

How Multiple Withdrawals of GSP Benefits and Uncertainty affects Thai Exports

Panutat Satchachai¹ and Kornkarun Cheewatrakoolpong²

Abstract

Trade policy uncertainty has become an increasingly important feature of the global trading system, yet relatively little is known about how uncertainty embedded in non-reciprocal trade preference schemes affects exports. This paper examines the impact of multiple withdrawals of Generalized System of Preferences (GSP) benefits and varying degrees of uncertainty on Thailand's exports. Unlike previous studies that focus on one-time changes in preferential access, this study emphasizes multiple withdrawals and compares two contrasting institutional settings: the European Union's relatively rule-based and predictable graduation mechanism and the United States' more discretionary and uncertain preference regime.

Using HS 6-digit export data from Thailand to the EU and US over 2002–2022, this study applies difference-in-differences approaches within gravity and Poisson Pseudo-Maximum Likelihood (PPML) frameworks. Cross-product and temporal variation in GSP graduation, expiration, and review processes are exploited to identify the effects of uncertainty embedded in preferential trade arrangements.

The results suggest that changes in GSP status and associated uncertainty do not automatically reduce Thailand's exports. In the EU, graduation and lower uncertainty did not significantly affect aggregate exports, although high-technology exports appear more sensitive to preference withdrawal than low-technology products. In the US, multiple withdrawals and greater uncertainty did not undermine export performance and, in several specifications, were associated with stronger export outcomes, particularly in high-technology sectors. These findings suggest that export responses depend not only on tariff preferences but also on institutional design, effective preference margins, sectoral characteristics, and firms' ability to adjust.

JEL: F1, F13, F14

Keywords: Trade Policy Uncertainty, Generalized System of Preferences

¹ Assistant Professor, Faculty of Economics, Chulalongkorn University, Thailand.
E-mail: Panutat.s@Chula.ac.th

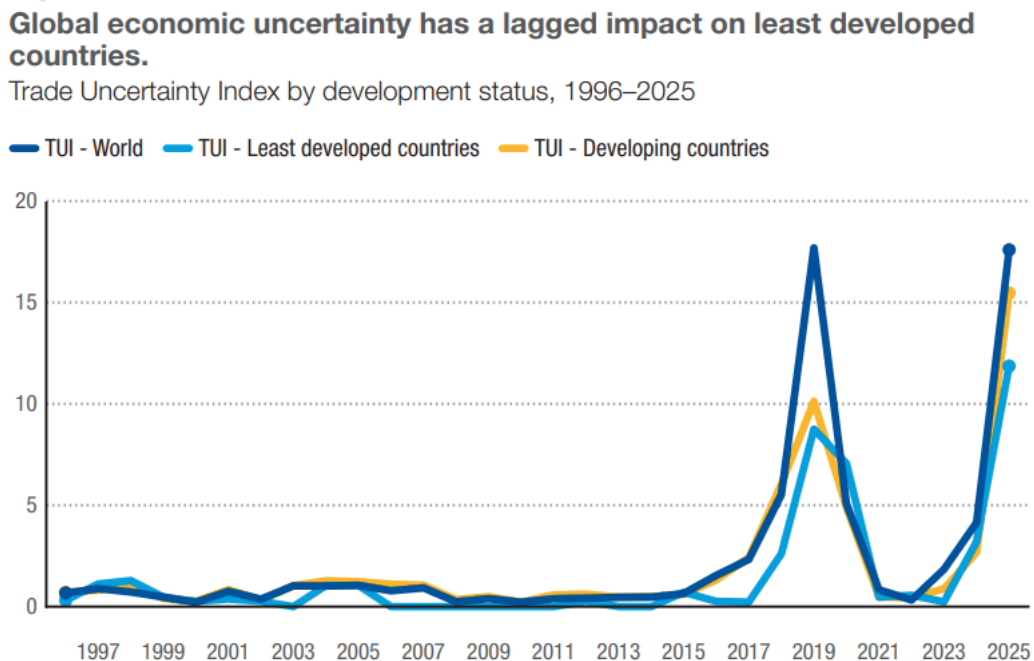
² Associate Professor, Faculty of Economics, Chulalongkorn University, Thailand.
E-mail: runechan@gmail.com

1. Introduction

Even though traditional trade policy, which is normally defined by tariffs, quotas, or rules-based agreements, is designed to create stable and predictable trade between countries, it is not considered certain. Recently these trade policies have been increasingly subject to rapid, discretionary changes by the government, and have become a challenge for today's international trade. When trade rules and future policies are unclear, it creates hesitation in decision-making, disrupts global supply chains and international trade, and can lead to broader economic instability.

Trade policy uncertainty refers to the unpredictability surrounding a government's trade-related decisions, such as tariffs, non-tariff measures, quotas, trade agreements, and regulatory standards. The primary sources of trade policy uncertainty are political changes, trade wars and retaliatory tariffs, geopolitical conflicts and global tensions, and protectionist trends and national security concerns. Figure 1 shows a rise in trade uncertainty index (TUI) starting in 2016. The Brexit referendum and Trump's re-election signaled a change in the trade policies of the UK and US from supporting trade liberalization to implementing more protectionism.

Figure 1: Global Trade Uncertainty Index during 2000s to 2020s



Source: UNCTAD calculations based on UNCTADStat and World Uncertainty Indicators computed by Hites Ahir, Prof. Nicholas Bloom and Davide Furceri.

Note: Indices are developed based on a methodology described in Ahir, et al. (2022). The indicator counts the number of times "uncertainty" is mentioned near trade-related words in Economist Intelligence Unit (EIU) country reports. Both World, developing countries and LDC averages are simple (unweighted) averages based on available country figures. The 2025 figure for TUI includes the extrapolation of the first quarter figure to the whole year.

Source: UNCTAD Trade Preferences Outlook 2025 (UNCTAD/DITC/TSCE/2026/1)

According to the World Bank (2019) and UNCTAD (2026), the impact of trade policy uncertainty on trade is profound. It deters firms from entering the foreign market, leading to a decrease in trade volumes and disrupts the supply chains participation and hampers the investment. An abrupt change in tariffs also shifts demand from imports to domestically produced goods and acts as a tax on labor and capital because they increase consumption and investment prices.

Another way that trade policy uncertainty can arise is from a change in non-reciprocal trade preferences (NRTPs). By design, NRTPs are unilateral under which developed countries grant preferential market access to developing countries, often reflecting the strategic and economic interests of the donor countries. These preferences typically involve reduced or zero tariff rates—below the most-favoured nation (MFN) tariff rates. As non-reciprocal schemes, they do not require developing countries to offer equivalent concessions and allow them to maintain protective tariffs to safeguard domestic industries. Prominent examples include the Generalized System of Preferences (GSP), the African Growth and Opportunity Act (AGOA), and the European Union’s Everything But Arms (EBA) initiative.

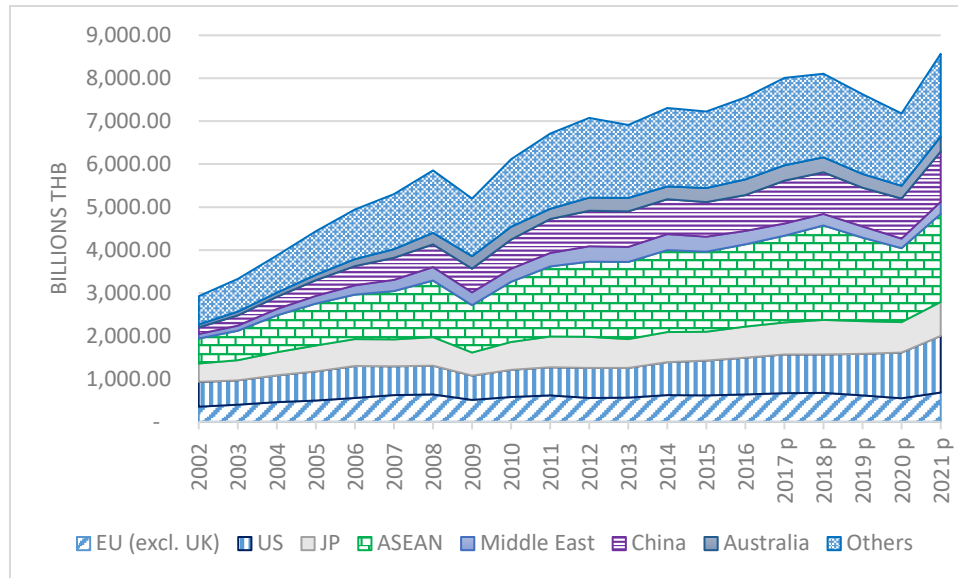
While a large body of literature shows that granting NRTPs can stimulate exports and that losing the preferential market access raises trade costs (additional from tariffs) and disrupts trade, the effectiveness of NRTPs on exports has been mixed, and the magnitudes of impacts vary across countries, depending on level of income, export dependency, tariff margin or alternative preferential scheme. However, the past literature only focuses on the effect of the one-time change of NRTPs and relatively few studies explicitly examine the role of uncertainty surrounding these schemes.

