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Inward Foreign Direct Investment induced Technological Innovation in Sri Lanka? Empirical Evidence using ARDL Approach

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Abstract: Fostering innovation is considered one of the key policy priorities in most governments' agendas in developing countries, and foreign direct investment (FDI) is considered a principal resource for financing sustainable development, corresponding to 17 sustainable development goals (SDGs). This study analyzes the extent to which inward FDI affects innovation (proxied with patent applications) in Sri Lanka using secondary data from 1990 to 2019. We used the Autoregressive Distributed Lag (ARDL) cointegration procedure to examine the long-run relationships between variables. As per the study results, the coefficient of inward FDI is a negative sign while the coefficients of per capita gross domestic product (GDP) and high technology exports (HEX) show positive signs 2.142 and 0.414, respectively, and statistically significant in the long run. It is demonstrated that per capita GDP and high technology exports are an important variable in explaining technological innovation, and inward FDI and education expenditure (EDU) did not contribute towards widening technological innovation in Sri Lanka. Shaping the future of FDI in Sri Lanka is essential to foster innovation capability.

Keywords: Foreign direct investment; technological innovation,ARDL approach

1. Introduction

Foreign direct investment (FDI) is considered one of the effective channels of technology transmission across borders since FDI's inflow contains knowledge about new technologies and materials, production methods, or organizational management skills [1]. Furthermore, FDI is an essential pillar of economic development policy, and most countries in the world have established national investment promotion agencies (IPAs) to attract FDI. Foreign direct investment contributes to sustainable development in several ways. It directly impacts increasing capital investment, exports, employment, and tax revenue while it generates an indirect impact on local suppliers, technology transfer, productivity, innovation, and good governance. It can also support local industry upgrading in host economies and facilitate their participation in the global value chain [2–4].

On the other hand, the importance of FDI has emerged from multinational corporations' (MNCs) role in creating positive externalities in economic growth through providing financial resources, creating jobs, transferring technological know-how, managerial and organizational skills, and enhancing competitiveness [5,6]. Today, the importance of FDI has increased as it is a form of technology transfer and market network that can affect global production and sales [7]. According to the United Nations Conference on Trade and Development (UNCTAD) data, It is evident that Foreign capital globalization, enormously FDI inflow, has increased significantly in developing countries during the last years compared with developed countries. Most developing countries believe that FDI's principal benefits are embodied in increasing their technological and scientific capacities and narrowing the technological gaps between them and developed countries. FDI contributes to technological progress in developing countries and is an essential factor for the technology inflows that can create and strengthen overall technological capabilities [8].

Technological innovation can define as a fundamental driver of economic growth and human progress. Nowadays, international production is a common fact through foreign direct investment due to technological advancement.

The literature on FDI and economic growth has emphasized the importance of innovation for economic development. FDI often leads to technology transfer through multinational firms in the host countries. New technology can be acquired from research and development (R&D) or learning from the existing technology generated by others [9]. FDI can stimulate technology transfer, which tends to increase the productive efficiency of factors. It is logical to think that increases in technology translate into improved labor force's improved productivity, which, in turn, results in increased capital yield [10]. Furthermore, Berger and Diez (2008) stressed that FDI might stimulate technological innovation in host countries through various channels such as competitive effect, demonstration effect, human capital formation effect, knowledge diffusion through the brain, backward linkages, and forward linkages [11].

