

Trade Policy Shocks and Differentiated Goods

Evidence from India's 2019 Loss of GSP Status in the U.S.
Jewelry Market

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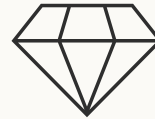
Presentation Roadmap



1

Why jewelry?

Motivation and industry context



2

What Changed?

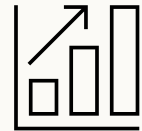
India's GSP removal & policy shock



3

How I Test It?

DiD model, data, controls, and robustness



4

What I Find

Imports rose, production scale



Motivation: Jewelry Is Not a Typical Commodity

Jewelry is not a standard commodity

- Fine jewelry is differentiated by design, branding, metal content, gem grading & characteristics
- Hence making it a non interchangeable good

Supplier relationships are hard to replace

- Buyers have longstanding relations with their supplies
- Replacing a vendor would mean replacing whole lines of jewelry

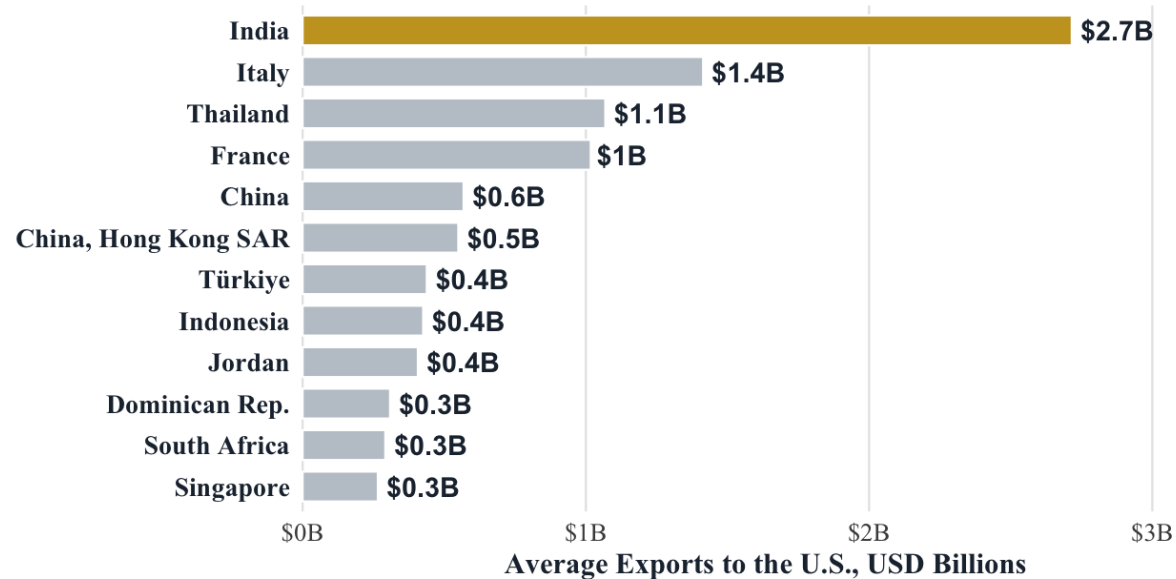
Jewelry trade does not behave normally

- Due to its complicated supply chain and dependence on uniqueness's, does not behave as theory would dictate
- High margins and strong vendor relations make trade especially up to the company

Industry Context: India Is a Jewelry Powerhouse

India Is Among the Largest HS 7113 Jewelry Exporters to the U.S.

Average annual U.S. HS 7113 imports by exporter, 2019–2023



Source: UN Comtrade HS 7113 U.S. import data. Values averaged across 2019–2023.

90% of the globes cut and polished diamonds come from India, making them the globes diamond hub (Agrawal, 2023)

HS 7113

jewelry & related articles

By 2021 India represented 35% of the global gold market (World Gold Council)

Policy Shock: India Lost Preferential General System of Preference Access

Generalized Systems of Preference is a program that allows certain nations to export to the U.S. without having to face the costs of tariffs

2007



Many Indian gold products
lose GSP

2019



India loses GSP status as a
country

Expected from basic trade theory: with the rise in costs (anywhere from 0% during GSP to 5-6% post(GJEPC India)), buyers would decrease their imports from India

Question: How did the 2019 General System of Preference Removal from India impact the U.S.'s imports of Indian Made Jewelry?

