



Pakistan Journal of Economic Studies

ISSN (E) 2708-1486 (P) 2708-1478

Volume 7: Issue 3 September 2024

Journal homepage: <https://journals.iub.edu.pk/index.php/pjes/index>

How has the duty drawback policy impacted the exports of surgical goods from Pakistan?

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ARTICLE DETAILS

History:

Accepted: 25 September 2024

Available Online: 30 September 2024

Keywords:

Duty Drawback

Difference in Difference (DID)

Surgical sector

JEL Codes:

H25

H43

F14

ABSTRACT

Objective: The Government of Pakistan, through its SRO No. 711(1)/2018 introduced the Duty Drawback scheme to increase the exports from the country. This research gauges the effect of the Policy of Duty Drawback scheme on exports of particular surgical goods from Pakistan.

Research Gap: Most of the research on the Duty Drawback Scheme has holistically covered its impact on a country's exports, failing to measure the impact at the microenterprises level, like small and medium-sized enterprises. However, unprecedented to others, this research has gauged the effects of duty drawbacks on a specific small and medium sector i.e. surgical sector of Pakistan.

Design/Methodology/Approach: To gauge the effectiveness of the Duty Drawback Scheme, the research utilized the Difference in Difference (DID) estimation technique and the inverse weight of propensity score using Firthlogistic regressions. For estimation used panel data for each of these 51 surgical goods pooled over 2017 and 2021. These fifty-one surgical goods are classified as treatment groups while others as control groups. The data is fetched from the database of the official website of Trade Map, and International Trade Centre UNCTAD/WTO.

The Main Findings: The estimation of the research demonstrates that the Duty Drawback Policy has significantly increased the annual exports of treated surgical goods compared to control surgical goods. Thus, the policy has a potential positive influence on increasing the country's exports.

Theoretical / Practical Implications of the Findings: The outcome of the study reveals that the Duty Drawback Policy provides favorable support for enhancing the exports of surgical goods from Pakistan. Therefore, the policy should be applied to the production of remaining surgical items, as well as to similar manufacturing organizations, to boost the country's exports.

Originality/Value: This research provides a line of direction to policymakers for the formulation of future policies and decision-making. Furthermore, the research contributes to the literature for future studies on similar nature topics.

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Recommended Citation:

Ahmad, N. (2024). How has the duty drawback policy impacted the exports of surgical goods from Pakistan? *Pakistan Journal of Economic Studies*, 7(3), 258-265. Available at: <https://journals.iub.edu.pk/index.php/pjes/article/view/3069>

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1. Introduction

The exports are utilized as a key tool for the growth of developed economies (Fan et al., 2015). Economies utilized different tools to enhance their exports (Quaye et al., 2017). Duty drawback programs, frequently used in trade policies, provide rebates and exemptions on duties to allow exporters to obtain imported inputs at global prices while safeguarding other economic sectors. Such programs are particularly common in developing countries with high levels of protection (Ianchovichina, 2004).

The economy of Pakistan is struggling toward stabilization due to a shrinking export bill and an increasing import bill each year. Numerous studies explain that exports boost a country's economic growth and play a crucial role in

economic stabilization and development (Mohamed, 2023; Sobirov et al., 2023). Export-oriented economies tend to be well-developed.

To enhance the exports the Government of Pakistan also introduced the Duty drawback scheme as a tool to increase the exports of Surgical goods. This research gauges the effect of the Policy of Duty Drawback scheme levied by the Government of Pakistan through its SRO No. 711(1)/2018 on the increase in exports of surgical goods. Using the Difference and Differences model along with inverse weights through the Propensity Score, it tested whether the Duty Drawback policy has a positive or negative effect on the exports of Surgical Goods from Pakistan. The research examined data on surgical goods for 2017 (one year before the policy) and 2021 (the year when the policy ended).

Industrial development plays a role in the economic development while providing employment opportunities ensuring improved utilization of domestic skills & resources. It is not a question of innovation and R & D, but recognition that something being exported should be produced competitively at domestic level. Industrial export growth is always in focus for a country to achieve some competitive levels in international trade but a thought-provoking issue for developing countries is the need to reduce their reliance on customary export products while increasing export of new products.

Export diversification becomes important for developing countries and Pakistan is no exception to it, as it develops export competitiveness by widening the of export products, thus reducing dependence on customary exports that have an inclination of decreasing terms of trade (Ekman- Ozcelik and Erlat, 2013). Therefore, export diversification can be accomplished by altering the share of prevailing products (intensive margins) and moving towards new products in the export portfolio (extensive margins) to meet competition needs internationally.