Empirical studies show different outcomes of FDI on innovation. Mohamed et al. (2021) aimed to test the relationship between FDI, technological innovation, and economic growth in Egypt (1990-2019) using the autoregressive distributed lag (ARDL) model. They found a significant positive relationship between inward FDI and capital formation and, inflation and innovation index had a negative impact on economic growth. [12]. Ustalar and Sanlısoy (2020) found that the FDI to Turkey increases local investors' innovative performance but does not significantly impact foreign investors.FDI is more effective on domestic firms' innovation performance, and the economic policy of Turkey should enhance FDI to accelerate the domestic producer's transfer of innovation [13]. Nyeadi and Adjasi's study (2020) investigated the impact of inward FDI on host firms' innovation in Nigeria and South Africa. The empirical findings revealed that FDI contributes positively to firms' product and process innovation in Nigeria. These positive effects occurred through the transfer of knowledge, technology transfer, and capital injection into host firms. They found no significant impact between FDI and product and process innovation in South Africa due to foreign firms partly acquiring foreign firms' ownership [14]. Rahman and Oh (2020) show that FDI is a breadwinner of technology, capital, and modern management needs using 21 Asian countries from 2002 to 2017 [15]. Ismail (2013) confirmed that the innovation carried by FDI through production linkage is a complement to higher in high- tech exports while importing countries' innovation initiated through the learning process of importing is getting strength and reducing import of high-tech product in Asian countries [16]. Dhrifi's study (2018) empirically proved that technological innovation plays a vital role in determining foreign direct investment–economic growth relationship [17]. Bayramoglu and Abasiz (2017) explored the effects of foreign direct investment inflows and technological innovations on export performance in ten host developing Asian countries. The empirical results reveal that the foreign direct investments, per income and patent applications, have a positive and statistically significant impact on export performance. Also, results indicate that patent applications' impact is more significant than the foreign direct investments on exports [18].

FDI frequently comes with new technologies and innovations, and they are an essential source of productivity growth. Because FDI helps host country domestic industries develop with the international technology frontier [19]. Sivalogathasan and Wu (2014) found R&D expenditure is a significant determinant of innovation capability and knowledge generation process with human resources subsidize to domestic innovation capability, and intellectual property rights should be strengthened to attract more technology-driven FDI and encourage innovation [20]. In 2013 Garcia et al. (2013) found inward FDI negatively related to local firms' innovativeness and identified the distinction between innovation and productivity. They interpreted inward FDI helps to drives the production possibility frontier of local firms, but inward FDI does not help firms to be more innovative [21]. Chen's study (2007) evidenced that more FDI will not bring higher innovation. The results manifest the way for improving regional innovation, suggesting increasing domestic research and development, improving innovation capability and absorptive capacity in the domestic firm, and acquiring the stock of human capital [22]. Cheung and Lin (2004) revealed that the demonstration effects of FDI are strong for minor innovation in China [23].

Finally, the empirical literature shows mixed results on the impact of FDI on innovation due to differences in research objectives, variables, estimation methods, period, data types, number of countries, provinces, cities, and firms considered, and considered control variables. We believe that country-specific studies are imperative for each country to identify the effects of FDI on innovation. Hence, the main objective of this study is to examine the effects of inward FDI on innovation in Sri Lanka.

2. Materials and Methods

This study analyzes the extent to which inward FDI affects innovation in Sri Lanka. This study used five variables for the analysis. We collected the relevant data from the World Development Indicators (WDI) and the National Intellectual Property Office's statistics(NIPO) in Sri Lanka. The long-run empirical model reflecting the impact of inward FDI on innovation capability is specified following equation. The model was modified from the structural formula of Cheung and Lin (2004), Chen (2007), and Sivalogathasan and Wu (2014) [20,22,23].

The proposed model to discuss the effects of inward FDI on technological innovation can be specified as the following econometric model.

$$LnTI_t = \beta_0 + \beta_1 LnFDI_t + \beta_2 LnPGDP_t + \beta_3 HEX_t + \beta_4 LnEDU_t + \varepsilon_t \text{..........................} \quad (1)$$

Where;
$Ln\ TI_t$ = Logarithm form of patent applications
$LnFDI_t$ = Logarithm form of Inward Foreign Direct investment
$LnPGDP_t$ = Logarithm form of per capita GDP
HEX_t = High-technology Export as a percentage of GDP
$LnEDU_t$ = Logarithm form of Education expenditure
ε_t =Error term

The variable for technological innovation equivalent total number of patent applications as the dependent variable, and the explanatory variables are inward FDI, per capita GDP, high-technology export as a percentage of GDP, and Education expenditure. The amount of inward FDI used to measure comprehensively capture its effect on innovation. We include per capita GDP to account for the fact that innovation capabilities may be different at different stages of economic growth in an economy. As seen in the literature, most researchers widely use research and development (R & D) expenditure as an input to innovation in an economy. Due to the unavailability of the data on research and development expenditure in Sri Lanka, We include high-technology export as a percentage of GDP, as a proxy for research and development expenditure. High-technology exports reflect high R & D intensity in the export sector in an economy. This study uses annual time series data in Sri Lanka covering the period of 1990 to 2019 and, we used E-Views 10 statistical program to conduct all tests included in this analysis.

