







“Impact of foreign trade and foreign direct investment on economic growth: Empirical insights from Nepal”

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IMPACT OF FOREIGN TRADE AND FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH: EMPIRICAL INSIGHTS FROM NEPAL

Abstract

This study aims to examine the impact of foreign trade and foreign direct investment on Nepal's long-term economic growth. It uses secondary data from 1989/90 to 2021/22 collected from various economic surveys of the Ministry of Finance of Nepal. Descriptive and explanatory research designs are used in this study. The trace, max-eigen tests, and fully modified least square methods search the long-run co-integration and impact between response and predictor variables. Trace and max-eigen tests consistently point toward the long-run co-integration between dependent (gross domestic product) and independent (import, export, total trade, and foreign direct investment) variables. Exports and imports are found to be negative and statistically significant to explain Nepal's economic growth. One unit increase in exports results in a 0.748 unit decrease in Nepal's economic growth. Similarly, total trade volume and foreign direct investment positively impact economic growth. Each unit increase in foreign direct investment results in a 0.0036 unit increase in GDP in Nepal. Foreign trade has a multiplier effect on Nepal's GDP growth. The 76.35 percent variation in economic growth depends upon total foreign trade volume, exports, imports, and foreign direct investment. To promote sustainable economic growth, policymakers should prioritize policies encouraging increased total foreign trade and foreign direct investment while carefully managing the potential negative impact of excessive reliance on import dynamics.

Keywords

trade volume, trade-led growth hypothesis, exports, imports, protectionism

JEL Classification

F40, F43, F63

INTRODUCTION

Amidst the age of globalization, the interdependent connection between international trade, foreign direct investment, and economic growth has gained significant importance in determining the prosperity of countries. The increasing interconnection of nations and the integration of economies have made the influence of international trade and foreign direct investment on a country's economic path a matter of utmost importance. The trade-led growth hypothesis posits that foreign trade plays a vital role in the economic growth of a nation. An increase in exports can lead to higher economic growth by reaping the benefit of economies of scale, technology transfer and innovation, production diversification, foreign currency earnings, and employment generation. It also helps boost the government's tax revenue. In addition, trade openness increases economic upsurge by promoting gross capital formation and stimulating the labor force (Islam, 2021). The resource flow from developed to developing economies drives an economic upswing through trade openness (Shahbaz, 2012).

Improved transportation and communication facilities have opened new international markets for exchanging goods and services. Global cooperation among economic partners through foreign trade is essential for long-term sustainable economic development.

International trade drives technological advancement, investment, and market growth in Nepal. Exporting textiles, carpets, handicrafts, medicinal plants, and tourism services has increased output, employment, and revenue. Trade hurdles include high transportation costs, infrastructure constraints, bureaucratic procedures, and limited international market access. Due to Nepal's strong import dependence, insufficient export diversification, and infrastructure restrictions, its trade imbalance is significant (Acharya, 2019; Chhetri, 2022; Sharma & Bhandari, 2006). Nepal has joined regional trade agreements to solve these issues and sought trading prospects with other nations (Pokhrel, 2022). The foreign trade-driven economic growth remains questionable in Nepal. Hence, Nepal's foreign trade effects must be better evaluated using the available dataset.

Foreign direct investment is the act of a foreign entity, such as an individual, business, or government, investing in the productive assets of a different country. These assets encompass tangible assets like factories and equipment and intangible assets such as technology, intellectual property, or managerial expertise (Kayani et al., 2021). Foreign direct investment plays a pivotal role in economic growth by facilitating capital inflows, technology transfer, and managerial knowledge, contributing to increased productivity and job creation in the host country (Shahbaz & Rahman, 2012). Foreign direct investment fosters global economic integration, promoting access to new markets and stimulating overall development by infusing foreign capital and resources (Frankel & Romer, 1999).

1. LITERATURE REVIEW

Numerous empirical and theoretical studies have examined the link between economic growth and foreign trade. Numerous studies have noted a long-term association between gross domestic product, exports, and international trade, but they have yet to determine whether imports have a beneficial or harmful impact.