We think one possible explanation of the mixed results might lie in the uncertainty embedded in how frequently NRTPs designs and implementations change over time. Such uncertainty arises from two main sources: (1) the extent of discretion exercised by donor countries in determining product and country eligibility, and (2) the need for periodic renewal of the schemes. Because preferential access can be modified, suspended, or withdrawn, uncertainty over future market access may increase tariffs, reduce trade volumes and discourage long-term investment decisions by exporters. The multiple withdrawals in preference are different from the one-time withdrawal and, hence, would be a good candidate for measuring the trade policy uncertainty.

The EU and the US have been major providers of NRTPs though different varied schemes. The European Union’s GSP operates under a relatively rule-based and institutionalized framework, particularly following its 2005 reform, which introduced more transparent and systematic graduation criteria based on objective thresholds such as income levels and export competitiveness. This reform lowers trade policy uncertainty by making the conditions for preference withdrawal more predictable and less subject to ad hoc political discretion. In contrast, the United States’ GSP is characterized by a more discretionary and politically contingent process. Eligibility decisions are determined through annual reviews conducted by the U.S. Trade Representative (USTR), subject to presidential authority and congressional approval under the Trade Act. Moreover, the program has experienced repeated expirations and delayed renewals, leading to gaps in coverage and sudden tariff hikes. These features make the US’s GSP significantly more uncertain and less predictable for exporters (see Hertz and Wagner, 2011; Hakobyan, 2017, 2020). Hence, the degree of uncertainty varies substantially across donor countries, reflecting differences in institutional design, which can be used to examine the impacts on exports across preferential schemes.

Thailand provides an ideal case to examine how these contrasts between the low uncertainty under the EU scheme and high uncertainty under the US scheme affect Thai exports. As a long-standing beneficiary of GSP schemes since 1971, Thailand has relied on preferential access to major developed markets, particularly the EU and the US, to support its export growth and industrial development. Figure 2 shows and highlighted the importance of these two markets for Thailand’s exports between the early 2000s and 2020s that the value of exports to both accounted for 18% to 32% of total exports, with an average of 22% over these periods.

Figure 2: Export Values by Partner Country or Regional Group, 2002–2021

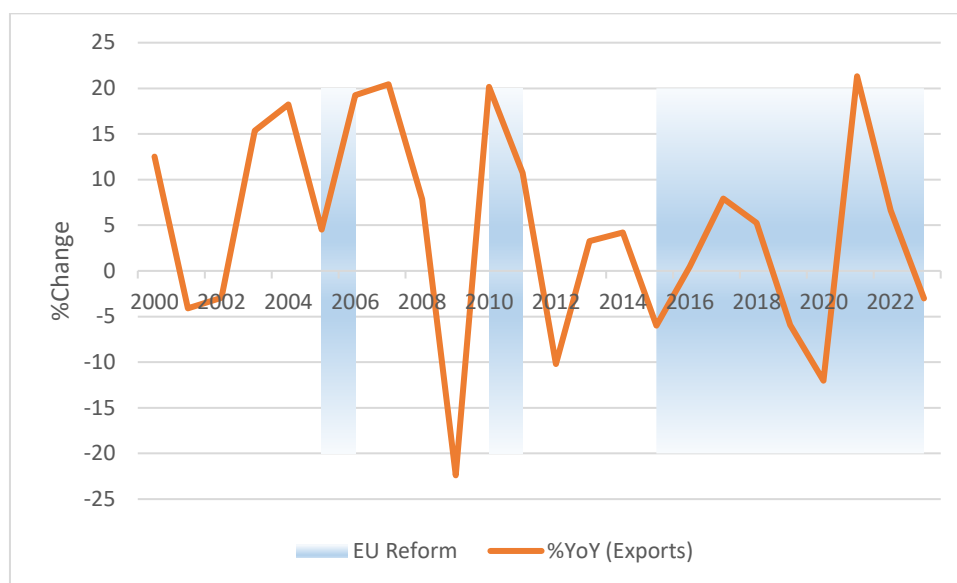


Source: Bank of Thailand

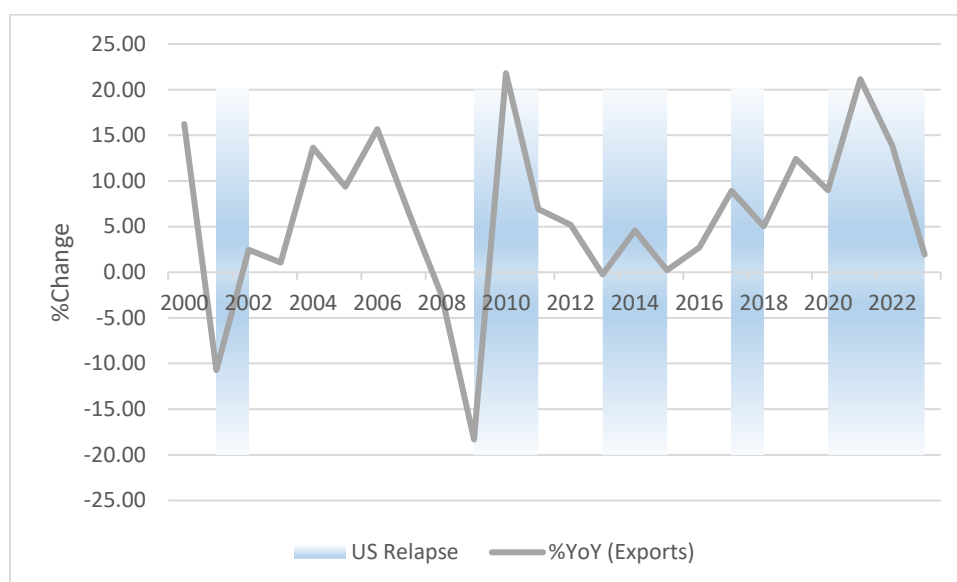
However, over the past two decades Thailand has experienced different degrees of uncertainty through multiple episodes of constantly changing in GSP benefits due to institutional changes under both schemes. The introduction of the EU reforms in 2005, 2010 and 2015, which subsequently resulted in the complete EU’s GSP withdrawal or graduation of Thailand in 2015, creates a structured, systematic, and predictable withdrawal process, and reduces the uncertainty, though caused the losses in GSP benefits. On the other hands, the several episodes of expirations and relapses of the US’s GSP program create a more volatile environment with several episodes of GSP expiration and increase the uncertainty of receiving GSP benefits. Figure 3 illustrates the effects of the change in GSP uncertainty on exports in both markets. The shaded areas represent the periods of change in GSP, reflecting GSP uncertainty, in which there was a reform in the EU or a relapse in the US. Overall, uncertainty seems to have mixed effects with both periods of increase and decrease in exports. Hence, it is unclear whether there are negative impacts from the uncertainty and it is worth investigating.

Figure 3: Changes in Exports to EU and US between 2000–2023

(a) Exports to EU (%YoY)



(b) Exports to US (%YoY)



Source: CEIC (Compiled by Authors)

Given the importance of GSP preferences and the variation in institutional uncertainty across regimes, this paper examines how changes in GSP design and the associated degree of trade policy uncertainty affect Thailand’s export performance. Using HS 6-digit export data to the EU and the US over 2002–2022, we estimate difference-in-differences models within both gravity and Poisson Pseudo-Maximum Likelihood (PPML) frameworks. Exploiting cross-product and temporal variation in GSP graduation, withdrawal, expiration, and review processes, we identify how exporters respond to different forms of uncertainty embedded in non-reciprocal trade preference schemes.

