1—*NNTR*—defines Gap_g as the NNTR rate. Column 2—*Applied*—defines Gap_g as the applied NNTR rate, calculated as the good-level tariff rate applied to Chinese imports between 1974 and 1979. Column 3—*Time-Varying*—defines Gap_g as the NNTR rate minus the average duty applied to NTR countries in every year. Column 4—*Shipping*—includes shipping costs. Column 5—*Tariffs*—further includes applied duties. Column 6—*Anticipation*—includes the lead change in tariffs to control for some of the anticipation to the 1980 NTR liberalization. Standard errors in parentheses are clustered at the jg level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

H Additional figures

Fig. H.1 – Autocorrelation of 1980 tariff changes

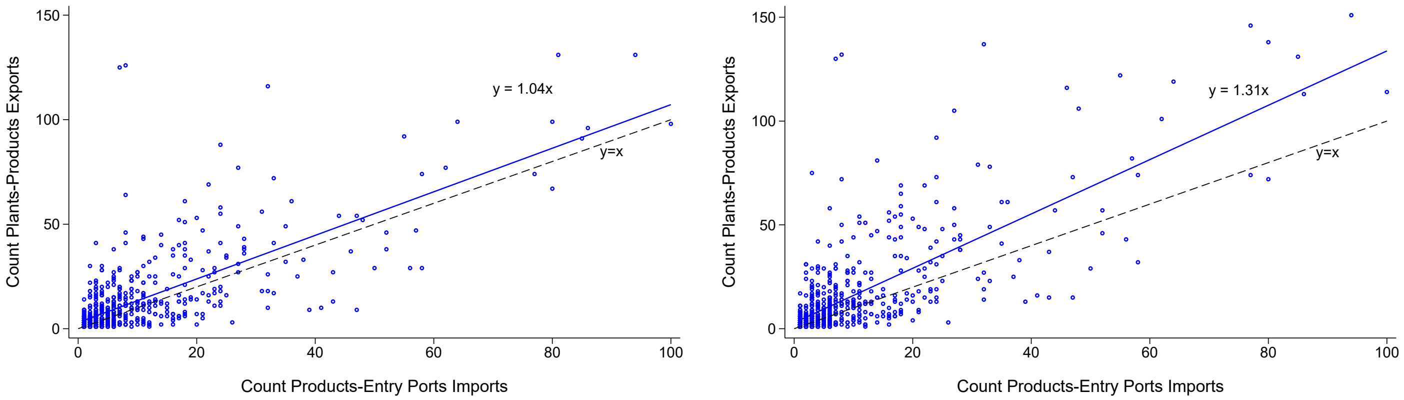
Notes: Autocorrelation of 1980 tariff changes, obtained from regressing h-year ($h = [1, 25]$) tariff change relative to 1979 on one-year tariff change between 1980 and 1979. Includes same fixed effects as in (2). 95-percent confidence interval estimated using standard errors clustered at the jg level.

Fig. H.2 – Extensive- and intensive-margin NTR-gap elasticities



Notes: Estimates of $\hat{\beta}_t$ for $t = [1974, 2007]$ from (3) using measures of extensive (solid line) and intensive margins (dashed line) as dependent variables. 95-percent confidence intervals constructed using standard errors clustered at gj level.

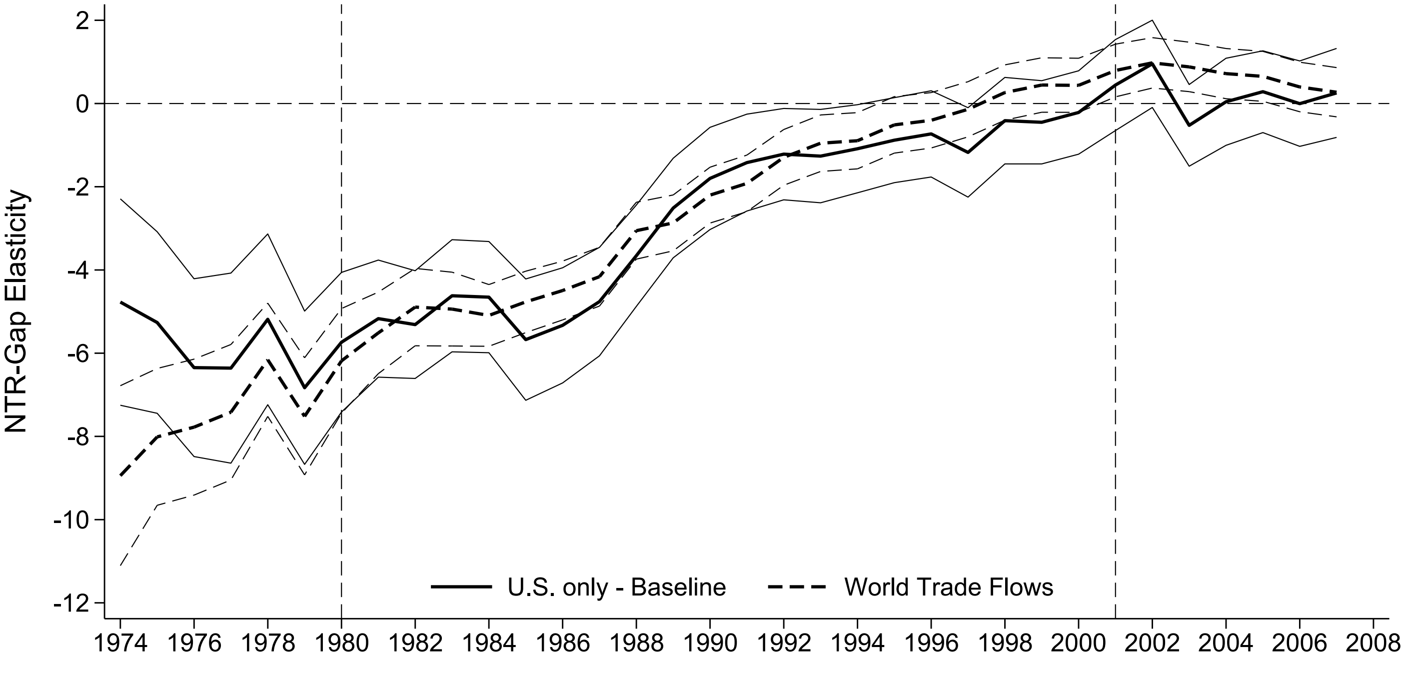
Fig. H.3 – Extensive margin measures in Colombian firm-level export data


(a) Firm count

(b) Firm-product count

Notes: In both figures the x-axis is the extensive margin measure we use in Figure H.2 applied to U.S. imports from Colombia in 2006: the count of product-district of entry of U.S. imports, where products are defined at the TSUSA 7-digit (1974–1988) and HS 8-digit (1989–2008) level, of each SITC good. In Panel (a) the y-axis is the count of firms exporting each SITC good to the United States in the Colombian export data and in Panel (b) it is the count of firms-products of each SITC good.