We applied the autoregressive distributed lag (ARDL) cointegration procedure to examine the long-run relationships between variables considering various reasons. Many research done recently [12,24–26] autoregressive distributed lag (ARDL) cointegration procedure developed by Pesaran et al. (2001) have used as test methods for the existence of long-run relationships between economic variables in the time series analysis due to the reasons of its validity based on the order of integration of the variables and sample size [27]. Other cointegration methods proposed by Engel and Granger (1987) and Johansen and Juselius (1990) only valid with the cases of the same order of integration [28,29].On the other hand, the ARDL model is the most suitable model for superior performance in small samples [27].

In the procedures of estimating long-run relationships, the first step is estimating long-run relationships, as shown in Equation (1). After identifying the existence of long-run equilibrium, the next step is estimating the long-run parameters. The specific ARDL model use in this analysis is formulated as shown by Equation (2).

$$\Delta lnTI = \beta_0 + \beta_1 \, \Delta lnTI_{t-1} + \beta_2 \, \Delta LnFDI_{t-1} + \beta_3 \, LnPGDP_{t-1} + \beta_4 \, HEX_{t-1} + \beta_5 \, LnEDU_{t-1} + \sum_{i=1}^{q1} \gamma_{1i} \, \Delta lnTI_{t-i} + \sum_{i=0}^{q2} \gamma_{2i} \, \Delta LnFDI_{t-i} + \sum_{i=0}^{q3} \gamma_{3i} \, \Delta LnPGDP_{t-i} + \sum_{i=0}^{q4} \gamma_{4i} \, \Delta HEX_{t-i} + \sum_{i=0}^{q5} \gamma_{5i} \, \Delta LnEDU_{t-i} + e_t \quad \ldots\ldots (2)$$

Where Δ is the difference operator, β_0 is the drift component, e_t is white noise error term and $\beta_2 \rightarrow \beta_5$ are correspond to long-run relationship, $\gamma_{1i} \rightarrow \gamma_{5i}$ show the short-run dynamics of the model. In Equation (2), the F statistic of the lagged terms is used to test whether there is cointegration among the variables or not in the long term.

In this case, the null hypothesis is co- integrating relationship does not exist among the variables (H_0: $=\beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$) while the alternative hypothesis states the existence of co- integrating relationship among the variables (H_1: $\neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$). Here, the method for testing this hypothesis is to compare the F-statistic with the upper and lower bounds of critical values for the bounds test. The calculated F-statistics are compared with the upper and lower bounds of critical values. If the calculated F-statistic exceeds the upper bound critical value at the considered significance value, it indicates that the case is significant and the null hypothesis is rejected, and there is a long-term relationship between the variables. If the F-statistic is lower than the lower bound of the critical value, it is insignificant, and the alternative hypothesis is accepted; there is no long-term relationship. However, the decision regarding the long-term relationships between the variables is inconclusive; if the F-statistics is neither lower nor greater than the two critical values, the value lies between the upper and the lower bound of the critical value. The critical bounds values are different according to the sample size, as explained by Pesaran et al. (2001), Narayan (2005), and Sam et al.(2019) [27,30,31].

In the next step of the procedure, we obtain the short-run coefficients of the explanatory variables using the ARDL. –ECM model as shown by Equation (3).

$$\Delta lnTI = \alpha_0 + \sum_{i=1}^{q1} \alpha_{1i} \, \Delta lnTI_{t-i} + \sum_{i=0}^{q2} \alpha_{2i} \, \Delta LnFDI_{t-i} + \sum_{i=0}^{q3} \alpha_{3i} \, \Delta LnPGDP_{t-i} + \sum_{i=0}^{q4} \alpha_{4i} \, \Delta HEX_{t-i} + \sum_{i=0}^{q5} \alpha_{5i} \, \Delta LnEDU_{t-i} + \gamma ECT_{t-i} + \mu_t \quad \ldots\ldots (3)$$

Where; ECT is the error correction term which measures the speed of adjustment each period toward equilibrium, γ, is the corresponding parameter that indicates this measure, and μ_t is the error term. If the coefficient of the ECT_{t-i} is statistically significant, and a negative sign implies that short-run disequilibrium adjustments towards the long-run equilibrium.