Overall clusters enhance operational efficiency through specialization, enhance technology spillovers, bring innovation (Arif and Asadi, 2011), build synergies across firms & associated institutions, bring better marketing coordination opportunities (Sonobe and Otsuka, 2006), diffusion of best practices through human skills & better technology, increase productivity through employment generation, encourage value added exports, facilitate market internationalization (Sonobe and Otsuka , 2006) and profit margins thus promote exports. Many industrial clusters exist in Pakistan contributing to its trading sector.

2. Background of Study

The Duty Drawback scheme is considered to be an important trade promotional tool, to give impetus to the export of a country. The duty drawback means reimbursement of local taxes, customs duties for input materials to produce exported items, and levies on the exports to exporters. Many countries like China, and South Korea have opted for duty drawback schemes to mitigate the expenses incurred by the exporters like taxes, and customs duties, in producing export proceeds.

The Government of Pakistan intended to increase its exports by adopting duty drawback models similar to those used by China and Korea. Pakistan's surgical sector plays a vital role in the country's exports due to its uniqueness and market competitiveness. However, some surgical equipment relies on imported raw materials, which creates challenges in competing in international markets. Therefore, the Ministry of Commerce of Pakistan took the initiative to give duty drawbacks on the exports of surgical goods to increase their exports. The policy has been devised at Harmonized System Code (HS Code) at 8 digits representing each surgical product.

This paper gauged the effect of the policy of the Duty Drawback scheme on the increase in exports of surgical goods and found that the policy significantly increases the exports of surgical goods in Pakistan. As per the policy, 51 surgical products are subjected to duty drawbacks at some rates. This paper comprises of Introduction, background, literature review, data and methodology, preliminary results and discussions, conclusions, and policy recommendations.

3. Literature Review

The impact of Duty Drawbacks on exports has been discussed quite often in research. However, I have gone through a number of articles that have gauged the effect of the duty drawback on the exports of countries. Moreover, there are mixed findings by the authors.

The policy of duty drawback has a significant effect in improving the competitiveness of exports, but the welfare is still ambiguous (Elena, 2002). Findings from China also show that duty drawback does not help in export promotion (Mah, 2007). Msoni (2018) examined the effect of the duty drawback scheme on Zambian exports from 2008 to 2016 by utilizing the ARDL approach, finding a long-run relationship between the exports and the scheme. However, the study revealed that the duty drawback scheme did not promote exports, likely due to rent-seeking behaviors and inefficiencies in the scheme's administration.

Nasrin and Yusuf (2023) critically examined the Bangladesh Customs Duty Drawback Regulations, highlighting significant loopholes in the Customs Act of 1969 and the VAT Act of 2012. Their study, based on qualitative research methods, revealed inadequacies such as the absence of operational customs rules for duty drawback, lack of clear instructions regarding the stability of Input-Output Coefficients, and the absence of acknowledgment for duty drawback within the VAT and SD Act.

Hatta (2018) explores an ideal tariff system in a small open economy with limited resources, focusing on the role of duty drawback to increasing the exports and utilization as a tool of trade policy. The research demonstrates that the best mixture of tariffs and duty drawbacks for a specific revenue level is not the same. Additionally, it establishes that if the optimal import tariff rates are positive when there is no duty drawback, they will remain positive even after the duty drawback rate is introduced.

On the other hand, evidence from Columbia shows that giving duty drawback has significant impacts on a country's exports and gives impetus to exported quantities. Using a comprehensive DID method with a comprehensive firm-country-product-year level database, López (2022) estimates the effect of input-duty reductions on export outcomes. The findings reveal that reducing input duties enhances export quantities and diversifies product varieties, particularly for goods not directly benefiting from the policy.

Mariel and Minner (2015) examine how more tariffs and difficult customs measures influence global automotive production strategies, emphasizing the role of duty drawbacks in reducing overall duty expenditures when imported raw materials are used in the production of goods for export. Their study develops a mixed-integer model to optimize production capacity and duty management in multi-stage processes. The findings of the study reveal the substantial financial effects of duties and drawbacks, offering insights into effective production network design.

Regional trade agreements (RTAs) play a role in enhancing trade by reducing tariffs and other trade barriers. However, firms operating under alternative tariff regimes, such as duty drawback (DD) systems, may experience different trade effects when RTAs come into force. Hayakawa et al. (2024) explore this dynamic by examining how firms in Thailand adjust their import behavior when switching from a DD regime to an RTA regime. Study findings suggest that the presence of DD regimes can significantly influence the magnitude of RTAs' impact on trade, particularly in economies where firms are already benefiting from other tariff reduction mechanisms.