Fig. H.4 – Annual NTR-gap elasticities: China supply factors

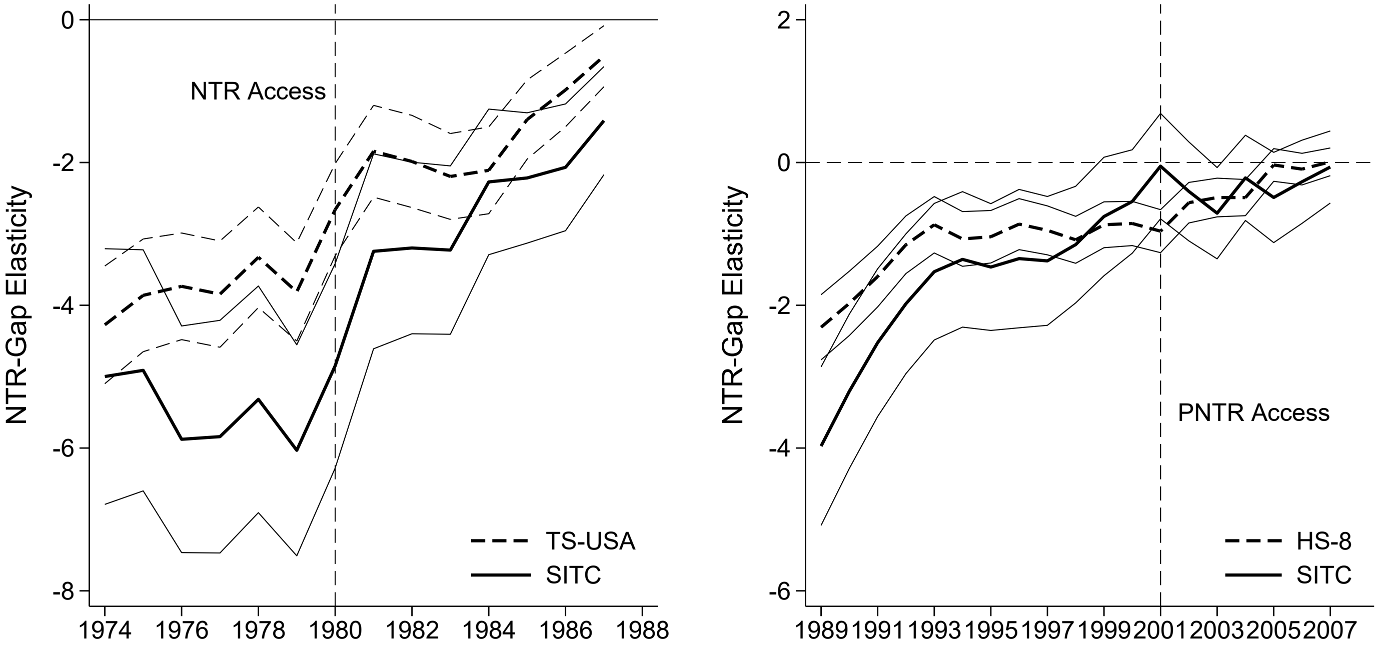


Notes: This figure plots the estimates of $\hat{\beta}_t$ for $t = [1974, 2007]$ from (C.2) using the merged World Trade dataset from Feenstra et al. (2005) (1974–2000) and the BACI Trade Dataset (2000–2008). The standard errors that construct the 95-percent confidence interval are clustered at the jg level.