3. Estimating and Analyzing Results

3.1. Unit Root Analysis

Before testing cointegration, this analysis conducted unit root tests to check the order of integration for each variable using the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test.

Table 1. Unit Root Tests Results

Variable	ADF Test Statistics (with Trend and Intercept)			PP Test Statistics (with Trend and Intercept)		
	Level	First Difference	Order of Integration	Level	First Difference	Order of Integration
LnTI	-3.14	-11.00*	I(1)	-3.17	-15.98*	I(1)
LnFDI	-4.09*	-5.10*	I(0) I(1)	-5.55*	-7.38*	I(0) I(1)
LnPGDP	-1.20	-3.63*	I(1)	-1.20	-3.59*	I(1)
LnEDU	-2.84	-5.85*	I(1)	-2.99	-5.70*	I(1)
HEX	-2.40	-4.10*	I(1)	-2.16	-4.16*	I(1)

Note:* show significant at 5%. ADF: Augmented Dickey-Fuller; PP.:Phillips-Perron.

The results indicated that the null hypothesis could not be rejected at the level for all variables except LnFDI.It reveals that LnFDI is integrated into I (0). The variables LnTi, LnPGDP, LnEDEX, and HEX, are integrated at I (1). Furthermore, The test results confirmed that no variables exceed the order of integration I (1), and variables are a mixture of integration I (0) and I (1). The presence of mixed order of integration of the variables supports applying the ARDL approach to testing for cointegration.

3.2. Lag length criteria

Selecting an appropriate lag length is essential before applying the ARDL test, as inappropriate lag length selection leads to a spurious outcome. Here, the appropriate lag length of the variables is selected using Akaike information criteria (AIC). The criteria show the top twenty models as in Figure 1. The ARDL. model proceeded with the lowest AIC (2,2,1,0,1) for this analysis.

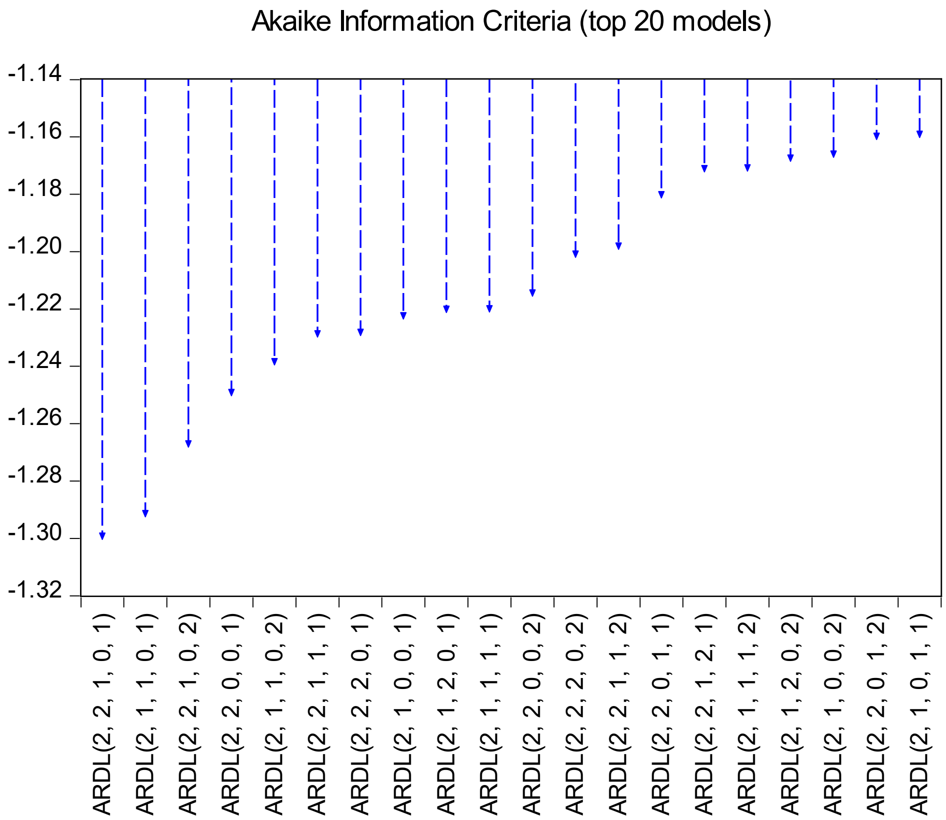

Figure 1.Lag length of each variable.Source: Researcher's calculation using E-Views 10.