Data & Identification Strategy

Reporter: United States

Partners: all exporters

Product: HS 7113

Years: 2011–2023

Difference-in-differences logic

Compare India's post-2019 change in U.S. jewelry imports against the rest of the world, while controlling for exporter and year fixed effects. DiD best isolates the before and after of the GSP loss.

$$\ln(T_{i,t,USA} + 1) = \beta(\text{India}_i \times \text{Post2019}_t) + \alpha_i + \delta_t + \varepsilon_{i,t}$$

Dependent variable measuring the exports to the U.S. from (*i*) exporter over (*t*) time. Dummy variables measuring 1 for India and 0 for all other nations. Another, 1 for post 2019 and 0 for pre-2019. Including exporter year fixed effects, accounting for distance to the US, trade relationships, geography and more. Also including time fixed effects, which will account for global shocks such as the 2020 coronavirus, gold price hikes, and change in the jewelry market

Raw Pattern: India's Share of US Imports



There is no dip to pre-2019 levels after GSP removal, with a very strong post covid rebound

Main DiD Result: Imports Rose After GSP Removal

Table 2. Difference-in-Differences Results

Effect of India's 2019 GSP Removal on U.S. HS 7113 Jewelry Imports

Variable	Coefficient	Std. Error	t-value	p-value	Percent Effect	Obs.	Exporter FE	Year FE
India × Post-2019	0.202	0.092	2.188	0.030	22.3	1492	Yes	Yes

Notes: Dependent variable is log U.S. import value of HS 7113 jewelry plus 0.0001. Standard errors are clustered by exporter. Percent effect is calculated as $100 \times (e^{\beta} - 1)$.