Fig. H.5 – Annual gap elasticities with aggregation at tariff lines

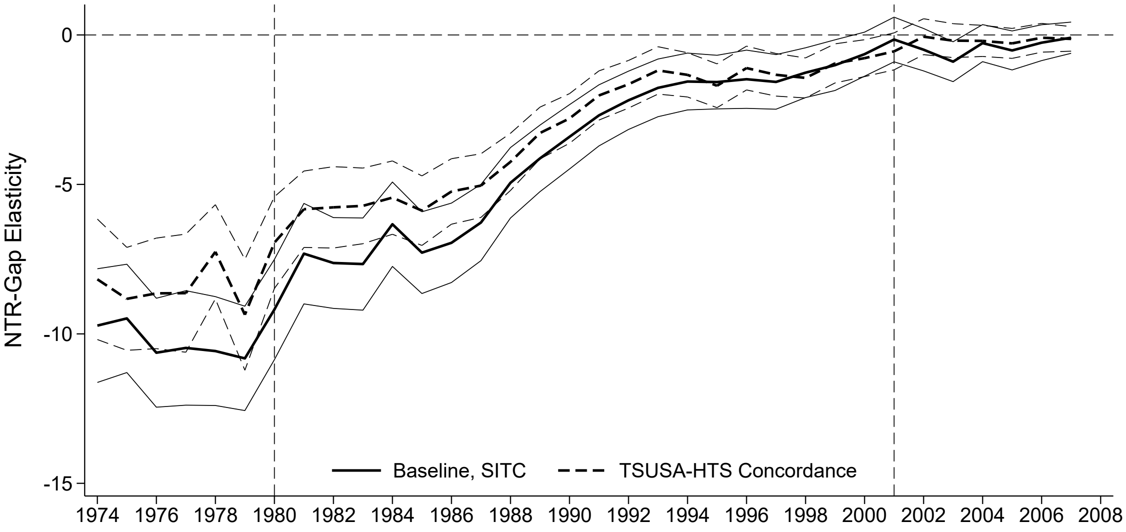
(a) TSUS 1974–1988

(b) HS 1989–2008



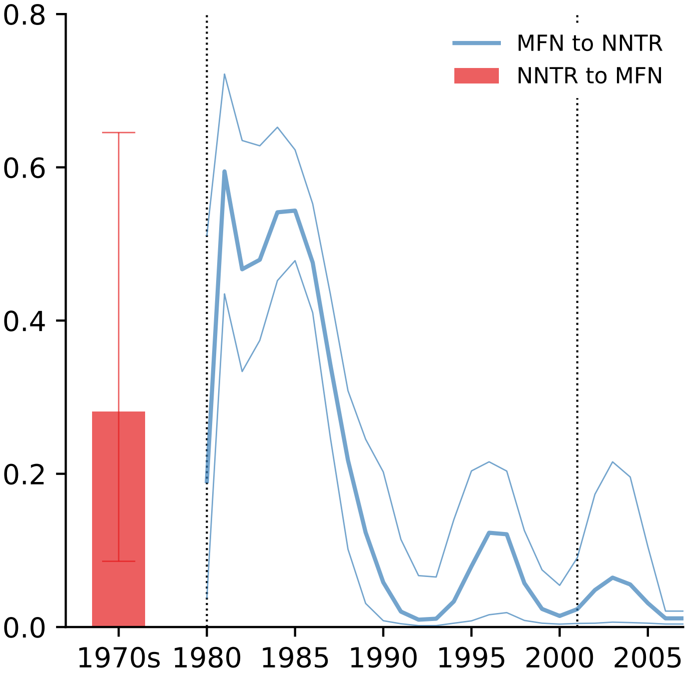
Notes: Left: Estimates of (3) using 7-digit TSUSA classification between 1974 and 1988. Right: estimates of (3) using HS classification between 1989 and 2008. Reference period is last year of each sample period. Estimates from our baseline 5-digit SITC classification are also shown. 95-percent confidence intervals constructed using standard errors clustered at jg level.

Fig. H.6 – Annual NTR-gap elasticities: SITC and TSUSA-HS



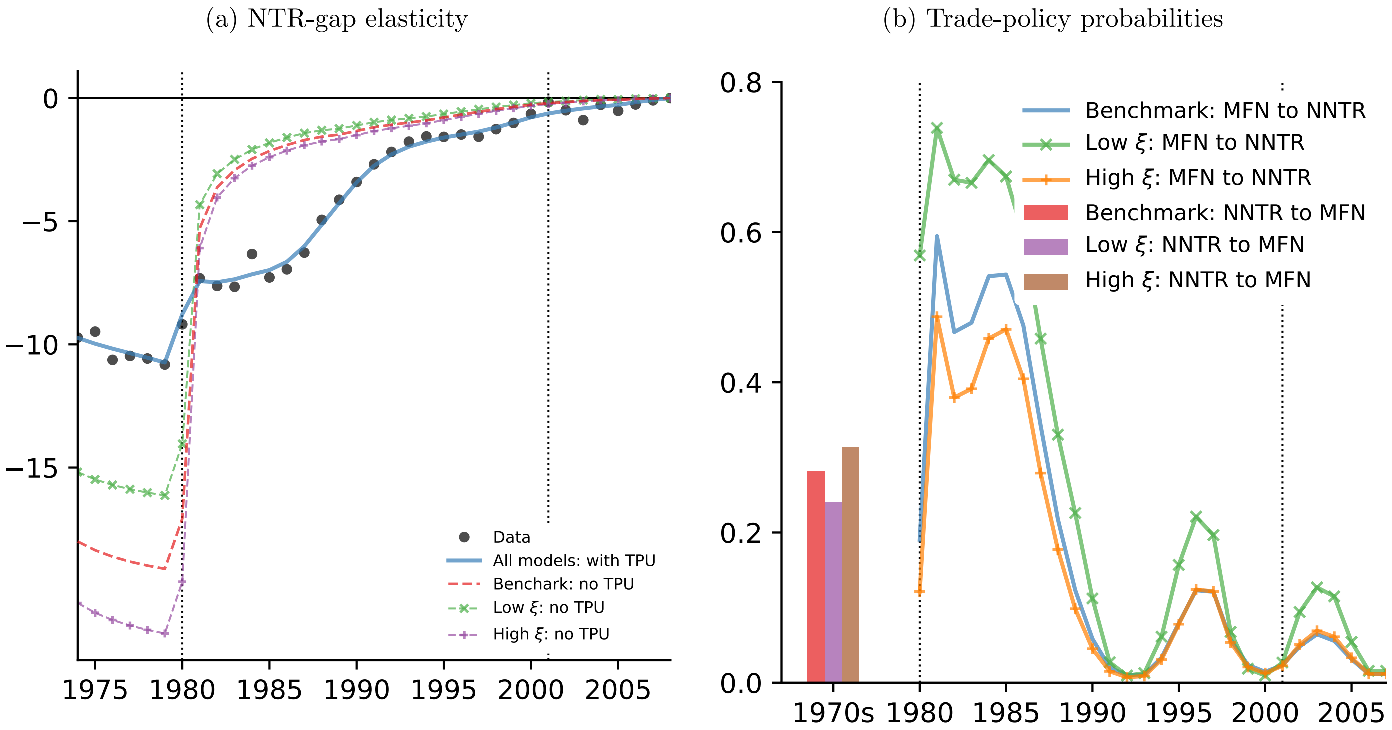
Notes: Solid line: baseline NTR-gap elasticity estimates from (3). Dashed line: estimates using a concordance between TSUSA and the HS product schedules from Acosta and Cox (2022). 95-percent confidence intervals constructed using standard errors clustered at jg level.

Fig. H.7 – Trade-policy probabilities: upper and lower bounds



Notes: This figure shows the estimated probabilities of switching policy regimes. Thick lines are the baseline results. Thin lines are estimated by matching the upper and lower confidence intervals shown in Figure 3.