According to the trade-led growth hypothesis, a nation can achieve higher economic growth by increasing its exports rather than relying solely on domestic demand. The rationale behind this idea lies in the potential benefits of international trade, such as access to larger markets, technological spillovers, and increased specialization (Helpman et al., 2004; Imbs & Wacziarg, 2003; Rodrik, 2018; Romer, 1993; Orhan et al., 2022). Furthermore, it suggests that countries should focus on producing goods and services with a comparative advantage over other nations and then trade them to maximize overall economic welfare. The arguments against the association between foreign trade and economic growth posit that international trade can lead to inflationary pressures and a decline in exchange rates. In export-based economies, deval-

uing their currencies is often employed to boost exports of low-quality products (Islam, 2021).

The import-led growth (ILG) hypothesis states that imports can foster economic growth by introducing quality inputs that enhance productivity and efficiency in domestic production. Furthermore, it amplifies the need for imported resources and boosts households' demand for imported goods (Caliendo & Rossi-Hansberg, 2012; de Souza Nonato & Carrasco-Gutierrez, 2023). In addition, it stimulates innovation and productivity by exposing the economy to new ideas and technology from foreign sources. Moreover, ILG creates opportunities for foreign direct investment and encourages domestic firms to become more efficient and competitive.

Islam (2021) found that foreign trade has a favorable effect on Saudi Arabia's economic growth. This phenomenon was noticed in both the short-term and long-term durations. The study provided evidence that the trade-led growth hypothesis is valid when applied to the setting of Saudi Arabia. Similarly, Çoban et al. (2020) provided evidence supporting the trade-led growth hypothesis, revealing a notable and meaningful association be-

tween trade and authentic gross domestic product. Adeleye et al. (2015), Bajo-Rubio (2022), Bashir and Ibrahim (2022), Belloumi (2014), and Busse and Königer (2015) have reached the same conclusion of a causal relationship between foreign trade and economic growth. Likewise, Chaudhary et al. (2016), Eriş and Ulaşan (2013), Hayat (2018), Islam (2021), Purnama and Yao (2019), Rahman and Mamun (2016) found the validity of the traded growth hypothesis. Shahbaz (2012), Tang (2013), Uddin et al. (2017), Vamvakidis (2002), and Zahonogo (2017) observed the strong association between foreign trade and economic prosperity.

In contrast, Araujo et al. (2015) found the absence of a bi-directional link between foreign trade and economic growth. Likewise, employing the panel causality approach, Menyah et al. (2014) proved that foreign trade and financial growth have not significantly affected the nation's economic prosperity.

In the Nepalese context, Acharya (2019) highlighted how foreign trade plays a vital role in advancing the nation's economic progress. The study revealed that a one percent rise in international trade resulted in a 0.61 percent rise in gross domestic product. Likewise, Sharma and Bhandari (2006) also found a notable impact of foreign trade on Nepal's economic growth. In addition, Magar (2021) examined the effect of foreign trade on Nepal's economic growth. The study concluded that exports and imports propel economic growth. However, export trade was more detrimental than import trade. Pokhrel (2022) noted that overseas trade boosts the Nepalese economy.

Makki and Somwaru (2004) observed that foreign direct investment stimulates domestic investment and contributes to developing countries' economic growth. Kayani et al. (2021) marked foreign direct investment's vivacious and significant impact on gross domestic product and exports. In contrast, foreign direct investment has insignificant effects on employment and capital formation. Darwin et al. (2022) examined the positive impact of foreign direct investment on economic growth in developing countries. Likewise, Abidin et al. (2015), Sriyana (2019), and Zeeshan et al. (2020) observed the positive and significant impact of foreign direct investment on economic growth. In develop-

ing countries, import, export, total foreign trade, and foreign direct investment collectively play a pivotal role in driving economic growth by fostering international integration, boosting productivity, and attracting capital inflows. These factors contribute to increased market access, technology transfer, and job creation, ultimately fueling economic development. Many researchers have found significant and insignificant impacts of foreign trade on economic growth based on their data and countries. However, the positive effects of foreign direct investment on economic growth are observed.

The present study searches the individual and joint effects of foreign trade and foreign direct investment on economic growth in developing countries like Nepal.

2. METHOD

The descriptive and explanatory research designs are foundational frameworks for a comprehensive investigation. Secondary data about concerned economic indicators, such as gross domestic product, export and import value, total foreign trade volume, and foreign direct investment, have been harnessed in this context. These data points have been systematically sourced from various economic surveys of Nepal and official publications from the Central Bank of Nepal.