+22.3%

estimated increase in U.S. imports from India after
2019

p = 0.030

statistically significant at the 5% level

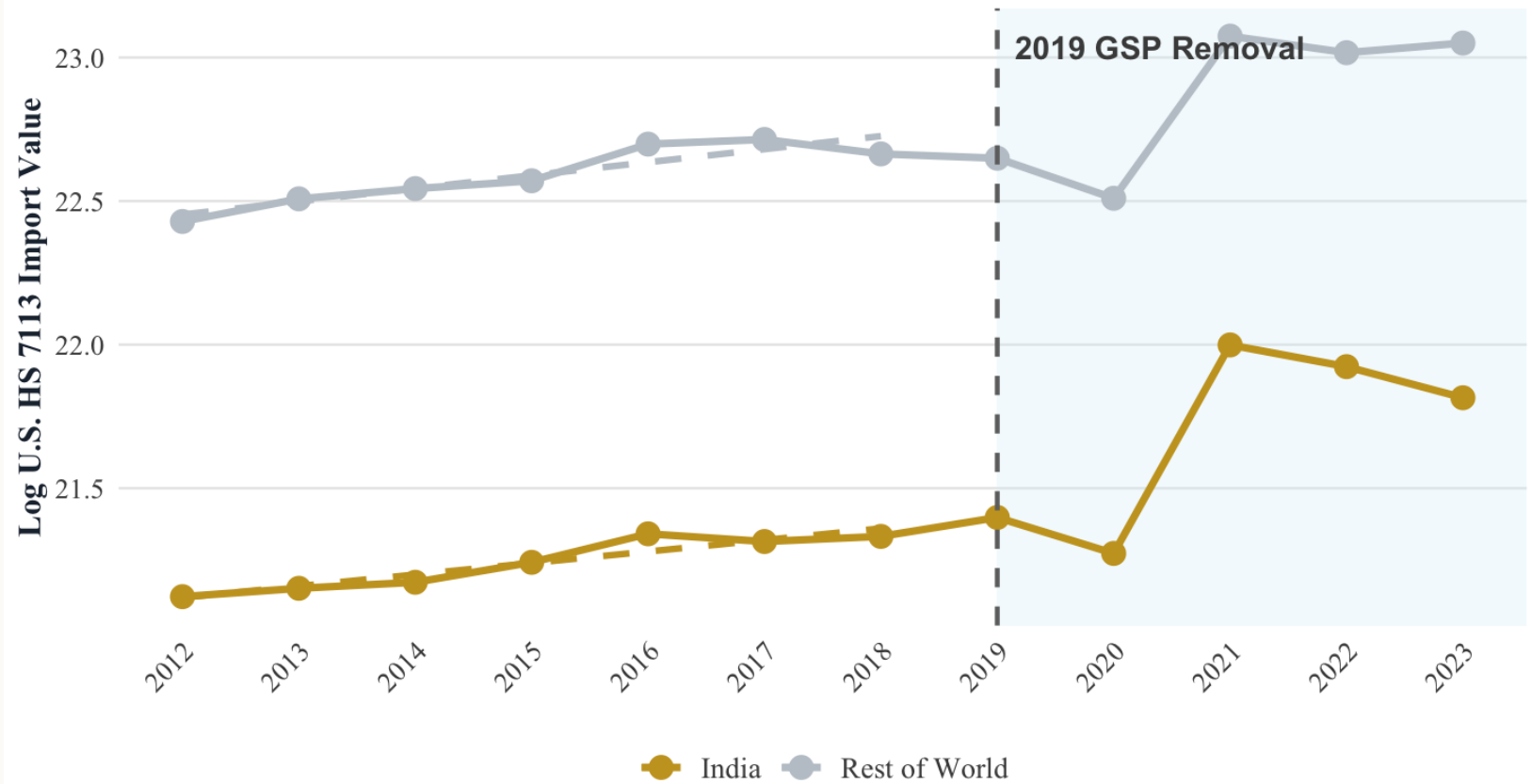
1492

observations, with exporter and year fixed
effects

DiD Model: Parallel Trends Check

Parallel Trends Check: India vs. Rest of World

Pre-2019 fitted trends in U.S. HS 7113 jewelry imports



Notes: Solid lines show observed annual trade values. Dashed lines show fitted pre-2019 linear trends. Shaded area indicates the post-2019 period.

World moves at a similar pace to India prior to 2019, further justifying the use of a DiD model.

India experiences a larger peak after 2019 than comparatively to the rest of the world, which is what the model is trying to capture

Model Two: Robustness Checks: Using post-2020 Variable vs post 2019

Some Indian jewelry was able to enter the U.S. duty free in 2019, due to some carryover

Table 3. Main DiD Model and Post-2020 Robustness Check

Effect of India's GSP Removal on U.S. HS 7113 Jewelry Imports

Model	Variable	Coefficient	Std. Error	t-value	p-value	Percent Effect	Obs.	Exporter FE	Year FE
Main Model: Post-2019	India × Post-2019	0.202	0.092	2.188	0.030	22.3	1492	Yes	Yes
Robustness Check: Post-2020	India × Post-2020	0.242	0.094	2.570	0.011	27.4	1492	Yes	Yes

Notes: Dependent variable is log U.S. import value of HS 7113 jewelry plus 0.0001. Standard errors are clustered by exporter. Percent effect is calculated as $100 \times (e^{\hat{\beta}} - 1)$. The Post-2020 model treats 2019 as a transition/front-loading year.

+27.4%

estimated increase in U.S. imports from India after 2020

p = 0.011

statistically significant at the 5% level

1492

observations, with exporter and year fixed effects

Tells us that the increase in imports is not just due to frontloading in an effort to avoid the rise in costs

Model Three: Robustness Checks: Including 2018 China Tariff Variable

Due to the tariffs placed on China in 2018, Chinese exports of HS7113 to the U.S. dropped by 70.2% by 2019 (UN Comtrade)

Table 4. DiD Results and Robustness Checks

Effect of India's GSP Removal on U.S. HS 7113 Jewelry Imports

Model	Variable	Coefficient	Std. Error	t-value	p-value	Percent Effect	Obs.	Exporter FE	Year FE	China Control
Main Model: Post-2019	India × Post-2019	0.202	0.092	2.188	0.030	22.3	1492	Yes	Yes	No
Robustness Check: Post-2020	India × Post-2020	0.242	0.094	2.570	0.011	27.4	1492	Yes	Yes	No
China Tariff Control	India × Post-2019	0.194	0.092	2.104	0.037	21.4	1492	Yes	Yes	Yes

Notes: Dependent variable is log U.S. import value of HS 7113 jewelry plus 0.0001. Standard errors are clustered by exporter. Percent effect is calculated as $100 \times (e^{\beta} - 1)$. The Post-2020 model treats 2019 as a transition/front-loading year. The China control model includes China × Post-2018 to account for the 2018 U.S.–China tariff shock. Year fixed effects absorb common COVID-era shocks.