This study contributes to literature in two ways. First, unlike most previous studies that focus on one-time changes in preferential access, we emphasize repeated changes in preference status and the role of institutional uncertainty embedded in the design and implementation of GSP schemes. Second, we compare two contrasting institutional environments: the EU's relatively rule-based and predictable graduation mechanism and the US's more discretionary and uncertain preference regime.

The results suggest that changes in GSP status and the associated degree of uncertainty do not necessarily lead to lower exports. Instead, export responses vary across institutional settings and product groups, highlighting the importance of adjustment mechanisms and sectoral heterogeneity in shaping trade outcomes. The remainder of this paper is organized as follows. Section 2 reviews the relevant literature. Section 3 presents stylized facts on GSP and trade policy uncertainty. Section 4 discusses the empirical framework and estimation methodology. Section 5 describes the data and identification strategy. Section 6 presents and discusses the empirical results, and Section 7 concludes and discusses policy implications.

2. Literature Review

GSP has been established in developed countries with the objectives of promoting export earnings, creating industry development, and fastening economic growth of developing countries. However, the criteria and eligibility of receiving GSP are subjected to developed economies' own interest. Hence, developing countries may encounter uncertainties from GSP withdrawal if they reach a certain level of economic development or their exports grow beyond certain limits. Also, GSP withdrawal might occur when a beneficiary country violates human rights, labor rights, or fails to comply with certain criteria, such as violating intellectual property rights and failure to provide equitable market access. As a result, the change in GSP, with lack of reciprocal binding, can cause uncertainty for developing countries as it can be used for economic and political motives.

Previous studies mostly analyze either one-time change in the benefits of granting GSP or the loss from GSP withdrawal on trade flows either at the product level of the specific countries or at a country level or a group of developing countries. The benefits of granting GSP or other forms of non-reciprocal trade preferences on export growth are well observed in many studies. Frazer and Van Biesebroeck (2010) and Cirera, Foliano and Gasiorek (2016) find that the granting GSP has been effective in promoting export growth from the developing countries. The evidence of EU's GSP on exports is well-documented by Cicera et al. (2016) and Persson and Wilhelmsson (2016). They find the increase in exports from developing countries to EU, but the effectiveness of preferences varies across different product groups and the different GSP recipients. Low-income and Least developed Countries (LDCs) benefit more compared to other developing countries.

Many studies have also shown that withdrawing preferences of EU and US causes substantial export declines from developing countries. In the case of EU, the negative effects of GSP graduation on exports flows are well-documented, see Lidberg (2012), Eggers (2017), Klassen, Martinez-Zarzoso, Nowak-Lehmann and Bruckner (2021) and Pradhan (2025). There are also evidence indicates that the temporary withdrawals of EU's GSP lower the exports in specific sectors from Sri Lanka (Bandara and Naranpanawa, 2015), Belarus (Gnutzmann and Gnutzmann-Mkrtchyan, 2017; 2020) and Cambodia (Tanaka, 2022).

Similarly, negative impacts of GSP withdrawal on exports are also found in the case of the US's non-reciprocal preferences. Hakobyan (2017, 2020) finds that the temporary expiration of the GSP or a change in the USTR products' Competitive Need Limits (CNLs) criteria leads to declining in exports from the partner countries. The Indian withdrawal from GSP is another example, where Chauhan (2020) finds a decline in export trend of the top exporting sectors. The effect of the suspension of other non-reciprocal trade preferences is also similar. The suspension of the US's AGOA given to African countries is found to be negatively affect the exports from the Africa to the US, see Edjigu, Hakobyan, and Kassa (2023) and Sorgho (2024). However, these negative results seem to vary significantly depending on the nature of the withdrawal (either temporary expiration, permanent removal or graduation), the products involved, and the importing country's characteristics

There are also studies that find mixed or nulled effects of the one-time loss of preference. For example, Cuyver and Soeng (2013) find that the imports from Asia and Latin America into the EU during 1994-2004 are negatively affected by the new GSP graduation rule. But the negative effects are observed only in agricultural products, while they find it is more beneficial for manufacturing products. Lidberg (2012) finds that no change in exports from many countries into EU15 at the sectoral level after the EU's GSP graduation in 2015. This is similar to the case of China's export to EU, where Jildenback (2015) finds no negative effect from the graduation.

These studies also provide possible explanations to why the impacts of the GSP withdrawal are various among countries. Hakobyan (2020) and Eggers (2017) found that countries less reliant on GSP-covered goods or possessing broader export portfolios are less affected by GSP withdrawal. Also, Chauhan (2020) found that beneficiary countries often undertake policy reforms or negotiate alternative trade arrangements such as free trade agreements to mitigate the impact of the GSP removal.

The following table summarizes the common methodologies used and their main findings.

Table 1: Summary of Related Literatures

Focus	Methodology	Data	Key Findings
Effects of NRTPs on Exports/Imports	Gravity model (Herz and Wagner, 2011; Klasen et al. 2016; Cirera, Foliano and Gasiorek, 2016; Sharma and Grant, 2019) Difference-in-differences (Frazer and Van Biesebroeck, 2010)	Product-level (US imports at HS 8-digit level) Sector-level Country-pair level	Preferences increase the exports from developing countries, but benefits are uneven across industries. The impact is more pronounced in manufacturing sector.
EU's GSP Graduation/Suspension	Gravity model (Lidberg, 2012; Cuyvers and Soeng, 2013; Cirera, Foliano and Gasiorek, 2016; Jildenbäck, 2016; Persson and Wilhelmsson, 2016; Eggers, 2017) Difference-in-differences (Borchert and Di Ubaldo, 2020; Tanaka, 2021; Gnutzmann and Gnutzmann-Mkrtchyan, 2022; Pradhan, 2025)	Product-level (CN Chapter level, CN 8-digit level). Sector-level	The results are mixed, i.e., negative impacts for vulnerable developing countries, while large developing is more resilient. The benefits are not distributed evenly across products or regions. Tariff reductions alone do not guarantee trade success. Uncertainty regarding future eligibility is the cost that hinders trade
US's GSP Expiration/Removal	Gravity (Sorgho, 2024) Difference-in-differences (Hakobyan, 2020; Edjigu, Hakobyan and Kassa, 2023;) Event Study (Hakobyan, 2017)	Product-level (US imports)	The removal of preferences triggers a massive and rapid decline in exports. The effect is not uniform across sectors. Countries and products that successfully utilized the programs suffered the most when they ended, especially if they rely on preferences. The damage caused by removing preferences is often structural and difficult to reverse.

Summarized by Authors

However, there are not many studies that focus on the uncertainty nature of the GSP, which find that the changes in GSP criteria and rules create a high degree of uncertainty about market access resulting in freezing or lowering exports and discouraging long-term investment in production of GSP eligible products. More recent studies find evidence of the decline in

exports due to higher uncertainty. Borchert and Di Ubaldo (2020) consider the trade effect of removing uncertainty about future trading conditions from the 2014 EU's GSP reform and find that by removing the uncertainty of graduation can increase the exports of the GSP receiving countries. The study adopted the difference-in-difference method for isolating the effect of the uncertainty removal from that of better market access obtained by countries that moved from the standard GSP to the GSP+ around the time of the reform. Klassen, Martinez-Zarzo, Nowak-Lehmann and Bruckner (2021) consider all non-reciprocal trade preferences and find that the uncertainty of GSP graduation of 184 GSP receiving countries during 1973 and 2013 caused the increase in the administrative costs and tariffs and led to a decline in exports. Because of the uncertainty of the non-reciprocal agreement, i.e., changes in rule complexity and difficult implementation, the GSP is more political and does not yield benefits in the long run (Herz and Wagner, 2011).

3. Stylized Facts on the GSP and Its Uncertainty

According to the WTO's there are 15 economies that grant GSP preferences³. Each granting country gives vary benefits in terms of reduced tariffs or free duty on most manufactured goods and certain agricultural products from the list of beneficiaries. The EU and the US are among the most important and largest markets for developing economies.