It covers the data of 34 fiscal years from 1989/90 to 2021/22. The economic growth or increase in gross domestic product is taken as a response variable, and imports, exports, total trade volume, and foreign direct investment are taken as predictor variables. The economic growth, or increase in gross domestic product (*GDP*), is the function of exports (*EXT*), imports (*IMP*), total foreign trade volume (*TTV*), and foreign direct investment (*FDI*). In this sense,

$$\begin{aligned} \text{Gross domestic product (GDP)} & \quad (1) \\ & = f(\text{EXT}, \text{IMP}, \text{TTV}, \text{FDI}). \end{aligned}$$

After converting import, export, total foreign trade, and gross domestic product in the logarithmic form. Ln refers to the natural log of concerned variables.

$$\text{LnGDP} = f \left(\begin{matrix} \text{LnEXT}, \text{LnMP}, \\ \text{LnTTV}, \text{FDI} \end{matrix} \right). \quad (2)$$

In simple regression form:

$$\text{LnGDP} = \beta_0 + \beta_1 \text{LnEXT} + \beta_2 \text{LnIMP} + \beta_3 \text{LnTTV} + \beta_4 \text{FDI} + \mu_t. \quad (3)$$

In equation 3, β_0 represents the regression line's intercept. β_1 , β_2 , β_3 , and β_4 are the coefficients of exports, imports, total foreign trade amount, and foreign direct investment, respectively. μ_t is the error term.

Fully modified least squares allow for fractional integration orders. In the context of mixed-frequency data, fractional integration can be beneficial to capture the long-term relationships between variables with different integration orders (Banerjee et al., 1993). Fully modified least squares assumes a cointegrating relationship among the variables, meaning a linear combination is stationary. This is often the case when there is a long-term equilibrium relationship (Saikkonen, 1991).

The fully modified least squares estimator involves regressing the first differences of the dependent variable (ΔY_t) on lagged levels and differences of the independent variable (X_t and ΔX_t), as well as lagged differences of the dependent variable (ΔY_{t-1}).

$$\Delta Y_t = \alpha + \beta_0 Y_{t-1} + \beta_1 \Delta X_t + \beta_2 X_{t-1} + \beta_3 \Delta X_{t-1} + \mu_t. \quad (4)$$

This specification includes lagged levels and differences of the variables to control for potential endogeneity and serial correlation. This equation is developed when the autoregression of the dependent variable is included.

3. RESULTS

Figure 1 displays the trend of five study variables (gross domestic product, export, import, total foreign trade volume, and foreign direct investment) from 1989 to 2022. The maximum and minimum values of gross domestic product, export, import, and total trade volume range from 4851600 to 85831, 237728.4 to 4195.3, 1539837.0 to 16263.7, and 1751427.6 to 20459.0 million rupees, respectively. Gross domestic product, export, import, total trade volume, and foreign direct investment are all increasing with slight variations in some years.

The descriptive statistics for the relevant study variables are displayed in Table 1. The mean and median provide a sense of the central tendency of the data. The standard deviation indicates



Figure 1. Condition of gross domestic product, export, import, total foreign trade, and foreign direct investment from F/Y 1989/1990 to 2021/2022

Table 1. Measures of central values, dispersion, and distribution of variables

Headings	NGDP	IMP	EXT	TTV	FDI
Mean	1309149	376057.50	60527.90	436585.4	44.41
Median	621750	144601.80	62175.00	217612.5	15.00
Maximum	4851600	1539837	237728.40	1751428.	200.00
Minimum	85831	16263.70	4195.300	20459.00	-10.00
Std. Dev.	1408903	447969.10	44825.32	484898.3	61.259
Skewness	1.146	1.419	1.797	1.427	1.387
Kurtosis	3.002	3.795	8.371	3.971	3.934
Coefficient of Variation	107.62%	119.12%	74.06%	111.07%	137.93%
Jarque-Bera	7.453	12.307	59.164	12.880	12.14
Probability	0.02	0.002	0.000	0.002	0.002
Observations	34	34	34	34	34

the amount of variation or dispersion of data. A higher standard deviation suggests a more significant variability of data. The standard deviation of gross domestic product is 1408903, which is more than other variables, so the mean of gross domestic product is less representative, and the mean of foreign direct investment is more suggestive than other variables. The coefficient of variation provides a relative measure of variability. The coefficient of variation of exports is 74.06 percent. So, the export is more consistent, but foreign direct investment is more variable or inconsistent than other variables. Data distribution is positively skewed and platykurtic ($K > 3$). Next, the higher the value, the more likely the data deviates from the normal distribution. However, the Jarque-Bera probability value is less than 0.05. So, the data are not normally distributed.