3.3.Diagnostic tests

The estimated model has passed diagnostic tests that approved the desired econometric properties of a model, as shown in Table 2.

Table 2. Diagnostic tests results.

Items	Test	Probability Value
Serial correlation	Breusch-Godfrey Serial Correlation LM Test	0.1617
Normality	Normality Test (Jarque-Bera)	0.0512
Heteroscedasticity	Breusch-Pagan-Godfrey	0.5956

Source: Researcher's calculation using E-Views 10.

According to the Lagrange Multiplier test of serial correlation, it is suggested that the residuals are not serially correlated as we failed to reject the null hypothesis of no serial correlation. Moreover, normality test results confirmed that the hypothesis of normally distributed residuals could not be rejected and indicated that error is normally distributed in the model. Breusch-Pagan-Godfrey's test of heteroscedasticity identified that the disturbance term in the equation is homoscedastic. Its probability value exceeded the 5% significance level and failed to reject the null hypothesis. The diagnostic test results of the estimated model confirmed that the model is free from heteroscedasticity and serial correlation.

Furthermore, we employed cumulative sum (CUSUM), and cumulative sum of squares (CUSUM of squares) charts developed by Brown et al. (1975) to ensure the estimated parameters of our results' long-run relationship [32]. According to Figures 2 (a) and 2 (b), the CUSUM and CUSUM square plots lie within the critical lower and upper bounds at the 5% significance level. Accordingly, the selected model is statistically stable, and parameters corresponding to LnPGDP, LnEDU, HEX, and FDI to LnTI, reflect constancy.

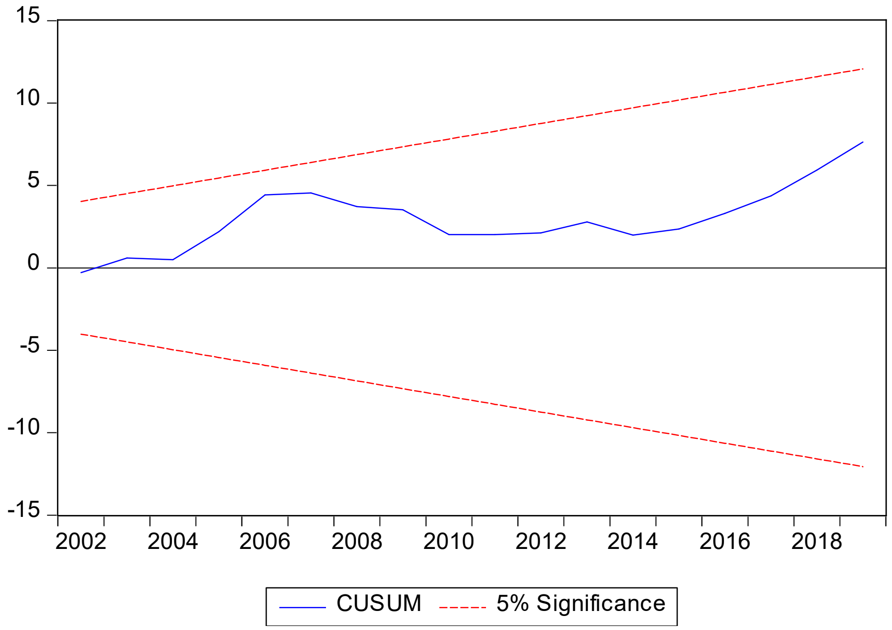

Figure 2. (**a**) Cumulative Sum (CUSUM)