The EU's GSP program operates under a structured and relatively transparent framework. It features three main arrangements: the standard GSP, the GSP+, and Everything but Arms (EBA). The reform of the EU's GSP scheme in 2005, 2010 and 2015 have removed the arbitrary graduation criteria and clearly defined eligibility and product coverage, with systematic periodic reviews and a transparent "graduation" process for countries that reach higher income thresholds or achieve sustainable development goals. While reforms have lower uncertainty, with longer-term commitments and clearer guidelines, the EU's more stringent compliance requirements, especially under GSP+, can introduce uncertainty for beneficiary countries that risk losing preferences if they fail to meet human rights or environmental standards.

In contrast, the US's GSP program is more discretionary and politically influenced. The US President holds significant authority to grant, withdraw, or modify preferences based on annual recommendations from the USTR and Congressional oversight. The program's scope, eligible products, and country coverage can be affected by political considerations, including human rights and labor standards reviews. Thus, uncertainty tends to be much higher due to its dependence on annual renewals by Congress and the executive branch.

Unlike the EU scheme, the US's GSP has no permanent authorization and must be periodically renewed by Congress. This creates a "switch on and switch-off" in GSP status, hence, high uncertainty. The US's GSP was frequently expired and not renewed immediately after its expiry. The expiration is applied to a country and hence, applying to all products. During these lapses, exporters must pay the full tariffs. However, if or when the GSP was renewed, these duties were fully refunded. This if and when also creates high uncertainty. Between 2002 and 2022, there are 6 episodes of GSP expiration (lapses): Sept 2001 to Dec

³ Armenia, Australia, Canada, the European Union (EU), Iceland, Japan, Kazakhstan, the Kyrgyz Republic, New Zealand, Norway, the Russia Federation, Switzerland, Türkiye, the United Kingdom, and the United States

2002, Dec 2009 to Dec 2010, Jan 2011 to Oct 2011, Jul 2013 to Jul 2015, Dec 2017 to Apr 2018, and Dec 2020 – present. The GSP legislation is not yet renewed after 2020, and the current status of the legislation is not known.

Another source of uncertainty in the US’s GSP is from annual review of the USTR in which it proactively assesses and reviews GSP status of an individual product annually. The results of the reviews can lead to sudden removal or suspension of the product receiving GSP benefits for non-compliance with GSP eligibility standards. This change happens more frequently than expiration and consider to be more uncertain. The criteria are income levels, market access, intellectual property rights and worker rights. If the GSP received country fails to provide market access for US goods, or deemed sufficiently developed, its GSP eligibility will be removed or suspended. Last but not the least the source is from the administration shift caused by the White House.

Table 2: Characteristics of EU’s and US’s GSP Uncertainty

	EU	US
Primary Source of Uncertainty	Graduation & Withdrawal	Legislative Lapses & Annual Reviews
Mechanism	Removing benefits from sectors/countries that become "too competitive" or violate human rights.	Programs are expiring completely due to Congress, or countries failing compliance reviews.
Level of Uncertainty	Low Uncertainty: Reforms (2005/2010/2015) made criteria more systematic and predictable.	High Uncertainty: Frequent gaps in coverage (lapses) and shifting political priorities during reviews.

Source: Compiled by Authors.

Understanding these distinctions and their implications of multiple GSP withdrawals and its uncertainty are crucial for exporters and policymakers in developing countries, including Thailand. As a result, this study consider how has the uncertainty surrounding the GSP schemes, particularly considering the recent multiple withdrawals of GSP benefits by the EU and the US, affected Thailand’s exports, especially for products that previously benefited from preferential tariff treatment?

Since GSP status is temporary, its multiple withdrawals can be used as a natural experiment for measuring uncertainty. Generally, in international trade, the uncertainty is measured by “tariff gap,” the difference between the preferential GSP rate and the standard MFN tariff rates. Using the unpredictability and fragility inherent in GSP, the multiple withdrawals, we think that this alternative measure of uncertainty would help fill in the research gap.

To answer this question, we use Thailand exports to the EU and the US as a case study. The data of exports statistics at the HS 6-digit product level from Thailand to the US and the EU⁴ are from UN Comtrade and the World Bank’s World Integrated Trade Solution (WTIS) for the period of 2002 and 2022. Since the HS data classification version is revised every five years to reflect change in trade patterns, changes in manufacturing processes or technological

⁴Due to the enlargement of the EU overtime, we use the exports to EU27.

advancement, we convert our data using the HS 2002 revision as the base line. This is done by using the WTO HS Tracker conversion. By using generalized and staggered difference-in-differences, we can create a counterfactual or “what-if” scenario that allows us to compare and isolate the actual outcome of exports affected by the multiple GSP benefit withdrawal (treatments) from the predicted outcome for the treatment group had they not received the treatment, which may change over time or differ between groups

4. Empirical Strategies

From the literature review, we can see that the gravity-based model and the difference-in-differences estimation are the main empirical strategy used to find the causal effects of the change in preferential trade policy on trade flow. Gravity model is used to assess the trade flow (see Herz and Wagner, 2011; Lidberg, 2012; Cuyvers and Soeng, 2013; Cirera, Foliano and Gasiorek, 2016; Persson and Wilhelmsson, 2016; Jildenbäck, 2016; Klasen et al., 2016; Eggers, 2017; Sharma and Grant, 2019; Sorgho, 2024), while the difference-in-differences is used to disentangle the effect of the preferential withdrawal (see Frazer and Van Biesebroeck, 2010; Hakobyan, 2020; Borchert and Di Ubaldo, 2020; Tanaka, 2021; Gnutzmann and Gnutzmann-Mkrtchyan, 2022; Edjigu, Hakobyan and Kassa, 2023; and Pradhan, 2025). Hence, in this paper, we will follow the same empirical strategy using gravity as a based model and the difference-in-differences approach to measure the causal effects of uncertainty.

4.1 Gravity Model

To assess trade flows and the trade policy uncertainty effects (impact of GSP expiration, withdrawal, graduation), we consider the gravity-based regressions. The gravity model of trade is useful and appealing due to its exceptional performance in identifying the factors that drive trade patterns and analyzing counterfactual policy scenarios in the empirical applications. In the most basic log-linear form, the gravity model can be written as follows:

$$\log(\text{export}_{ijt}) = \beta_0 + \beta_1 \text{GDP}_{it} + \beta_2 \text{GDP}_{jt} + \beta_3 \log(\tau_{ij}) + \varepsilon_{ijt}$$

Where τ_{ij} represents trade costs between two countries.

To model and estimate the causal effect of a trade policy (such as the trade policy uncertainty), we can adapt a panel data framework and use the difference-in-differences design to isolate and compare the change in trade flows for treated against control over time. Follow the Anderson and van Wincoop (2003) and Baier and Bergstrand (2007), we consider the following DID gravity model:

$$\log(\text{export}_{ijt}) = \delta_{it} + \varphi_{jt} + \gamma_{ij} + \beta \cdot \text{Policy}_{ijt} + \varepsilon_{ijt}$$

Where δ_{it} is the exporter-time fixed effects, φ_{jt} is the importer-time fixed effects, and γ_{ij} is the pair-fixed effects. The key variable is Policy_{ijt} , which is a dummy variable equal to 1 if the treatment is active between exporter i and importer j at time t . The parameter β will capture the average effect of the trade policy uncertainty on exports.

In this study, we are interested in modeling the trade policy uncertainty; hence, the Policy_{ijt} variable is the GSP benefit of product i exporting to country j being withdrawn at time t , which we will use the multiple withdrawals of GSP to measure uncertainty.

4.2 Difference-in-Differences Designs and Estimation Technique

To evaluate the causal effects of the trade policy uncertainty resulted from the frequent changes in the GSP schemes, we use the difference-in-differences (DID) method. The fundamental idea of DID is to estimate the causal effect of a treatment by comparing the change in outcomes for a treated (GSP being withdrawn) to the change in the outcomes for a control (untreated) where the event did not happen over two periods of time, i.e., performing a double differencing between the pre-outcomes and post-outcomes of two groups. In this setting, the estimand is the average treatment effects on the treated (ATT), which is calculated as the change in the treatment group minus the change in the control group. Under the parallel trend assumption, the average outcomes of both groups should follow parallel paths over time, i.e., the difference between treatment and control should stay the same over time. Hence, by doing the differencing should remove any time-invariant differences between the groups and any common temporal trends and distinguish the treatment effect.