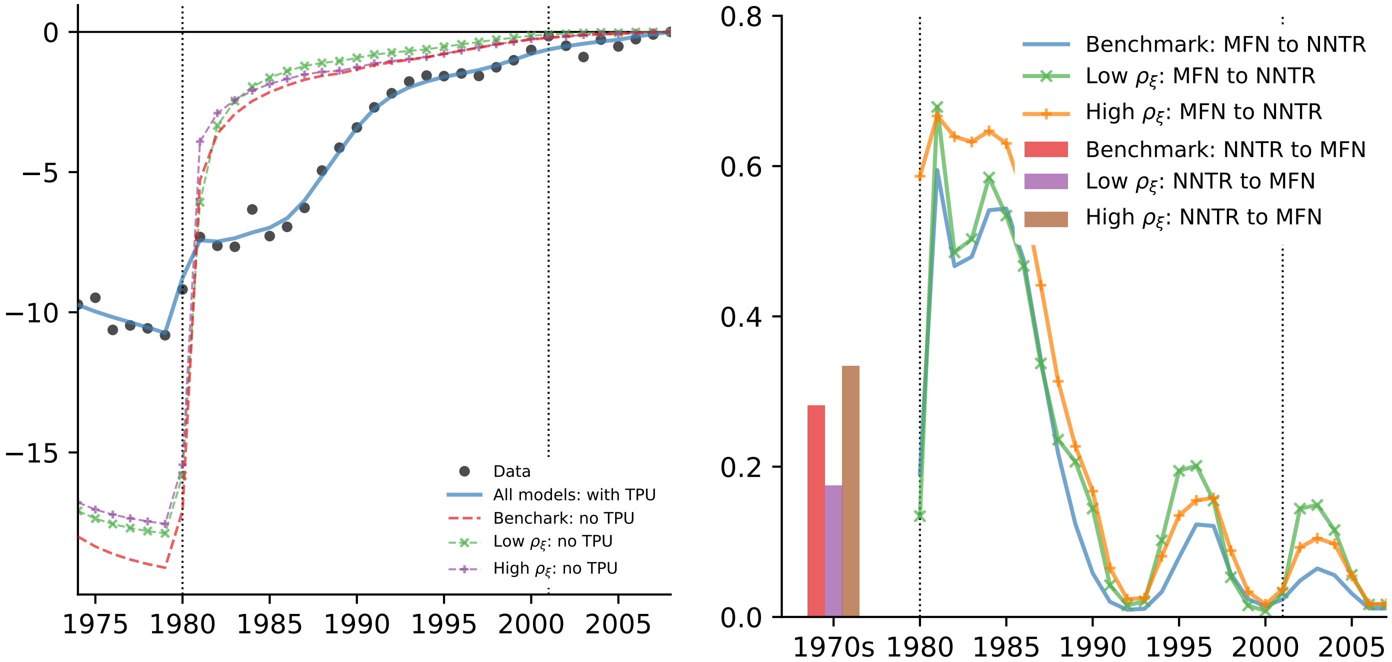
Fig. H.8 – Sensitivity to high iceberg cost (ξ_g)


(a) NTR-gap elasticity

(b) Trade-policy probabilities

Notes: Panel (a) shows the NTR-gap elasticity in the baseline model vs. alternative calibrations with higher and lower values of ξ_g. Panel (b) shows the estimated trade-policy transition probabilities in these alternative calibrations.

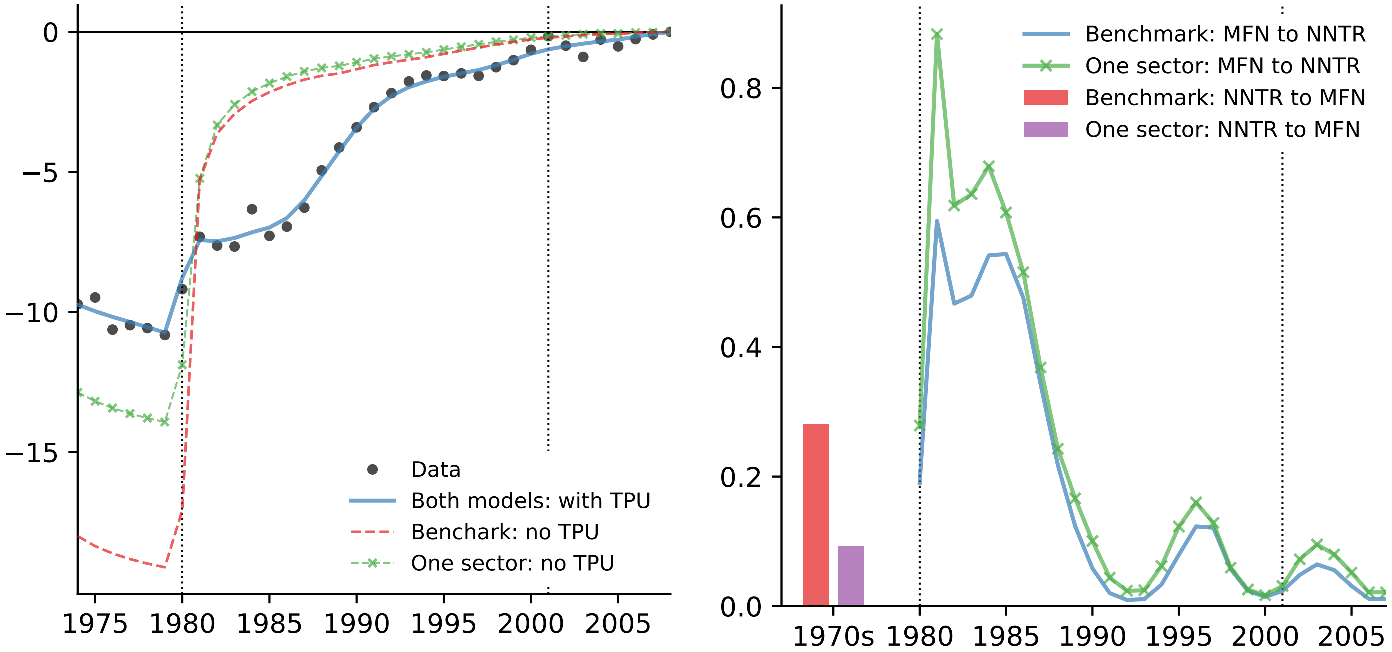
Fig. H.9 – Sensitivity to iceberg cost transition probability (ρ_ξ)


(a) NTR-gap elasticity

(b) Trade-policy probabilities

Notes: Panel (a) shows the NTR-gap elasticity in the baseline model vs. alternative calibrations with higher and lower values of ρ_ξ. Panel (b) shows the estimated trade-policy transition probabilities in these alternative calibrations.