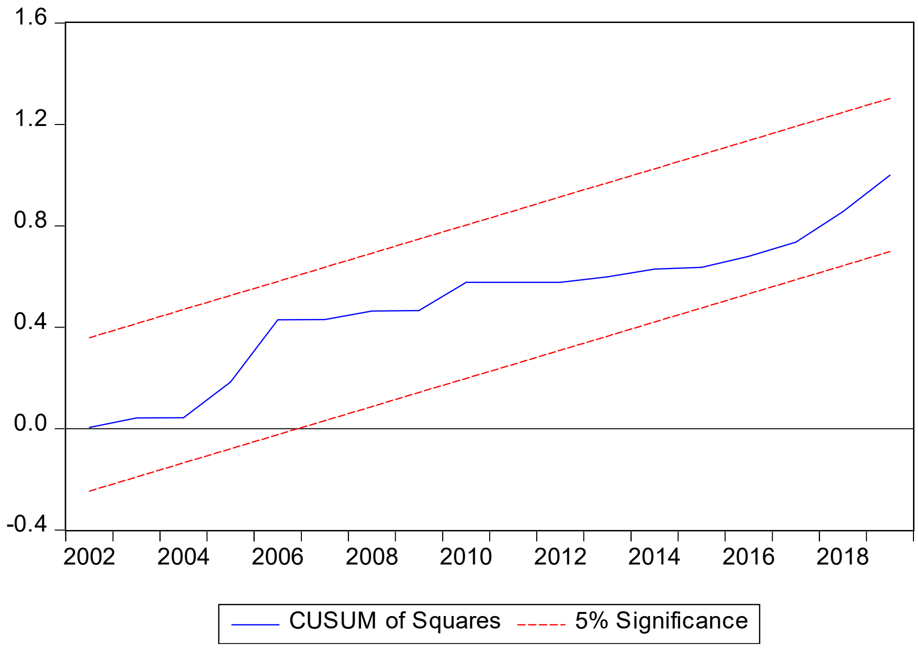

Figure 2. (**b**) Cumulative Sum of Squares (C.U.S.U.M.S.Q.)

3.4. ARDL Bounds Test

When LnTI is the dependent variable, the result of the bound test for the ARDL model (2, 2, 1, 0, 1) is shown in Table 3. The null hypothesis of the F-Bounds test is that there is no cointegration among variables. The null hypothesis is accepted if the calculated F-statistic is below the lower bound. If the F-statistic is higher than the upper bound, the null hypothesis is rejected, and the integration among variables is confirmed (Pesaran et .al (2001). We applied critical bound values given by Narayan (2005) as our study's sample size is small [30].

Table 3. ARDL Bounds Test results

F-Bounds Test		**Null Hypothesis: No Levels Relationship**		
Test Statistic	Value	Significant Level	I(0)	I(1)
F-statistic	6.366	10%	2.525	3.560
K=4		5%	3.058	4.223
		1%	4.280	5.840

The ARDL bounds test calculated F-statistic is 6.366, above the upper bound at the 5 % significance level (4.223).Since ,we confirmed that long-run equilibrium relationship exist among LnTI,LnFDI,LnLPGDP,LnEDU,and HEX when LnTI is the dependent variable in the selected ARDL(2,2,1,0,1).

3.5. Long-Run Equilibrium Relationship

The regression results in Table 4 indicate that the R squared value is 0.971, and an adjusted R^2 is 0.954. It means that 97 percent of total variations in Innovation in Sri Lanka is explained by changes in per capita GDP, inward foreign direct investment, education expenditure, and high technology export. According to the long-run results, the coefficient of LnFDI is a negative sign, and it is significant at a 5 percent level. In general, innovation is expected to attract more inward FDI in developing countries. However, the results are reversed throughout the years. A rise in the inward FDI by one unit leads to decreased technological innovation by 0.61 units.

Meanwhile, the coefficients of LnPGDP and HEX show positive signs 2.142 and 0.414, respectively, and statistically significant in the long run. This suggests that per capita GDP and high technology export are important variables in explaining technological innovation in Sri Lanka.LnEDU with a coefficient of -0.154 is statistically insignificant and implies that education expenditure does not affect innovation in the long run in Sri Lanka. Overall, LnFDI is not contributing towards widening technological innovation in Sri Lanka.