Table 2 shows the outcome of a correlation analysis between five variables: gross domestic product, export, import, total trade volume, and foreign direct investment. A strong positive correlation (0.805) between gross domestic product and export suggests that as one variable increases, the other also tends to increase. Similarly, a strong positive correlation (0.755) between gross domestic product and import indicates that these variables tend to move together. A robust positive correlation (0.863) between gross domestic product and total trade volume suggests a high degree of positive association between these two variables. Gross domestic product and foreign direct investment also exhibit a strong positive correlation (0.771), indicating that changes in gross domestic product are associated with changes in foreign direct

investment. The correlation coefficients provide insights into the degree and direction of associations between the variables, which can be valuable for understanding patterns and relationships in the data.

Table 2. Correlation matrix of predictor and response variables

Variables	LnGDP	LnEXT	LnIMP	LnTTV	FDI
LnGDP	1.000	0.805	0.755	0.863	0.771
LnEXT	0.805	1.000	0.896	0.723	0.541
LnIMP	0.755	0.896	1.000	0.877	0.672
LnTTV	0.863	0.723	0.877	1.000	0.669
FDI	0.771	0.541	0.672	0.669	1.000

Table 3 displays the results of Augmented Dickey-Fuller (ADF) tests conducted on five variables: LnGDP, LnIMP, LnEXT, LnTTV, and foreign direct investment (FDI), representing the gross domestic product, import, export, total trade volume, foreign direct investment respectively. Table 3 shows that gross domestic product, import, and foreign direct investment are stationary at the level, as evidenced by the ADF-test statistics for the intercept-only and intercept and trend models.

On the other hand, export requires first differencing to achieve stationarity. The ADF-test statistics for total trade volume suggest it is stationary in level, but only after adding an intercept and a linear trend to the regression model. Gross domestic product, import, total trade volume, and foreign direct investment are stationary in level, and export stands after the first difference. In mixed-frequency data (where some variables are stationary in levels and others are in first differences), fully modified least squares can still be applied with specific considerations (Phillips & Hansen, 1990).

Table 3. ADF test to check the stationarity

Variables	Base	Level		First difference		Decision
		Intercept	Intercept and trend	Intercept	Intercept and trend	
LnGDP	ADF-test	0.933	-4.219	-5.043	-5.019	Stationary in level
	P-value	0.764	0.014	0.0003	0.002	
	t-Stat.	-2.954	-3.603	-2.957	-3.557	
LnIMP	ADF-test	-1.516	-5.367	-4.195	-4.184	Stationary in level
	P-value	0.512	0.001	0.003	0.013	
	t-Stat.	-2.964	-3.553	-2.964	-3.568	
LnEXP	ADF-test	-1.389	-3.245	-2.743	-2.536	Stationary after the first difference
	P-value	0.545	0.094	0.034	0.310	
	t-Stat.	-2.960	-3.557	-2.960	3.557	
LnTTV	ADF-test	-1.859	-5.032	-4.036	-4.092	Stationary in level
	P-value	0.346	0.002	0.004	0.016	
	t-Stat.	-2.964	-3.553	-2.964	-5.568	
FDI	ADF-test	-0.837	-4.232	-10.303	-4.485	Stationary in level
	P-value	0.794	0.011	0.000	0.007	
	t-Stat.	-2.957	-3.553	-2.957	-3.580	

Table 4 presents the trace and max-eigenvalue test results for long-run co-integration. These tests assess the number of cointegrating equations among variables. These tests reject the null hypothesis, saying there is no cointegrating equation because the p-value is 0.0004, less than 0.05. The trace and maximum eigenvalue tests consistently point toward one cointegrating equation at the 0.05 significance level.