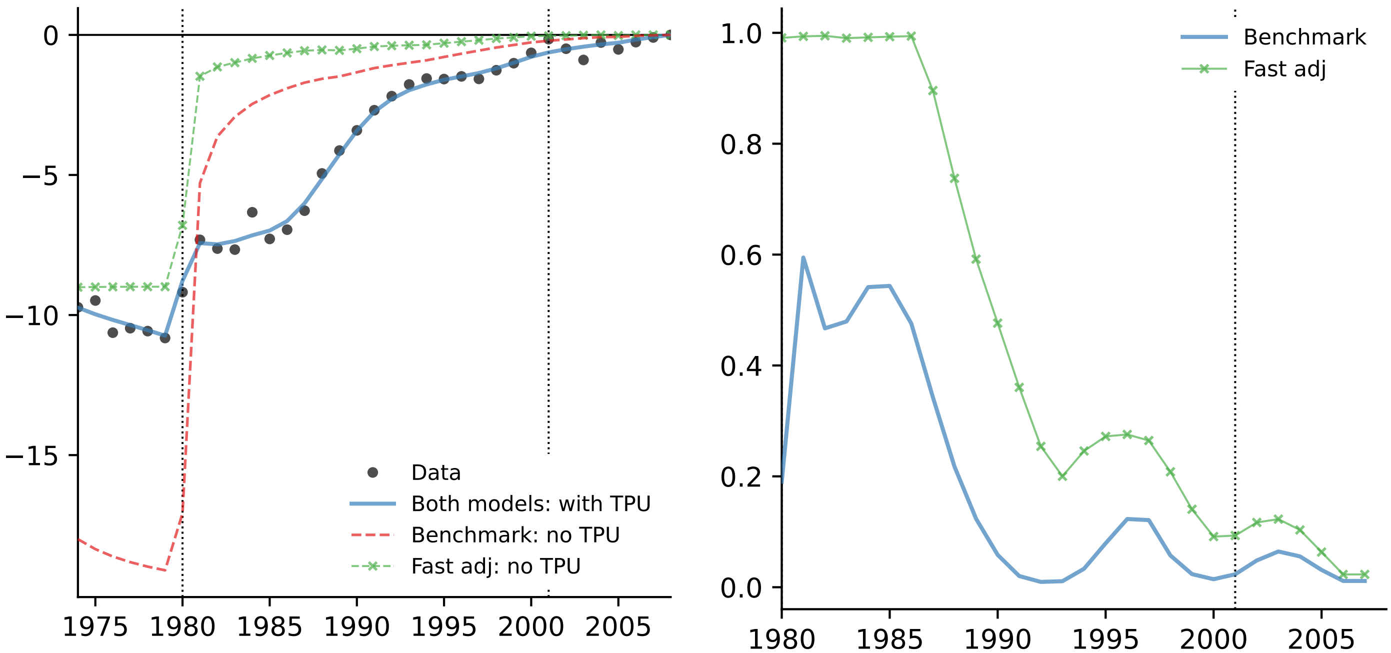
Fig. H.10 – Benchmark model vs. one-sector model


(a) Annual elasticity to NTR gap

(b) Trade-policy probabilities

Notes: Results for benchmark vs. one-sector model. Panel (a): NTR-gap elasticities. Panel (b): trade-policy transition probabilities. In one-sector model, all goods have same demand elasticity, non-tariff trade costs, and productivity dispersion; parameters calibrated to match aggregate exporter-dynamics statistics instead of sector-level statistics.

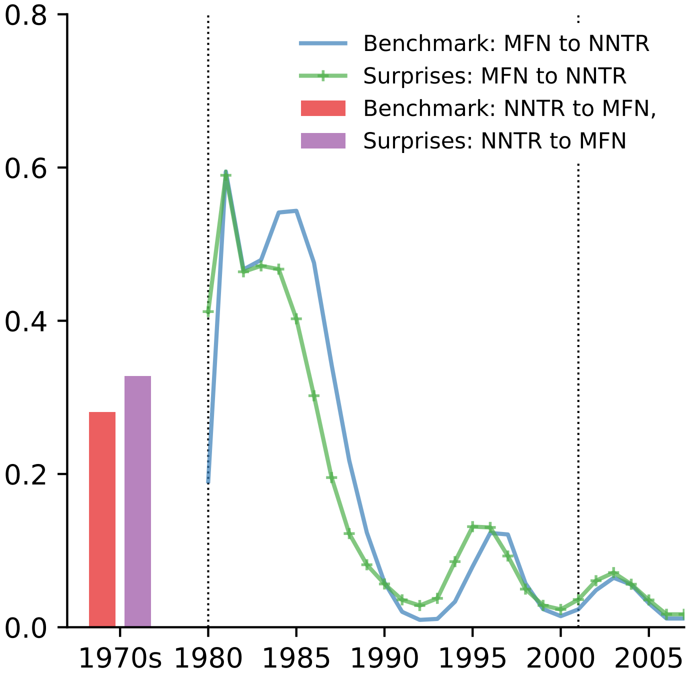
Fig. H.11 – Benchmark model vs. fast-adjustment model


(a) Annual elasticity to NTR gap

(b) Probability of losing MFN access

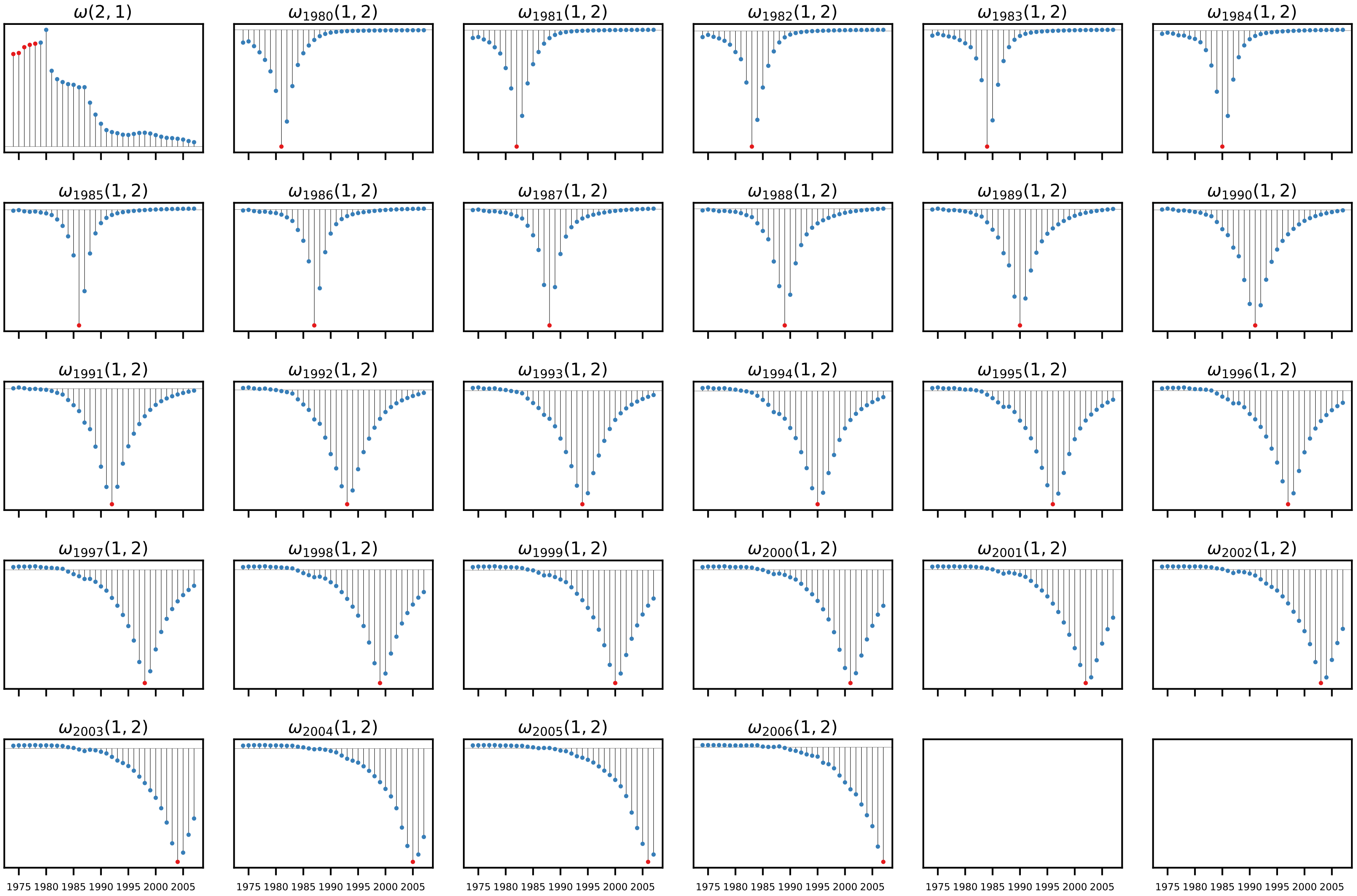
Notes: Results for benchmark vs. fast-adjustment model. Panel (a): NTR-gap elasticities. Panel (b): trade-policy transition probabilities. In the fast-adjustment model, there are no idiosyncratic shocks to firms' productivities or variable trade costs.