Let $Y_{it}(D_i)$ be the potential outcome for unit i at time t if the treatment is $D_i \in \{0,1\}$. The observed outcome Y_{it} is

$$Y_{it} = Y_{it}(0) + D_i * [Y_{it}(1) - Y_{it}(0)] = D_i Y_{it}(1) + (1 - D_i) Y_{it}(0)$$

The DID design is given by

$$ATT = E[Y_t(1) - Y_t(0) | D_i = 1]$$

This parameter is the difference between the outcome the treated group did experience ($Y_t(1)$) and the outcome they would have experienced without the treatment ($Y_t(0)$), on average, for the units in the treatment group in the post-treatment period.

By decomposing the change in the observed outcome in the treated group over time,

$$E[Y_t | D_i = 1] - E[Y_{t-1} | D_i = 1] = \underbrace{E[Y_t(1) - Y_{t-1}(0) | D_i = 1]}_{ATT} + \underbrace{E[Y_{t-1}(0) - Y_{t-2}(0) | D_i = 1]}_{counterfactual}$$

The second term is the counterfactual change that would have happened to the treated group without the treatment, the change that would have happened anyway. Under the parallel trend assumption, the change in outcomes over time for the treated group would be the same as the change in the outcome for the untreated group, i.e.,

$$E[Y_t(0) - Y_{t-1}(0) | D_i = 1] = E[Y_t(0) - Y_{t-1}(0) | D_i = 0]$$

We can use this observed potential outcome of the untreated group as the counterfactual, and we get the ATT based on the observed mean:

$$\begin{aligned} ATT &= E[Y_t(1) - Y_{t-1}(0) | D_i = 1] \\ &= E[Y_t(1) - Y_t(0) | D_i = 1] - E[Y_t(0) - Y_{t-1}(0) | D_i = 0] \end{aligned}$$

In the typical linear regression, the canonical DID is in the following form:

$$Y_{it} = \beta_0 + \beta_1 Post_t + \beta_2 Treat_i + \beta_3 Post_t * Treat_i + \varepsilon_{it}$$

Where Y_{it} is the outcome for unit i at time t ; $Post_t$ is a dummy variable equals to 0 for the pre-treatment period and 1 for the post-treatment period; $Treat_i$ is a dummy variable equals 0 for units in the control group and 1 for the units in the treatment group and ε_{it} is the error term.

Under the parallel trend assumption, the DID estimator is the difference between the expected pre-post change in realized outcomes in the treatment and control, which measured by β_3 on the interaction term.

$$\begin{aligned} ATT &= E(Y_{Post}^{Treated} - Y_{Pre}^{Treated}) - E(Y_{Post}^{Untreated} - Y_{Pre}^{Untreated}) \\ &= [(\beta_0 + \beta_1 + \beta_2 + \beta_3) - (\beta_0 + \beta_2)] - [(\beta_0 + \beta_1) - \beta_0] \\ &= \beta_3 \end{aligned}$$

However, the frequent changes in GSP (uncertainty) affect multiple products at different times. The traditional DID can produce biased results in this case. To accommodate the heterogeneous effect of the change in GSP and fix the biases, we consider two DID designs – generalized DID and the staggered adoption DID, where the “staggered” panel is break into many 2x2 comparisons.

4.2.1 Generalized Difference-in-differences

Generalized DID can take on more general pattern where the treatment “turns on” and “turns off” multiple times over time and exhibits a non-uniform exposure patterns (i.e., the event starts at different times for different product, and the products experience multiple events over time). The common regression for the generalized DID is the two-way fixed effects (TWFE) regression model which is based on a linear regression with unit and time fixed effects.

$$Y_{it} = \alpha_i + \theta_t + \beta_{TWFE} D_{it} + \varepsilon_{it}$$

Where Y_{it} is the outcome for product i at time t ; D_{it} is a binary treatment indicator that equals 1 if unit i at time t has been treated; β_{TWFE} is the coefficient of interest capturing the “average treatment effect of the treated, ATT”; α_i is a product fixed effect; θ_t is a time fixed effect; and ε_{it} is the error term.

It is worth noting that in the TWFE estimation, we assume that the effects are homogeneous, i.e., the effect of the treatment is β for all units, which is unlikely. They may vary across different units or exhibit dynamics or change across different time periods.

The dummy variable $Treat_{it}$ is our treatment dummy, indexing the i product affected by the GSP withdrawal during the period t , and is equal to 1 for treated product and only during those t years when the treatment is in effect, 0 otherwise. The indicator “turn on” when changes from 0 to 1 and “turn off” when changes from 1 to 0.

The advantage of the generalized DID is that it helps improve precision and provide better fit since it allows intercept to vary for each product and allows for the common change in outcome to vary by year.

4.2.2 Staggered Adoption Difference-in-differences

In the staggered adoption setting where the effects vary across products and over time, the TWFE estimator is biased because of the bad comparison where already-treated units are implicitly used as a control group for later-treated units. Thus, the effects of a change in already treated groups are not following the same trend as the treated group and violate the parallel trend assumption. To overcome the issue, we use methods proposed by Callaway and Sant’Anna (2021) and Wooldridge (2023) and Rios-Avila (2023).

In the linear setting with variation in treatment timing and heterogeneous treatment effects, Callaway and Sant’Anna correct the bias by explicitly using the “clean” comparisons to estimate the group-time treatment effects, ensuring that the control group’s outcome is not contaminated by prior treatment effects. The main idea is to estimate the group-time average treatment effect ($ATT(g, t)$) for every specific group g when they are first treated at every period t after treatment exposure:

$$ATT(g, t) = E[Y_t(g) - Y_t(0)|G_i = g]$$

Where $G_i = g$ for group that all units are treated at time g ; $T_t = t$ is the period that the effect is measured. Hence, $Y_{it}(g)$ is the potential outcome for unit i at time t when treated in period g ($t \geq g$) and $Y_{it}(0)$ is the potential outcome for unit i at time t when untreated.

The calculation is still based on the conventional DID, but the identification is based on which comparison used, the never treated units or not yet treated units:

$$ATT(g, t) = (E[Y_t|G_i = g] - E[Y_{g-1}|G_i = g]) - (E[Y_t|C] - E[Y_{g-1}|C])$$

Where C is an indicator variable for whether unit i is in a never-treated group.

Another specification that we consider is the extended two-way fixed effects (ETWFE) estimator proposed by Wooldridge (2023, 2025) which allow for non-linear models such as Poisson and PPML and suitable in the context of international trade and gravity models. Both Callaway and Sant’Anna, and ETWFE are similar to the standard TWFE structure with extended treatment term, $D_{igt} = 1(G_i = g) * 1(T_t = t)$:

$$Y_{it} = \alpha_i + \theta_t + \sum_{g \in G} \sum_{t=g}^T \beta_{gt} D_{igt} + \varepsilon_{it}$$

And in the PPML estimation, the model can be written as follows:

$$Y_{it} = \exp \left[\alpha_i + \theta_t + \sum_{g \in G} \sum_{t=g}^T \beta_{gt} D_{igt} \right] \cdot \varepsilon_{it}$$

Where D_{igt} is a dummy variable that takes the value of 1 if the unit i is in group g on period t and 0 otherwise. The ATT is calculated as the observed outcome minus the imputed counterfactual outcome.

$$ATT(g, t) = E(Y_{gt}^{observed}) - E(Y_{gt}^{imputed})$$

The estimates are clean and unbiased; hence, allow us to aggregate the effects separately into overall ATT, calendar-time ATT, and event-time ATT. This ETWFE is also supported by Nagengast and Yotov (2025) which show to correct the bias in the original gravity model.

4.2.3 Estimation

To accommodate zero trade values, we use PPML estimation, introduced by Silva and Tenreiro (2006, 2011). By including zero observations, the results are no longer affected by sample selection bias. Thus, PPML estimators can give robust empirical results. In addition, to

deal with the possible serial correlation and intra-group correlation, we use cluster robust standard errors for inference to avoid biased results and possible over-rejection.