Table 4. Estimated long-run coefficients

Selected Model: ARDL(2,2,1,0,1);Dependent Variable is LnTI				
Variable	Coefficient	Standard Error	t-Statistic	p-value
LnFDI	-0.618978	0.242659	-2.550818	0.0207*
LnPGDP	2.142490	0.439839	4.871075	0.0001*
LnEDU	-0.154001	0.289078	-0.532732	0.6011
HEX	0.414289	0.078598	5.271013	0.0001*
R-squared	0.971145			
Adjusted R-squared	0.954171			
F-statistic	57.21472			
Prob(F-statistic)	0.000000			

.Note: ∗ Significance at 5 percent level. Source: Researcher's calculation using E-Views 10.

3.6. Short-Run Equilibrium Relationship

Table 5 exhibits an Error Correction Model(ECM) associated with ARDL (2, 2, 1, 0, 1), selected based on the Akaike Information Criteria (AIC). It shows statistical significance at the 1 % level to confirm a speed of adjustment back to a long-term equilibrium with the coefficient of ECT (–1) –0.6483. In the short run, LnPGDP and HEX affect the changes in LnTI.An increase in LnPGDP by one unit and increased HEX by one unit leads to increased LnTI by 2.70 and 0.13, respectively.

Table 5. Error correction representation of the ARDL model

Selected Model: ARDL(2,2,1,0,1);Dependent Variable is D(LTI(-1))				
Variable	**Coefficient**	**Standard Error**	**t-Statistic**	**p-value**
D(LTI(-1))	-0.536698	0.081748	-6.565301	0.0000
D(LFDI)	-0.134612	0.042203	-3.189634	0.0054
D(LFDI(-1))	0.095963	0.049489	1.939082	0.0693
D(LPGDP)	2.707583	0.337354	8.025938	0.0000
D(HEX)	0.131859	0.036080	3.654658	0.0020
ECT(-1)	-0.648380	0.092218	-7.030927	0.0000
R-squared	0.856000			
Adjusted R-squared	0.823272			

Source: Researcher's calculation using E-Views 10

4. Discussion

This study attempted to examine the impact of inward foreign direct investment on technological innovation in Sri Lanka from 1990 to 2019. The ARDL model was used in this study. According to the bound test results of the ARDL model, the long-run equilibrium is confirmed. After that, the long-run and short-run coefficients calculated using the Error Correction form of the selected ARDL model. The empirical evidence demonstrated the following findings.

Per capita GDP (LnPGDP) and high technology export (HEX) variables are the only statistically significant variables with positive coefficients in the long run. Here, we used HEX as a proxy for research and development expenditure. The results evidenced that research and development intensity is positively correlated with technological innovation. Furthermore, it shows the importance of research and development to widen innovation capability in Sri Lanka. Per-capita GDP has a positive effect on innovation in our analysis, indicating a positive relationship between innovation and the level of economic growth in Sri Lanka. The coefficient of LnFDI is a negative sign, and it is significant at a 5 percent level. Inward FDI is not contributing towards widening technological innovation in Sri Lanka. So far, the studies examining the impact of inward FDI on innovation in Sri Lanka are rare. Hence, it is hard to compare these findings with studies done in Sri Lanka. These results are similar to the results of Chen's (2007) and (Gercia et al.'s (2013) studies. Chen did the study (2007) analyzed the relationship between FDI innovations in China using province-level data. The study found the determinant of regional innovation and evidenced that the correlation between FDI and regional innovation is statistically insignificant. More FDI will not bring higher innovation. The results manifest the way for improving regional innovation, suggesting increasing domestic research and development, improving innovation capability and absorptive capacity in the domestic firm, and acquiring the stock of human capital. Gercia et al. (2013) found inward FDI negatively related to local firms' innovativeness and identified the distinction between innovation and productivity. They interpreted inward FDI helps to drives the production possibility frontier of local firms, but inward FDI does not help firms to be more innovative. However, most of the existing empirical studies Cheung and Lin (2004), Sivalogothasan and Wo (2014), Eradal (2015), Loukil (2016), Dhrifi (2018), Nyeadi and Adjas (2020), Rahman and Oh (2020) confirmed that inward FDI is one of the significant elements of innovation capability in an economy.