Fig. H.12 – Trade-policy probabilities: unanticipated changes



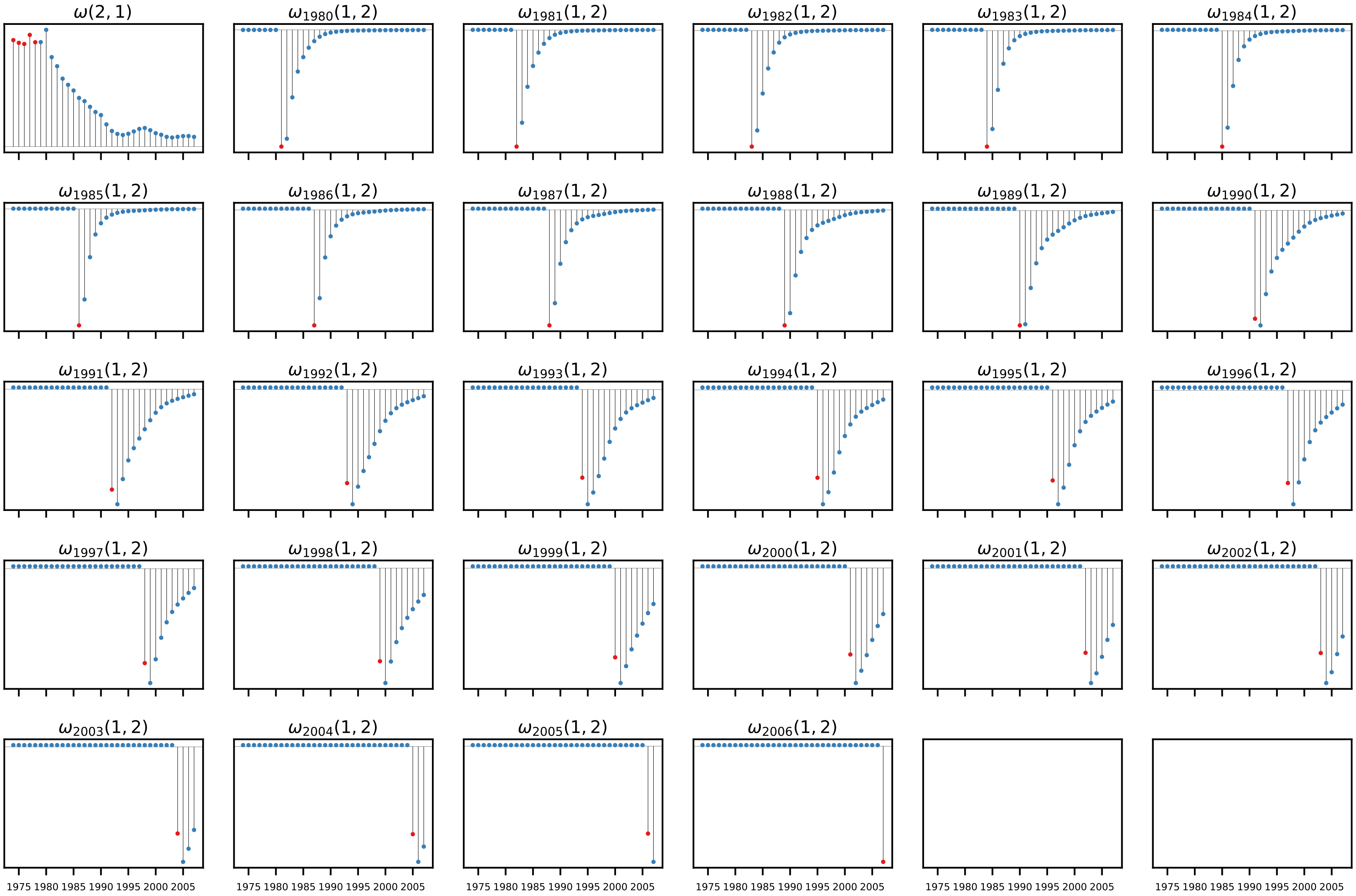
Notes: Estimated probabilities of switching policy regimes in benchmark vs. surprises model.

Fig. H.13 – Sensitivity of NTR-gap elasticities to probabilities: benchmark model