Lee and Yim (2015) investigate the impact of Korea's export assistance mechanisms, focusing on export insurance, trade exhibitions, and duty drawback systems. Utilizing time series analysis, their empirical findings reveal that export insurance and trade exhibitions do not significantly influence export levels. In contrast, the duty drawback system is shown to have a favorable and notable impact on export promotion.

Bangladesh's Ready-Made Garments (RMG) industry thrived due to an elaborate incentive package of duty drawbacks in the 1990s (Rahman & Chowdhury, 2020). Many countries offer duty drawbacks during a tariff conflict and voluntarily implement duty drawbacks to avoid export taxes. The welfare cost of the global tariff war could be greater without duty drawbacks (Lashkaripour, 2021).

Based on the review of research articles, it is evident that there are mixed views on the effect of duty drawbacks on the exports of a country. Thus, some avenues have yet to be traversed to find a correlation between exports and duty drawbacks.

Moreover, the researchers have utilized different types of models in estimating the effect of duty drawbacks and other similar regulations on exports. To name a few: Difference in Difference, First Difference, simple OLS regression, etc. It is noteworthy to state that most of the research on the topics has covered the outcome of duty drawback on the exports of a country holistically, failing to measure the impact at the microenterprises-level like small and medium-sized enterprises. However, unprecedented to others, this research has gauged the impact of duty drawbacks on a small and medium sector i.e. surgical sector of Pakistan. This is owing to the fact that small and medium enterprises are considered an engine of growth for an economy. Therefore, a positive impact of duty drawback will have a domino effect on large-scale enterprises that utilize inputs from these small and medium enterprises in the production of their export-related items.

In addition, no previous research has been conducted on duty drawback policies in Pakistan, leaving a gap in the literature. Furthermore, each country has unique economic, geographic, and industrial characteristics, so research on other countries may not be directly applicable to Pakistan's circumstances. Therefore, this study will provide valuable insights for policymakers and contribute to the academic literature.

4. Data and Methodology

4.1 Data

The research uses panel data for the exports of surgical goods. The policy of duty drawbacks implemented by the Ministry of Commerce of Pakistan contains fifty-one (51) surgical goods. The research uses the panel data for each of these 51 surgical goods pooled over 2017 and 2021. These fifty-one surgical goods are classified as treatment groups. On the other hand, the other surgical goods (control group) that are not subjected to the policy of duty drawbacks have their export values pooled for the years 2017 and 2021. This comprises the control group in our research. Moreover, the data is fetched from the official website database of Trade Map, International Trade Centre UNCTAD/WTO which is an open source of world trade data at country, product, and even region level.

4.2 Methodology

To investigate the connection between export trade and corporate technological innovation among listed companies in China, Zhou et al., (2021) employ a multiphase difference-in-differences (DID) model. Ferguson & Forslid (2019) used the DID model for estimation to assess the trade promotion policy via the Norway foreign service. Zhang et al., (2020), who investigated the influence of environmental policies on export behavior in China utilized the DID estimation technique. To assess the productivity of China's tax rebate policy on its textile exports to the USA, Bao et al., (2017) preferred DID techniques, similarly, Cheng et al., (2021) preferred the DID regression technique over others to test diverse effects of finance on firm exports in the context of China's export deregulation following WTO accession. Thus, this study is also going to use the DID technique for estimation.

$$\text{exportvalues}_{it} = \beta_0 + \beta_1 * \text{treatment}_i + \beta_2 * \text{post_policy}_t + \beta_3 * \text{DID} + \varepsilon_{it} \quad (1)$$

Where, exportvalues_{it} is dependent variable) that refers value of annual exports of surgical goods i in year t in 1000 US Dollars. treatment_i is the group dummy variable for the surgical goods that undergo the duty drawback policy and it takes the value of 1 for the goods that are treated and 0 for the control surgical goods, that do not take treatment. post_policy_t is the period dummy variable i.e. $=1$ for the post duty drawback policy period of year=2021. DID is the interaction term of treatment_i and post_policy_t , and measures the average treatment effect of the policy. ε_{it} is error term.