5. Model Specifications

Our analysis is built on the conceptual framework of the gravity model and difference-in-difference estimation method. Due to the nature of EU's GSP graduation, the effect of multiple withdrawals of GSP is irreversible and the effect of withdrawals and uncertainty on exports should be well-captured with the staggered adoption specification. We follow the structure of the staggered adoption specification proposed by Callaway and Sant'Anna, and ETWFE proposed by Wooldridge. The models can be written as follows:

$$\ln(Exports)_{it} = \alpha_i + \theta_t + \sum_{g \in G} \sum_{t=g}^T \beta_{gt} GSPGrad_{igt} + \gamma MFN_{it} + \varepsilon_{it}$$

$$Exports_{it} = \exp \left[\alpha_i + \theta_t + \sum_{g \in G} \sum_{t=g}^T \beta_{gt} GSPGrad_{igt} + \gamma MFN_{it} \right] \cdot \varepsilon_{it}$$

where $Exports_{it}$ is the export value of product i from Thailand to EU at time t . The dummy variable $GSPGrad_{it}$ is based on the EU's GSP graduation reform to reduce uncertainty, which happens in 2005, 2010 and 2015. Not all products are graduated at the same time, but once they are graduated, they never receive the GSP benefits again. Thus, if product i at time t is graduated at time g , $GSPGrad_{igt} = 1$ for all $g > t$. We also control for the MFN tariff rates of product i at time t (MFN_{it}) to prevent omitted variable bias and better isolates the impacts of GSP uncertainty. The MFN tariff rates also represent the convention trade costs since global trade is conducted on MFN terms. This specification would make our models "cleaner" and remove any possible confounding effect of tariff being impose on each exporting product.

However, in the case of the US's GSP, it is different where an expiration and a withdrawal can be renewed. Thus, the effect of GSP on exports is reversible. These on and off nature of the treatments do not fit the staggered adoption; hence, we consider the conventional gravity model with generalized DID estimation in the case of the US as follows:

$$\ln(Exports_{it}) = \alpha_i + \theta_t + \beta_{TWFE} GSPEXpire_{it} + \gamma MFN_{it} + \varepsilon_{it}$$

$$\ln(Exports_{it}) = \alpha_i + \theta_t + \beta_{TWFE} GSPReview_{it} + \gamma MFN_{it} + \varepsilon_{it}$$

And similarly, models under the PPML specification are as follows:

$$Exports_{it} = \exp[\alpha_i + \theta_t + \beta_{TWFE} GSPEXpire_{it} + \gamma MFN_{it}] \cdot \varepsilon_{it}$$

$$Exports_{it} = \exp[\alpha_i + \theta_t + \beta_{TWFE} GSPReview_{it} + \gamma MFN_{it}] \cdot \varepsilon_{it}$$

The dummy variable $GSPEXpire_t$ is basically a time dummy. (= 1 if at year t , the legislation expires; 0 otherwise). GSP expiration is applied to all GSP receiving products when the legislation expires. The dummy variable $GSPReview_{it}$ is based on the USTR annual reviews (= 1 if GSP of product i is reviewed and removed in year t ; 0 otherwise). This happens when the GSP received country fails to provide market access for US goods, or deemed sufficiently

developed, its GSP eligibility will be removed or suspended. This status can change yearly. The difference between $GSP_{Expire_{it}}$ and $GSP_{Review_{it}}$ is the source of uncertainty

GSP eligible products are usually listed at the HS 8-digit level; hence, we will map them to HS 6-digit. We consider the GSP effective year since it is more consistent, in terms of measurement. The data on the EU's GSP graduation are from the official documents of the European Commission and European Union Law. The product and country graduation happened during the reform in 2005, 2010, and 2015. We use those years to cross check between 2002 and 2015 which products were removed from the GSP lists. For the US's GSP, the expiration dates were from the USTR.

To examine whether the impact of multiple withdrawals of GSP and uncertainty differs among sectors, we will group our products by their level of technology. Based on Eurostat Annex 2, we use NACE Rev. 1.1 at the 2-digit level to aggregate products into industry and organize them into two groups based on the level of technology⁵, high technology and low technology product exports.

6. Estimation Results

Due to the differences of the EU's and US's GSP schemes, we consider different estimation methods for each case, and the results are separately discussed. The results are based on gravity and PPML models and are estimated using the difference-in-difference estimations. We believe that using PPML, which takes into account the zero flows, also helps create the better counterfactual for the difference-in-differences setting. Hence our discussions are mainly based on PPML.

6.1 EU

The estimation results based on the whole sample (Table 3 Column [1]) suggest that the multiple withdrawals and lower uncertainty of the EU's GSP for Thailand did support the increase in Thailand's exports, on average, but it is statistically insignificant. This result is broadly consistent with the institutional reform of the EU's GSP in 2005, which was designed to simplify the scheme and make it more predictable, thereby reducing uncertainty surrounding future preference withdrawal and supporting exports.

This finding also supports the broader trade policy uncertainty literature. Handley and Limão (2017) argue that uncertainty over future market access can discourage firms from entering or expanding in export markets, while greater predictability can support trade and investment decisions. In this context, the absence of a large negative effect of multiple withdrawals and uncertainty after EU graduation may reflect the fact that the preference withdrawal was relatively anticipated and rule-based. Thai exporters may therefore have had time to adjust their pricing, market strategy, production structures, or destination-market allocation before the loss of preferences took full effect.

⁵ Originally, we consider four groups of technology, high, medium-high, medium-low and low. However, the number of samples for some groups are too small.

Table 3: Estimation Results for the EU

	[1] Whole Sample	[2] Hi Tech	[3] Lo Tech
Average Treatment Effects on the Treated			
ATET	0.0588	0.1115	-0.1373
ATT by Group			
Grad 2005	0.0938	-0.9175***	8.4420***
Grad 2015	0.0549	0.3486***	-0.1697
Obs	65,900	28,593	33,594

Source: Authors

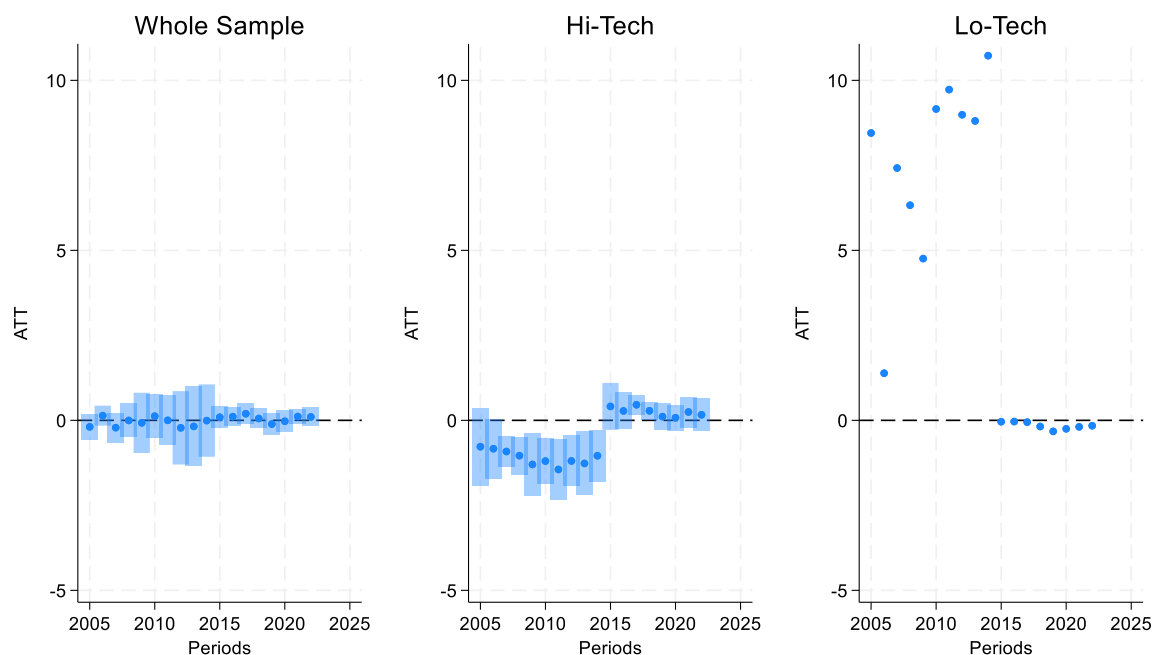
Note: (1) The PPML estimates are rescale and can be interpreted as % change in exports. (2) MFN tariff rates are included but not shown. (3) *, **, or *** indicates statistical significance at 10%, 5% and 1% respectively. (4) The gravity estimates are omitted from the table but are available upon request from the authors.