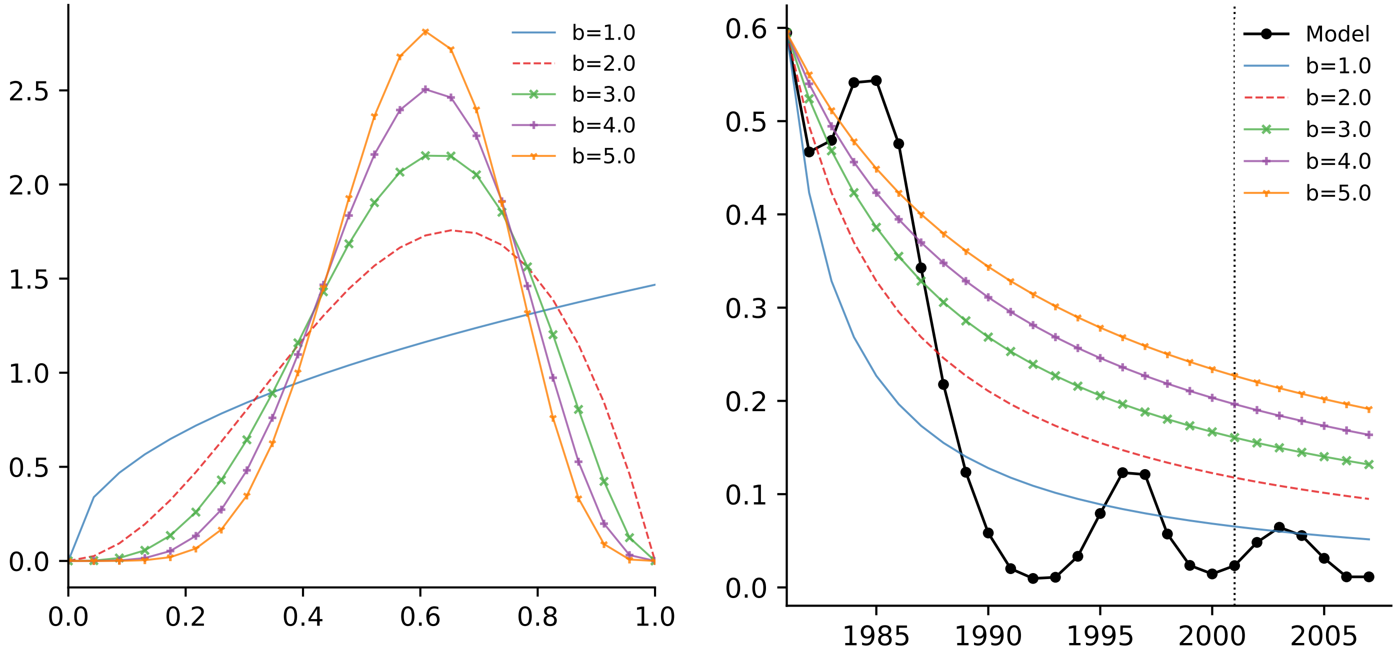
Notes: Each panel shows how NTR-gap elasticities in benchmark model change when single trade-policy transition probability is increased by 1 percentage point. First panel: probability of gaining NTR access, $\omega(0, 1)$. Remaining panels: probability of losing NTR access, $\omega_t(1, 0)$. Red dots: elasticities used for identification. Blue dots: elasticities not used for identification.

Fig. H.14 – Sensitivity of NTR-gap elasticities to probabilities: surprises model



Notes: Each panel shows how NTR-gap elasticities in benchmark model change when single trade-policy transition probability is increased by 1 percentage point. First panel: probability of gaining NTR access, $\omega(0,1)$. Remaining panels: probability of losing NTR access, $\omega_t(1,0)$. Red dots: elasticities used for identification. Blue dots: elasticities not used for identification.

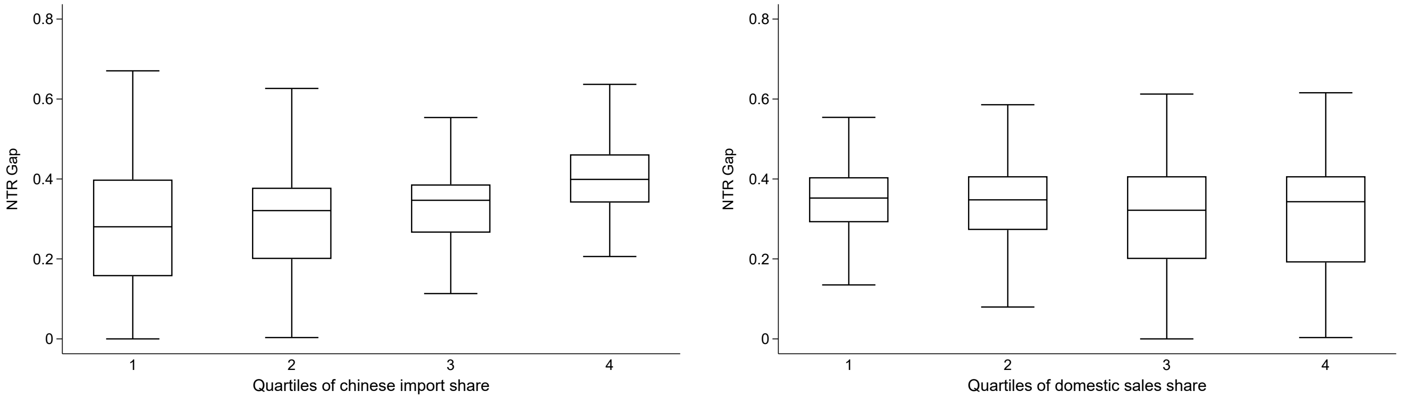
Fig. H.15 – Model-implied expectations vs. Bayesian learning


(a) Prior PDF

(b) Posterior mean

Notes: Panel (a) shows Bayesian prior-belief distributions about the probability of losing NTR status. All priors have the same mean as the model-implied estimate for 1980. Panel (b) shows mean posteriors from 1980–2008 against the model-estimated probabilities.

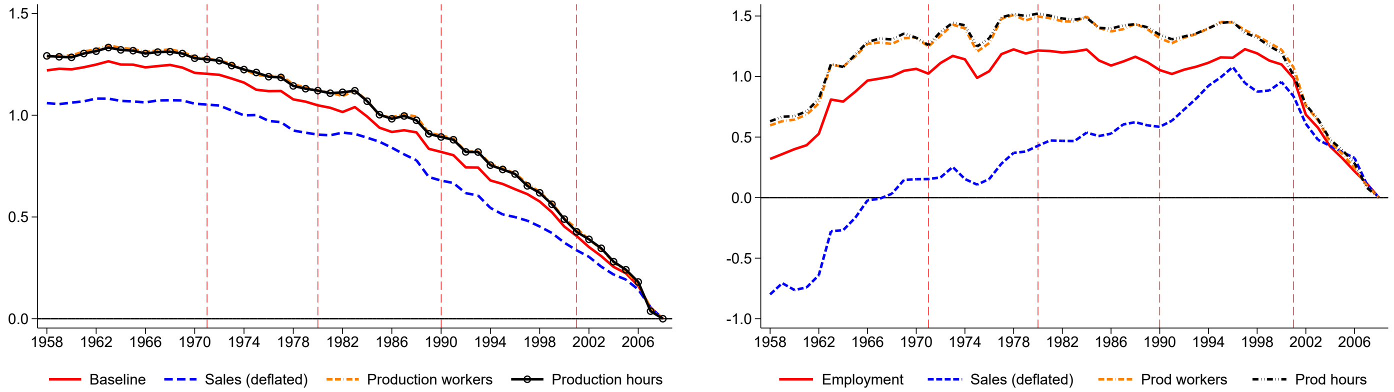
Fig. H.16 – Variation in the NTR gap across industries versus variation in Chinese import shares


(a) Chinese import share quartiles

(b) Domestic sales share quartiles

Notes: This figure plots the distribution of NTR gaps across different quartiles of China's import share of industry absorption (Panel a) and the domestic market share of U.S. firms in total industry sales (Panel b). Both are simple averages during 1995—1999.