The research uses the DID econometric models along with the inverse weight of propensity score using Firthlogistic regressions (Puhr et al., 2017) to predict the values of the treatment group and find a nonlinear relationship between the treatment and exchange rate and duty drawback. Initially, the treatment variable is regressed on the explanatory variables' duty drawback, and exchange rate by using Firthlogistic regressions, later on, the propensity score is calculated based on the estimated Firthlogistic regressions. Finally, the inverse of the predicted probabilities (pscore) is done for assigning weights to each observation. This was done to check for a nonlinear relationship between the dependent variable (treatment dummy==1) and explanatory variables: exchange rate and duty drawback.

These weights are then used in the DID model for gauging the effect of the policy of duty drawback in increasing

exports of surgical goods. The equations are as under:

$$\text{Logit (P (treatment=1 | X1=exchange rate, X2=duty drawback) = f (\beta X \text{ exchange rate, duty drawback})$$

Where, treatment is the group dummy variable for the surgical goods that undergo duty drawback policy, its value is 1 for the treatment group and 0 for the control group. exchange rate is exchange rate is the annual proportion of Pakistan rupee in US dollars for the years 2017 and 2021. duty drawback is the rate of duty reimbursement given to each surgical good in percentage. $f (\beta X \text{ exchange rate, duty drawback})$ is the Firthlogistic function that takes into the account exchange rate and duty drawback rate and predicts probabilities for treatment==1 and to check nonlinearities

After predicting probabilities (score) through logistic regression and taking their inverse weights the second DID model is given as follows:

$$\text{exportvalues}_{it} = \beta_0 + \beta_1 * \text{treatment}_i + \beta_2 * \text{post_policy}_t + \beta_3 * \text{DID} + \beta_4 \text{ weight} + \varepsilon_{it} \quad (2)$$

Where, exportvalues_{it} is value of annual exports of surgical goods i in year t in 1000 US Dollars. treatment_i is the group dummy variable for the surgical goods that undergo duty drawback policy and it takes a value of 1 for the goods that are treated and 0 for the control surgical goods. post_policy_t is the period dummy variable i.e., =1 for the post duty drawback policy period of year=2021. DID is the interaction term of treatment_i and post_policy_t , and measures the average treatment effect of the policy. Weight is inverse weight of p score calculated through logistic regression.

5. Results and Discussion

Table 1: Impact of Duty Drawback Policy on Exports of Surgical Goods from Pakistan Using DID

	(1)	(2)
	DID without Weighted Propensity Score	DID with Weighted Propensity Score
treatment	6355.3 (7629.0)	-13758.9** (6782.8)
Post_policy	-630.0 (7629.0)	2984.1 ((6428.8)
DID	1780.6 (10789.0)	21894.8** (9337.0)
Weight		267801.0*** (29270.0)
Cons	834.0 (5394.5)	-2780.1 (4554.4)
No. of observations	204	204
Prob>F	0.608	0.00
	F (3200) =0.61	F (4,199) =21.58
Std error in parenthesis=	*p<.10	**p<.05 ***p<.01

Source: Author’s Estimations

Table 2: Comparison of the Two Models (DID with and without Weighted Propensity Score)

If treatment==1 firthlogit treatment exchange rate duty drawback

Initial:	Penalized log-likelihood	=	-139.6451
Alternative:	Penalized log-likelihood	=	-146.04757
Rescale:	Penalized log-likelihood	=	-139.6451
Interaction 0:	Penalized log-likelihood	=	-139.6451

Interaction 1:	Penalized log-likelihood	=	-73.5597	
Interaction 2:	Penalized log-likelihood	=	-73.4790	(not concave)
Interaction 3:	Penalized log-likelihood	=	-73.33	(not concave)
Interaction 4:	Penalized log-likelihood	=	-73.3199	
Interaction 5:	Penalized log-likelihood	=	-73.2512	
Interaction 6:	Penalized log-likelihood	=	-73.1974	
Interaction 7:	Penalized log-likelihood	=	-73.1974	
Interaction 8:	Penalized log-likelihood	=	-73.1974	
		No. of obs	=	204
		Wald chi2(2)	=	21.28
Penalized log-likelihood =	-73.1974	Prob > chi 2	=	0.0000

treatment	coefficient	Standard error	Z	P > Z	[95% confidence interval]	
Exchange rate	154.491	47.80879	3.23	0.001	60.78751	248.1945
Duty drawback	3.0898	.6698029	4.61	0.000	1.777031	4.40261
cons	-13.9041	4.280179	-3.25	0.001	-22.39319	-5.515195