Table 5 provides regression results from a fully modified least squares analysis, with the dependent variable (DV) being gross domestic product and several independent variables. The inverse relationship is found between exports and Nepal's gross domestic product. Holding other variables constant, a one-unit increase in export is associated with a 0.748 unit decrease in gross domestic product. The export is statistically significant at a 5 percent level to explain Nepal's gross domestic product in the long run. The import trade is statistically significant (p-value = 0.0002) in determin-

ing Nepal's economic growth. Holding other variables constant, a one-unit increase in import is associated with a 4.081 unit decrease in gross domestic product. The persistent trade deficits (importing more than exporting) can drain a country's resources and negatively impact its economic growth.

Such a reality can be seen in the Nepalese economy. Heavy reliance on exports can make a country vulnerable to economic downturns in its trading partners, affecting its growth. Increased imports can lead to heightened competition, potentially causing job losses in domestic industries, mainly if they cannot compete globally. Total trade volume is also responsible for Nepal's economic growth. Holding other variables constant, a one-unit increase in Nepal's total foreign trade is associated with a 5.723-unit rise in gross domestic product. Foreign trade opens new markets, increasing business opportunities and promoting economic growth. Diversification of markets re-

Table 4. Trace and max-eigen tests for long-run co-integration

Hypothesized: No of CE(S)	Eigenvalue	Trace Method			Maximum Eigen Method		
		Trace statistics	Critical value at 0.05	p-value	Max-eigen stat.	Critical value 0.05	p-value
None	0.7692	90.963	69.818	0.0004	46.924	33.877	0.0008
At most 1	0.4958	44.039	47.856	0.109	21.915	27.584	0.225
At most 2	0.3407	22.124	29.797	0.292	13.330	21.132	0.422
At most 3	0.2095	8.794	15.495	0.385	7.525	14.265	0.429
At most 4	0.0388	1.268	3.841	0.260	1.269	3.841	0.260

Note: Trace and max-eigen tests indicate one cointegrating equation at the 0.05 level.

Table 5. Fully modified least squares test for long-run effect between variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LnEXT	-0.748	0.309	-2.422	0.022
LnIMP	-4.081	0.965	-4.229	0.0002
LnTTV	5.723	1.194	4.794	0.000
FDI	0.0036	0.0009	3.924	0.0005
C	1.6226	1.1927	1.360	0.1845
R-squared	0.7635	Mean dependent var		13.5101
Adjusted R-squared	0.7597	S.D. dependent var		1.1715
S.E. of regression	0.2349	Sum squared residual		1.6013
Long-run variance	0.0693			

Note: Dependent Variable: LnGDP.

duces dependence on a single economy. Trade allows countries to specialize in producing goods and services where they have a comparative advantage, leading to increased efficiency and overall economic growth. Foreign direct investment and gross domestic product are positively related. Holding other variables constant, a one-unit increase in foreign direct investment is associated with a 0.0036-unit rise in gross domestic product. Foreign direct investment often brings advanced technologies and management practices, contributing to increased productivity and innovation, thus fostering economic growth. Foreign direct investment brings in capital, which can be crucial for infrastructure development, research, and other projects that contribute positively to economic growth. Foreign trade and foreign direct investment can stimulate job creation by expanding businesses, supporting industries, and generating employment opportunities in various sectors.

The value of R-squared is 0.7635, which is more than 60 percent. So, the independent variables are jointly significant in determining Nepal's economic growth. The R^2 and Adjusted R^2 values represent the proportion of the variance in the dependent variable (LnGDP) explained by the independent variables. In this case, the model explains approximately 76 percent of the variance. The value of standard error (S.E.) of regression is 0.2349. This represents the standard error of the estimate, indicating the average amount that actual values are expected to deviate from the predicted values. In this case, it is 0.2349 units. Sum squared residual (1.6013) is the sum of the squared differences between the actual and expected values. It indicates the overall fit of the model. Long-run variance (0.0693) measures the long-run volatility or vari-

ability of the dependent variable. The model has a good overall fit, as indicated by the high R-squared value. Each independent variable appears statistically significant in explaining the variation in the natural log of gross domestic product (LnGDP). The fully modified least square regression model for long-run association is estimated as follows:

$$\begin{aligned} \text{LnGDP} = & 1.6226 - 0.7483 \cdot \text{LNEXT} \\ & - 4.0806 \cdot \text{LNIMP} + 5.7227 \cdot \text{LNTTV} \\ & + 0.0036 \cdot \text{FDI}. \end{aligned} \quad (5)$$