Since when the treatments are staggered, the ATT can be biased due to heterogeneity in treatment timing, we also estimate the ATT by the time that graduation occurred (ATT by Group). The reform in 2010 did not affect the Thai products export to the EU; hence, it is dropped from our analysis. Figure 3 shows that the ATT on the exports of all products did not change after the reform in 2005 and 2015.

Interestingly, substantial heterogeneity emerges across product groups as seen in Figure 3 and 4. While several specifications indicate positive export responses for low-technology products following the 2005 graduation, the PPML estimates suggest significantly negative effects for high-technology products. These findings imply that the effects of GSP withdrawal differ across sectors and may depend on the degree of reliance on preferential market access.

One possible explanation is that low-technology sectors may already possess sufficient competitiveness and face relatively limited effective preference margins, allowing exports to remain stable or even expand after graduation. This interpretation is consistent with the logic of EU graduation, under which preferences are withdrawn once sectors are considered sufficiently competitive in international markets.

Figure 3: Average Treatment Effects on the Treated by Product Groups (Calendar)



Source: Authors

Note: The ATT estimates are based on PPML and rescaled to make them comparable across groups.

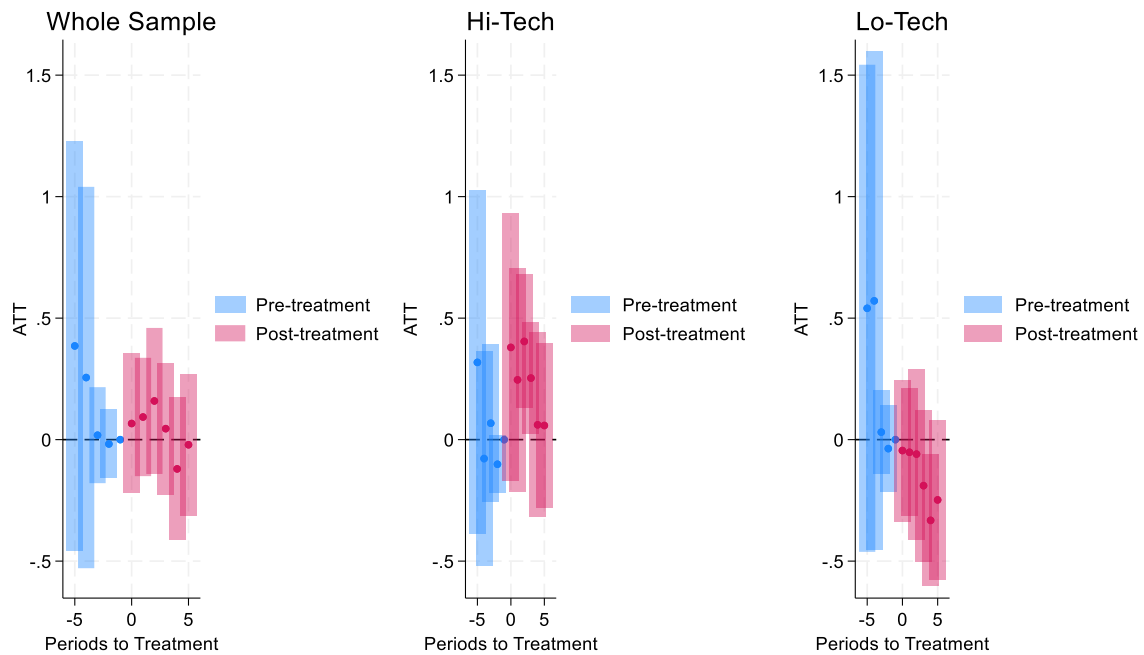
By contrast, some high-technology sectors appear to remain more sensitive to changes in market access conditions. High-technology industries often operate in highly competitive international environments characterized by tighter margins, stricter standards, and greater integration into global value chains. In such sectors, even relatively small increases in trade costs following preference withdrawal may influence sourcing decisions and export competitiveness. Therefore, the negative estimates for high-technology products are more likely to reflect differential dependence on preferential access rather than the effects of uncertainty itself.

The results following the complete graduation in 2015 suggest a somewhat different pattern. High-technology exports show signs of recovery or expansion in some specifications, while low-technology exports remain broadly unchanged. This may indicate that firms in certain high-technology sectors gradually adjusted to the new tariff regime over time, although this interpretation should be treated cautiously given the mixed estimates across specifications.

The timing of the EU's GSP reforms also provides additional insights through the event-study analysis. Figure 4 presents the group-time average treatment effects across product groups and shows a broadly consistent pattern with the ATT estimates. We do not observe statistically significant changes in aggregate exports following graduation, suggesting that the reduction in trade policy uncertainty alone did not generate export expansion. Although slight

increases are observed for high-technology products and slight declines for low-technology products in some periods, these changes are generally not statistically significant.

Figure 4: Group-Time Average Treatment Effects by Product Groups (Event)



Source: Authors

Note: The ATT estimates are based on PPML and rescaled to make them comparable across groups.

Rather, the evidence suggests that policy predictability may have supported export stability by reducing adjustment costs and allowing exporters to respond in advance. When firms can anticipate preference withdrawal under a transparent and rule-based system, they may gradually adjust production structures, revise pricing strategies, upgrade product quality, reallocate exports across markets, or strengthen competitiveness before tariff preferences are removed. This interpretation is consistent with Handley and Limao (2017), who argue that reductions in trade policy uncertainty can facilitate firm adjustment and reduce disruption to trade outcomes.

Taken together, the evidence from Figure 4 suggests that lower uncertainty in the EU's GSP regime may have contributed more to maintaining export performance than to generating additional export growth. This highlights the role of policy predictability in shaping export responses and suggests that the benefits of rule-based preference regimes may arise through smoother adjustment rather than direct export promotion.

Overall, the empirical evidence indicates that the EU's transition toward a more rule-based and predictable graduation mechanism did not significantly harm Thailand's aggregate

exports. However, the adjustment process varied substantially across sectors. The findings suggest that reduced trade policy uncertainty may help limit export disruption, but its effectiveness depends on sectoral competitiveness, effective preference margins, and exporters' ability to adapt to changing market access conditions.

6.2 US

The estimation results for the US suggest that multiple withdrawals and the higher uncertainty surrounding the US's GSP program—arising from both periodic expiration of the Act and annual USTR reviews—did not negatively affect Thailand's exports. Instead, the estimates indicate positive average effects on exports to the US in several specifications, with GSP expiration showing smaller but statistically significant positive effects, particularly for the whole sample (Table 4 Column [1]) and high-technology products (Table 4 Column [2]).

These findings are notable because they differ from the broader literature on trade policy uncertainty, which generally predicts that uncertainty reduces trade and investment. For example, Hakobyan (2020) and UNCTAD (2025) document that the expiration of the US GSP reduced exports from beneficiary countries, particularly for products with larger preference margins. In contrast, the results for Thailand suggest that temporary withdrawal and uncertainty surrounding preferential access did not translate into lower exports.

Table 4: Average Treatment Effects on the Treated for the US

	[1] Whole Sample	[2] Hi Tech	[3] Lo Tech
GSPExpire	0.2341**	0.3478**	0.2131
GSPReview	0.2644	0.4271*	0.2557
Obs	75,720	31,446	40,261

Source: Authors

Note: (1) The PPML estimates are rescale and can be interpreted as % change in exports. (2) MFN tariff rates are included but not shown. (3) *, **, or *** indicates statistical significance at 10%, 5% and 1% respectively. (4) The gravity estimates are omitted from the table but are available upon request from the authors.