Source: Author’s Estimations

Table 3: Showing Firth Logistic Regression

Source	SS	Df	MS	Obs No.	=	204
Model	9.0611e+10	4	2.2653e+10	F(4, 199)	=	21.58
Residual	2.0894e+11	199	1.0499e+09	Prob>F	=	0.0000
Total	2.9955e+11	203	1.4756e+09	R-square	=	0.3025
				Adj R-sq	=	0.2885
				Root MSE	=	32403

exportvalues	Coefficient	Std.err	T	p> t	[95% conf. interval]	
Treatment	-13758.85	6782.821	-2.03	0.044	-27134.28	-383.4234
Post_policy	2984.062	6428.811	0.46	0.643	-9693.273	15661.4
DID	21894.77	9337.036	2.34	0.020	3482.545	40307
Weight	267801	29269.95	9.15	0.000	210081.9	325520.1
cons	-2780.121	4554.429	-0.61	0.542	-11761.26	6201.015

Source: Author’s Estimations

It is noted that the regression results as per model no.1 show insignificant results. The coefficients on treatment post_policy DID are also insignificant. This shows that the policy of duty drawback on average does not have a significant impact on the increase of exports of the treated group compared to the control group. It is clear from the outcomes that the goodness of fit of Model 1. is very small i.e. 0.68 may not adequately capture the complexity of the relationship between the duty drawback policy and exports.

However, the economic significance implied that there is a significant impact of the policy intervention as the exports of surgical goods of the treated group have increased. Furthermore, owing to the small sample size, the study moved to an advanced model 2.

In model 2, the study used difference and difference with the weighted propensity score to remove potential bias and improve the precision of the estimates. The estimation result showed an improved model with an improved goodness of fit as evident from the F-Statistic value of 21.58 provides a more robust framework to measure the impact of the policy. Based on the regression results from Model No. 2, it is interpreted that the policy of duty

drawback has a positive and significant effect on the exports of surgical goods and this is aligned with many earlier studies (Lee & Yim, 2015; Mariel & Minner, 2015; Park, 2012). The coefficient on DID shows the value of 21894.8 which is significant at a 5% significance level keeping other explanatory variables constant, owing to the duty drawback policy of Pakistan. The treated group in the surgical sector experienced an increase in the value of 21894.8 in US\$1000 as compared to the control group. This increase is attributed to the implementation of the duty drawback policy, which helps exporters by reimbursing a portion of the duties paid on imported raw materials used for production. Overall, the Duty Drawback scheme boosted the exports of surgical goods and played a crucial role in stabilizing the economic growth of Pakistan.

6. Conclusion and Policy Recommendations

To conclude, it is stated that a number of research have been carried out to fathom the impact of duty drawback policy on exports. However, there have been mixed views on the impact, some support the fact that the policy plays a quintessential role in increasing the exports, while others downplay this view. Moreover, different models have opted to check the view.

In this research, by conducting research through differences in difference, the results came out to be insignificant. Furthermore, by using a concoction of Difference in differences with weighted Propensity, the model was improved with higher goodness of fit and significant values with positive impacts of policy on the annual export values. Thus, the model, illustrates that the duty drawback policy has significantly increased annual exports of treated surgical goods as compared to the control surgical goods.

The study's findings indicate that the duty drawback scheme enhances the export of surgical items and has a favorable impact. Therefore, policymakers should extend the duty drawback policy to cover other low-export surgical items, as well as similar manufacturing sectors, to further boost the country's exports. Additionally, the scope of the duty drawback scheme should be expanded to other manufacturing industries, such as sports goods, garments, leather, and information technology, to help transform Pakistan's economy into an export-oriented one.

References:

- Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate behavioral research, 46*(3), 399-424.
- Bao, Q., Hou, J., Li, K., & Wang, X. (2017). The impact of tax rebates on export performance: China's textile exports to the USA. *Asian-Pacific Economic Literature, 31*(1), 79-89.
- Barro, R. J. (1997). *Macroeconomics*. MIT Press.
- Cheng, D., Hu, Z., & Tan, Y. (2021). Heterogeneous impacts of finance on firm exports: Evidence from export deregulation in a large developing country. *The World Economy, 44*(11), 3326-3350.
- Fan, H., Li, Y. A., & Yeaple, S. R. (2015). Trade liberalization, quality, and export prices. *Review of Economics and Statistics, 97*(5), 1033-1051.
- Ferguson, S., & Forslid, R. (2019). Sizing up the impact of embassies on exports. *The Scandinavian Journal of Economics, 121*(1), 278-297.
- Government of Pakistan, Ministry of Commerce & Textile (Commerce Division). (2018, June 8). S.R.O. 711(1)/2018. Retrieved from <https://www.commerce.gov.pk/wp-content/uploads/2018/06/SRO.pdf>
- Hatta, T. (2018). Revenue-Constrained Combination of an Optimal Tariff and Duty Drawback. *Frontiers of Economics in China, 13*(1), 52-67.
- Hayakawa, K., Laksanapanyakul, N., & Mukunoki, H. (2024). The trade effect of regional trade agreements in the presence of duty drawbacks. *The World Economy*.
- Heinze, G., Ploner, M., Dunkler, D., Southworth, H., & Heinze, M. G. (2023). Package 'logistf'.
- Ianchovichina, E. (2004). Trade policy analysis in the presence of duty drawbacks. *Journal of Policy Modeling, 26*(3), 353-371.
- Ianchovichina, E. (2007). Are duty drawbacks on exports worth the hassle?. *Canadian Journal of Economics/Revue canadienne d'économie, 40*(3), 881-913.
- Lashkaripour, A. (2021). The cost of a global tariff war: A sufficient statistics approach. *Journal of International Economics, 131*, 103419.

- Lee, S. Y., & Yim, B. J. (2015). Effect of Korea's Export Assistance System on Export Promotion. *Journal of International Trade & Commerce*, 11(6), 53-65.
- López, D. C. (2022). Duty Drawbacks, Imported Inputs Duties and Exports: Evidence from Firm-Level Data from Colombia. *Revista de economía del Rosario*, 25(2), 2.
- Mah, J. S. (2007). The effect of duty drawback on export promotion: The case of Korea. *Journal of Asian Economics*, 18(6), 967-973.
- Mariel, K., & Minner, S. (2015). Strategic capacity planning in automotive production networks under duties and duty drawbacks. *International Journal of Production Economics*, 170, 687-700.
- Mohamed Sghaier, I. (2023). Trade openness, financial development and economic growth in North African countries. *International Journal of Finance & Economics*, 28(2), 1729-1740.
- Msoni, J. (2018). The impact of the duty drawback scheme on exports: The case of Zambia. *International Journal of Multidisciplinary Research and Development*, 5(5), 14-18.
- Nasrin, K., & Yusuf, M. A. (2023). A Critical Analysis of the Bangladesh Customs Duty Drawback Regulations. *AIUB Journal of Business and Economics*, 20(1), 30-43.
- Odor, L., & Kucserova, J. J. (2014). *Finding Yeti: More robust estimates of output gap in Slovakia* (No. WP 1/2014). Research Department, National Bank of Slovakia.
- Park, H. H. (2012). The Duty Drawback Scheme as an Export Incentive and Export Demand in Korea. *Journal of Korea Trade*, 16(1), 39-47.
- Pesaran, H., & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration “chapter 11. In *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*. Cambridge University Press Cambridge.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, 16(3), 289-326.
- Puhr, R., Heinze, G., Nold, M., Lusa, L., & Geroldinger, A. (2017). Firth's logistic regression with rare events: accurate effect estimates and predictions?. *Statistics in medicine*, 36(14), 2302-2317.
- Quaye, D. M., Sekyere, K. N., & Acheampong, G. (2017). Export promotion programmes and export performance: a study of selected SMEs in the manufacturing sector of Ghana. *Review of International Business and Strategy*, 27(4), 466-483.
- Rahman, K. M., & Chowdhury, E. H. (2020). Growth trajectory and developmental impact of ready-made garments industry in Bangladesh. *Bangladesh's Economic and Social Progress: From a Basket Case to a Development Model*, 267-297.
- Sobirov, Y., Jeong, J. Y., Karimov, M. U. U., & Bekjanov, D. (2023). Do FDI and trade openness matter for economic growth in CIS Countries? Evidence from panel ARDL. *Journal of East-West Business*, 29(4), 345-374.
- Zhang, Y., Cui, J., & Lu, C. (2020). Does environmental regulation affect firm exports? Evidence from wastewater discharge standard in China. *China Economic Review*, 61, 101451.
- Zhou, D., Peng, J., & Gao, X. (2021). Examining export trade and corporate innovation: A multiphase difference-in-differences method. *China Journal of Accounting Research*, 14(2), 207-230.

Acknowledgments

I would like to acknowledge the continued support and guidance of my academic supervisor, Associate Professor Huang Chien-Yu of the International University of Japan. The authors are grateful for the support of anonymous reviewers.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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