+21.4%

estimated increase in U.S. imports from India after 2019

p = 0.037

statistically significant at the 5% level

1492

observations, with exporter and year fixed effects

The drop in Chinese exports only contributes to 0.9% drop from our original model

Model Four: Isolating Gravity Effects with no GSP Dependent Variable

To check and ensure that our model cannot be explained by simply the effects of gravity

Table 5. Gravity-Style Baseline Model

GDP and Distance Predictors of U.S. HS 7113 Jewelry Imports

Variable	Coefficient	Std. Error	t-value	p-value	Obs.	Year FE
Log GDP	1.191	0.089	13.314	0.000	1291	Yes
Log Distance	-0.237	0.303	-0.782	0.436	1291	Yes

Notes: Dependent variable is log U.S. import value of HS 7113 jewelry plus 0.0001. Standard errors are clustered by exporter. The model includes year fixed effects but does not include exporter fixed effects because distance is time-invariant.

GDP:

- A 1% increase in a nations GDP was associated with a 1.91% increase in jewelry exports to the U.S.
- Jewelry is very reliant on the largest economies being the largest exporters
- Was found to be statistically significant at the 5% level

Distance:

- A slightly negative relationship but was not found to be statistically significant in contrary to most trade theory
- Likely due to the lightweight nature of jewelry, making it easier for global transport and jewelry having been produced in nations that cannot have production easily moved

Model Five: Production Capacity Matters

Due to India's production capability, we wanted to see if that played a role in the increase in trade relative to other countries

Table 6. Final DiD Model with Production Capacity Control

Effect of India's 2019 GSP Removal on U.S. HS 7113 Jewelry Imports

Model	Variable	Coefficient	Std. Error	t-value	p-value	Interpretation	Obs.	Exporter FE	Year FE
GSP Model with Production Capacity Control	India × Post-2019	0.144	0.091	1.586	0.115	15.5% effect	1247	Yes	Yes
GSP Model with Production Capacity Control	Global HS 7113 Export Capacity	0.146	0.041	3.542	0.001	Elasticity	1247	Yes	Yes

Notes: Dependent variable is log U.S. import value of HS 7113 jewelry plus 0.0001. Standard errors are clustered by exporter. The model includes exporter and year fixed effects. Global HS 7113 export capacity is measured as the log of each exporter's total global HS 7113 exports plus 0.0001. The India × Post-2019 interpretation is calculated as $100 \times (e^{\beta} - 1)$.

15.5%

India × Post effect after production-capacity control

p = 0.115

no longer statistically significant

0.146

production-capacity coefficient is positive and significant

There is a decrease in the effect on trade, and the model becomes no longer statistically significant. We can also see that when the production capacity control is isolated, that variable alone is statistically significant at a p-value of 0.001. Likely pointing towards production capacity explaining a lot of how India's exports remained resilient; they can produce a specialized good better than other nations

Model Six: PPML Model vs. DiD Model

As PPML is important in trade literature, we wanted to make sure to include one for comparison

PPML Comparison Model									
Effect of India's 2019 GSP Removal on U.S. HS 7113 Jewelry Imports									
Model	Variable	Coefficient	Std. Error	z-value	p-value	Percent Effect	Obs.	Exporter FE	Year FE
PPML Main Model	India × Post-2019	0.188	0.156	1.205	0.228	20.7	1492	Yes	Yes

Notes: PPML model uses U.S. HS 7113 import value in levels as the dependent variable. Standard errors are clustered by exporter. Percent effect is calculated as $100 \times (e^{\beta} - 1)$.

20.7%

India × Post effect

p = 0.228

no longer statistically significant

1492

observations

In PPML, changes in large exporting countries create more noise than when the log is added in a DiD model. The error in PPML is larger hence why the coefficient is similar but it become no longer statistically significant

Conclusion: Jewelry Trade Was Resilient, But Scale Matters

1. U.S. imports of Indian HS 7113 jewelry did not decline after India's 2019 GSP removal.
2. The positive post-2019 effect is robust to front-loading and China-tariff checks.
3. Once production capacity is included, the GSP coefficient weakens, suggesting India's scale and specialization are central to the story.

Bottom line: The jewelry market appears less responsive to tariff shocks than a standard commodity market, but the resilience is tied closely to India's role as a major global producer.

Next Steps

1. Run the same model on more disagree trade data (HS711319 and other product)
 2. Use the MFN rate instead of the post-2019 dummy variable
 3. Look at global removal of GSP's effect on HS7113 to determine if this is unique to India
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Thank you!