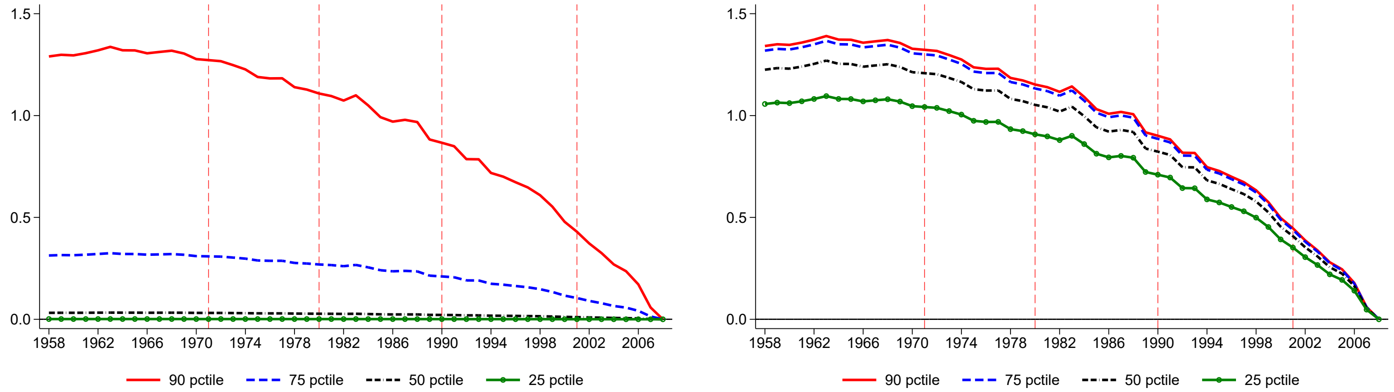
Fig. H.17 – Alternative measures of substitution


(a) Baseline estimate

(b) Reduced form elasticities

Notes: This figure plots versions of Figure 7 with sectoral deflated sales, production workers, and sectoral production hours as the dependent variables instead of total sectoral employment.

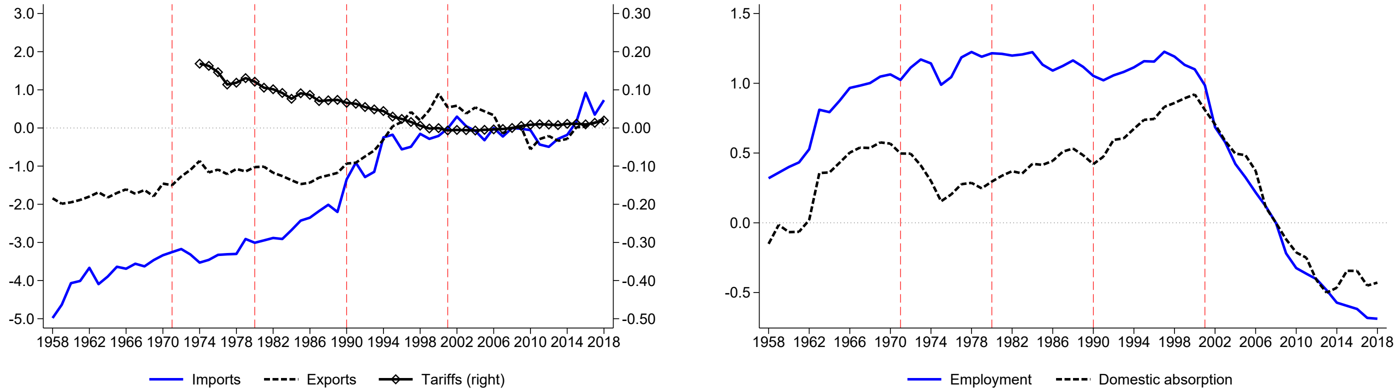
Fig. H.18 – Sectoral employment effects by industry import and export share


(a) Chinese import share percentiles

(b) Domestic sales share percentiles

Notes: This figure highlights the industry-level heterogeneity in the annual coefficients from (20). Panel (a) holds the domestic sales share constant at the median during 1995–1999 (91 percent) and varies the Chinese import share from different points in the distribution. Similarly, Panel (b) holds the Chinese import share constant at the median during 1995-1999 (6 percent) and varies the domestic sales share from different points in the distribution.

Fig. H.19 – Elasticity to the NTR gap



(a) Total imports and exports

(b) Employment and domestic absorption

Notes: This figure plots the elasticity of aggregate variables to NTR gap over time. The tariffs in panel (a) are applied rates aggregated at SIC industry-year level by taking a weighted average across countries.

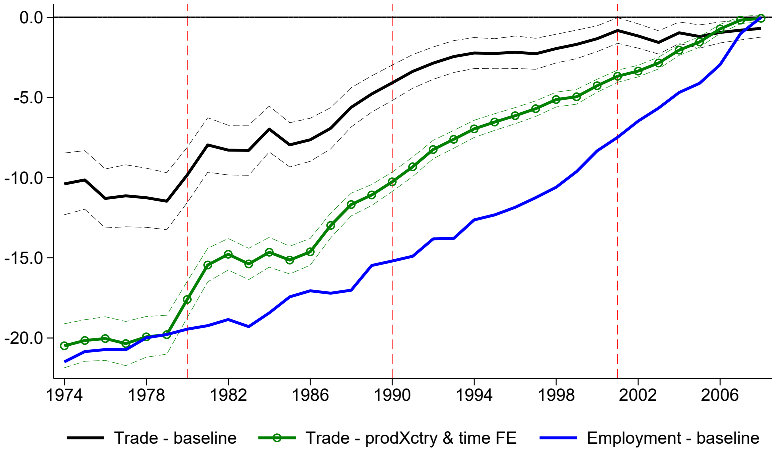


Fig. H.20 – NTR-gap elasticities estimated using trade vs. employment data. Solid line: using employment data. Dashed line: using trade data with product-time (δ_{gt}), product-country (δ_{jg}), and country-time (δ_{jt}) fixed effects. Dotted line: using trade data with only product-country (δ_{jg}) and time (δ_t) fixed effects. Shaded areas: 95-percent confidence intervals.