4. DISCUSSION

Findings revealed that exports and imports negatively impact economic growth. The coefficient of export and import are negative and statistically significant. Persistent trade imbalances, competition-induced job losses, and vulnerability to global market fluctuations can contribute to the negative impact of exports and imports on economic growth. This finding aligns with the research outcomes reported by Busse and Königer (2015), Eriş and Ulaşan (2013), Orhan et al. (2022), Rahman and Mamun (2016), and Vamvakidis (2002).

Foreign trade has a positive impact on Nepal's economic growth. One unit increase in foreign trade results in more than one (5.7227) increase in Nepal's economic growth. The multiplier effect is observed between total trade volume and economic growth in Nepal. Foreign trade positively impacts economic growth by providing market access, promoting specialization and efficiency, facilitating technology transfer, attracting foreign direct investment, increasing productivity, job creation, and overall economic expansion. The concept of economies of scale, enhanced market

access, and increased specialization in production contribute to a multiplier effect where a one-unit increase in foreign trade can lead to more than one unit increase in economic growth. However, foreign trade has a favorable positive impact on economic growth in Nepal. This finding aligns with the conclusions made by Adeleye et al. (2015), Belloumi (2014), Chaudhary et al. (2016), Hayat (2018), Uddin et al. (2017), and Zahonogo (2017). The finding can be explained by the fact that higher foreign trade stimulates innovation and productivity by exposing the economy to new ideas and technology from foreign sources. Furthermore, it creates opportunities for foreign direct investment and encourages domestic firms to become more efficient and competitive.

Foreign direct investment positively and significantly impacts Nepal's economic growth. One unit increase in foreign direct investment results in less than one (0.0036) unit increase in Nepal's gross domestic product. Foreign direct

investment positively impacts gross domestic product by injecting capital, fostering technological advancements, stimulating job creation, and enhancing overall productivity and efficiency in the host country's economy. The upbeat but weak impact of foreign direct investment on economic growth may stem from factors such as limited technology spillovers, insufficient linkages with local industries, and varying degrees of absorptive capacity in the host country. This finding is also supported by Darwin et al. (2022), Makki and Somwaru (2004), Sriyana (2019), and Zeeshan et al. (2020).

The study offers significant insights into export, import, and overall trade ramifications on Nepal's economic growth. These findings alienate numerous previous studies and support the trade-led growth hypothesis. This study provides a solid foundation for further studies within the Nepalese context by examining foreign trade's short- and long-term impacts on Nepalese economic growth.

CONCLUSION

This study investigated the possible links between gross domestic product, foreign trade, and foreign direct investment in Nepal. The gross domestic product, imports, exports, total foreign trade amounts, and foreign direct investment are increasing with slight variations over a few years. Exports are more consistent than gross domestic product, imports, and total trade volume during 34 years because they have the smallest value of the coefficient of variation. Gross domestic product and foreign trade have a high degree of positive correlation. A long-run association exists between the response (gross domestic product) and predictor variables – export, import, total trade volume, and foreign direct investment in Nepal.

The finding revealed an inverse effect of imports and exports on Nepal's economic growth. So, it is suggested that the import of goods and services be reduced by promoting domestic industries and products. The impact of exports is not found to be positive. This could result in the export of raw materials to international markets. The export of raw materials hurts the country's economic growth. Therefore, the government must utilize the country's raw materials to increase gross domestic product. Industrial, agricultural, and tertiary sectors, including foreign trade, must be developed for economic growth. The total volume of foreign trade and direct investment positively impacts Nepalese economic growth. The policymakers may consider implementing measures to promote and facilitate international trade and attract more foreign direct investment for sustained economic development.

AUTHOR CONTRIBUTIONS

Conceptualization: Arjun Kumar Dahal, Ganesh Bhattarai, Prem Bahadur Budhathoki.

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Formal analysis: Arjun Kumar Dahal, Ganesh Bhattarai, Prem Bahadur Budhathoki.

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