One interpretation is that Thailand's exports to the US may no longer depend heavily on unilateral tariff preferences. As a relatively mature middle-income exporter with diversified manufacturing capabilities and established supply-chain integration, Thailand may have become less sensitive to temporary changes in preferential treatment.

Additional insights emerge when controlling for MFN tariffs. The results show that the positive effects become stronger for high-technology products, while the effects for low-technology products weaken or become statistically insignificant. This suggests that MFN tariff levels partly explain the observed export response. However, the positive and statistically significant coefficients imply that the increase in trade costs following GSP withdrawal and

higher uncertainty was insufficient to offset other favorable factors affecting Thailand's exports during the study period.

One possible explanation is that the effective preference margin may already have been relatively small for many Thai exports, implying that the transition from GSP treatment to MFN tariffs did not substantially increase trade costs. Consequently, the estimated coefficients may reflect the net effect of multiple economic forces rather than the pure mechanical effect of preference withdrawal. These forces may include exporter competitiveness, supply-chain integration, and firms' ability to adapt to recurring policy changes.

A second explanation concerns Thailand's export structure. Compared with the average GSP beneficiary country, Thai exporters may be more diversified and internationally competitive, allowing them to absorb the loss of preferences more effectively. And finally, a third explanation is related to anticipatory adjustment. Since US's GSP expirations and renewals occur repeatedly and are politically determined, firms may not perceive GSP access as permanent. Instead, exporters and importers may gradually adapt their sourcing, pricing, and inventory decisions around expected policy changes. This repeated withdrawal pattern may reduce the disruptive effects of temporary preference withdrawal.

Unlike the EU case, sectoral heterogeneity in the US appears to follow a different pattern. High-technology exports are found to drive most of the positive export response. High-technology sectors continue to expand despite recurring GSP expiration and product-level reviews, suggesting that these industries may be relatively resilient to preference uncertainty. One possible explanation is that high-technology industries tend to rely more on long-term supplier relationships, production networks, accumulated capabilities, and non-price competitiveness than on tariff preferences alone.

This interpretation may also reflect broader developments in global trade during the sample period. In particular, the trade conflict may have encouraged US importers to diversify sourcing toward alternative suppliers in ASEAN, including Thailand. Since high-technology industries are generally more integrated into international supply chains and involve higher switching costs, these sectors may have been better positioned to maintain or expand exports despite temporary GSP withdrawal. However, these findings should not be interpreted as evidence that uncertainty itself promotes exports. Rather, the positive estimates likely reflect the combined effects of exporter competitiveness, relatively limited effective preference margins, supply-chain integration, and external demand shifts associated with broader changes in the global trading environment.

By contrast, low-technology exports show weaker and less robust responses once MFN tariffs are controlled for. This suggests that the observed effects for these sectors may partly reflect differences in tariff exposure rather than changes in uncertainty alone.

Another important implication concerns the relative magnitude of the two uncertainty measures. The estimated effects associated with annual USTR reviews tend to be larger than those associated with temporary GSP expiration, although statistical significance is not always observed. This suggests that frequent product-level adjustments may influence firm behavior more than temporary program-wide suspension because they create continuous uncertainty at the product level.

Overall, the empirical evidence indicates that multiple withdrawals and higher uncertainty surrounding the US's GSP program did not undermine Thailand's export performance. Instead, Thai exports demonstrated resilience and, in some cases, expansion despite multiple withdrawals in preferential treatment. These findings suggest that export outcomes under trade policy uncertainty depend not only on tariff preferences but also on competitiveness, effective preference margins, industrial structure, supply-chain integration, and firms' ability to adapt to changing trade environments.

Taken together, the findings suggest that Thailand's exports are no longer strongly dependent on unilateral tariff preferences alone. Across both the EU and US cases, the effects of GSP withdrawal vary depending on institutional design, effective preference margins, sectoral characteristics, and exporters' ability to adjust. The EU case suggests that lower trade policy uncertainty and a more predictable, rule-based graduation mechanism helped maintain export stability by reducing adjustment costs, although this did not necessarily translate into export expansion. In contrast, the US results indicate that repeated withdrawals and higher uncertainty did not undermine export performance and, in some cases, coincided with export growth, particularly in high-technology sectors.

These findings imply that export outcomes under non-reciprocal trade preferences are shaped not only by tariff preferences themselves but also by competitiveness, supply-chain integration, and firms' capacity to adapt to changing trade environments. The contrasting evidence from the EU and US further suggests that trade policy uncertainty does not operate in isolation and may interact with broader structural and sector-specific factors.

7. Conclusion and Policy Implications

This paper develops a framework to evaluate the effects of multiple GSP withdrawals and trade policy uncertainty on Thailand's exports under two distinct institutional settings: the EU's relatively rule-based and predictable graduation mechanism and the US's more discretionary and uncertain preference system. Using difference-in-differences approaches with both gravity and PPML estimations, this study examines how Thai exports responded to multiple graduation episodes in the EU and repeated withdrawal episodes in the US arising from program expiration and annual product reviews.

Overall, the findings suggest that GSP withdrawal and trade policy uncertainty do not automatically reduce Thailand's exports. Across both the EU and US cases, the aggregate effects are generally limited, indicating that Thailand's exports may no longer rely heavily on unilateral tariff preferences alone. Instead, export responses appear to depend on the interaction between institutional design, effective preference margins, sectoral characteristics, and firms' ability to adjust to changing market access conditions.

The EU results suggest that lower trade policy uncertainty and a more predictable, rule-based graduation mechanism did not significantly harm Thailand's aggregate exports. However, important heterogeneity emerges across sectors. While several low-technology sectors maintained or expanded exports following graduation, high-technology exports exhibit greater sensitivity to preference withdrawal in the PPML specifications. These findings suggest

that lower uncertainty may help reduce adjustment costs and support export stability, although predictability alone does not necessarily translate into stronger export growth.

The US case presents a different pattern. Despite repeated GSP withdrawals and greater uncertainty, Thailand's exports remained resilient and, in several specifications, expanded—particularly in high-technology sectors. However, these findings should not be interpreted as evidence that uncertainty promotes exports. Rather, the positive responses likely reflect the combined influence of exporter competitiveness, anticipatory adjustment, relatively limited effective preference margins, supply-chain integration, and broader restructuring of global production networks, including developments associated with the US–China trade conflict.

Taken together, the findings suggest that the trade effects of non-reciprocal trade preferences should not be understood solely through changes in tariff rates. Instead, export outcomes depend on how uncertainty interacts with industrial structure, effective tariff exposure, global value chain participation, and exporters' adaptive capacity. The contrast between the EU and US cases further suggests that rule-based predictability may support smoother adjustment, while uncertainty does not necessarily lead to weaker export performance when firms possess sufficient competitiveness and flexibility.

Policy Implications

From a policy perspective, the findings suggest that Thailand should gradually reduce reliance on unilateral trade preferences as a primary export strategy and place greater emphasis on strengthening long-term competitiveness. As countries move up the development ladder and become increasingly exposed to graduation from non-reciprocal preferences, sustaining export performance requires investment in productivity, innovation, quality upgrading, and deeper integration into global value chains.

The sectoral findings also imply differentiated policy priorities. Since high-technology exports appear more sensitive to preference changes in the EU but remain resilient in the US, targeted support should focus on strengthening technological capability, research and development, standards compliance, and supply-chain positioning in sectors exposed to changing market access conditions. Policies that improve firms' ability to upgrade and diversify markets may reduce dependence on tariff preferences.

More broadly, the findings suggest the need to rethink development strategies based primarily on non-reciprocal preferences. If trade policy uncertainty cannot be fully eliminated and preferential access becomes increasingly temporary, future trade cooperation may need to move beyond traditional unilateral preferences toward more sustainable frameworks. These may include reciprocal but development-oriented agreements, deeper South–South trade partnerships, and trade arrangements that strengthen productive capacity, attract quality FDI, and support export diversification.

Successfully implementing such strategies requires strong institutional capacity and coordination among government agencies, firms, and other stakeholders. While deeper integration may expose domestic industries to greater competition and adjustment costs, strengthening competitiveness and adaptive capacity is likely to generate more sustainable export growth than continued reliance on temporary preferential market access.

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