Reasons for finding the weak relationship between inward FDI and innovation in Sri Lanka might be some reasons. Before the government implemented the economic liberalization policy in 1977 in Sri Lanka, the economy followed the inward-looking policies, which had limitations for foreign investors and the free flow of FDI [33]. Later, the new government initiated an extensive economic liberalization process in 1977 [34]. Trade and investment policies promoted export-oriented industries. The inflow of FDI to the manufacturing sector accounted for more than 90%, while the service sector has not accounted for more FDI. After introducing privatization policies in the 1990s by the Sri Lankan government, the FDI to the service sector became more prominent than the manufacturing sector [35].In the 2000s, inward FDI had focused on the infrastructure sector and services sector, while FDI to the manufacturing sector has remained low, as in Table 6. The absorptive capacity of these two sectors is low compared to the manufacturing sector. Therefore, most foreign-funded firms were unable to acquire the maximum benefits of FDI spillovers.

Table 6.Sector-wise FDI inflows to Sri Lanka (US $ Million)

Sector	2005	2010	2015	2019
Manufacturing	135.32	159.65	257.0	319.5
Agriculture	0.47	6.45	3.9	1.3
Services and infrastructure	151.41	350.20	708.8	867.9

Source: [35,36]

Furthermore, another possible explanation for this existing relationship between FDI to Sri Lanka and innovation can be justified, using trends of gross expenditure on research and development (GERD) by the source of funding as shown in Table 7.

Table 7.Gross expenditure on research and development (GERD) by the source of funding as % of GDP

Source of funding	1996	2006	2010	2015
Government	0.13	0.11	0.09	0.063
Business enterprises	0.00	0.03	0.07	0.037
Foreign	0.05	0.01	0.00	0.002
Other	-	0.02	0.00	0.004

Source: National R&D Surveys, Sri Lanka [37,38].

Gross expenditure on research and development from foreign sources, as a percentage of GDP, is low compared to other sources [37-38]. It is confirmed our finding to inward FDI and innovation. Sri Lanka has a weak tendency to accelerate its innovation capabilities utilizing foreign sources to research and development activities under the existing foreign sources. It suggests that local firm-focused research and development is essential to build their innovation capabilities accompanied by more foreign sources.

5. Conclusion

The study results showed Sri Lanka has a weak tendency to accelerate its innovation capabilities utilizing foreign sources. It suggests that local firm-focused research and development is essential to build their innovation capabilities accompanied by more foreign sources. Obtaining advanced technology through FDI should be the primary motivation to attract FDI from developed countries. Then, it will be caused to improve domestic innovation capability. Hence, it is still necessary to form domestic firms with an absorptive capacity to enjoy the benefits of multinational firms.

Furthermore, our research findings can be used to formulate policies regarding future development scenarios in Sri Lanka. According to the 2030 agenda of sustainable development, fostering innovation is considered one of the key policy priorities in most governments' agendas in developing countries, while FDI is considered a principal resource of financing sustainable development corresponding to 17 sustainable development goals. Regarding the implications of the research findings, development policies should focus on the quality of inward FDI, fostering innovation capabilities in Sri Lanka, arranging in line with "goal 9" of SDGs [39]. Hence, the government should strengthen the protection of intellectual property rights to inspire innovation. Shaping the future of FDI in Sri Lanka is essential to foster innovation capability.

In this study, we interpreted our results considering the following limitations. Using the number patent application as a proxy for innovation capability has some limitations, as shown in the literature on innovation measuring. Furthermore, we included only limited variables as determinants of innovation capability in Sri Lanka due to the unavailability of the relevant data in some years. In order to have a more conclusive answer regarding the innovation, future research should include more variables such as research and development expenditure, number of researchers and scientists, number of technological enterprises, and labor productivity.

Author Contributions: Supervision,review,editing;L.H,Conceptualisation,Data collection,Data analysis,writing the original draft;.A.M.; Data collection, Conceptualization,;MMSA. All authors have read and agreed to the published version of the manuscript

Funding: Authors have not received any funds for this research.

Data Availability Statement: Publically available data were used to analyze in this study. The data can be found from the following links:

https://databank.worldbank.org/source/world-development-indicators

https://www.nipo.gov.lk/web/index.php?option=com_content&view=article&id=8&Itemid=130&lang=en

Conflicts of Interest: The authors declare no conflict of interest

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