Sri Lanka's Green Policy Disaster and Investigation of the Green Economy and Human Capital in Sri Lanka

Benjamin Drean[1]
[1]School Of Life and Wellness, France

Abstract

This investigation looks at how four important factors in Sri Lanka relate to environmental deterioration from 1985 to 2020: human capital, economic growth, infrastructure investment, and depletion of natural resources. We make use of secondary information gathered from the World Bank, Penn World, and the Global Footprint Network. The ARDL model was used to examine each variable. We discovered that, over time, economic expansion and the development of infrastructure have a positive association with CO2, but human capital and natural resources have a negative relationship with CO2. In order to preserve the environment, human capital plays a crucial role, and infrastructural development is necessary to boost the economy. Human capital investment is the most important thing in improving Sri Lanka's economy.

Keywords: Sri Lanka, Green Policy Disaster,Green Economy,Human Capital
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Background

The country of Sri Lanka, in the post-covid-19 era as the country most affected by the energy crisis that hit the entire planet, amid the heat of falling oil prices for fear of a recession in the United States, has provided some respite (Tian, Yu, Xue, Zhuang, & Shan, 2022). Sri Lanka is a country that relies on imports to meet its needs for fuel, medicine, and even food (Wickramasinghe, 2011). First, following the Sri Lanka Civil War, which had a 30-year impact on the nation, and subsequently as a result of Rajapaksa family-driven infrastructure development initiatives, a clan that has held power in Sri Lanka for decades, the public deficit accumulated year after year with the country's debt growing steadily (DeVotta, 2016). With the arrival of the pandemic in 2020, Sri Lanka's main sector, namely tourism, collapsed (Ranasinghe, Sammani, & Perera, 2021). The loss of foreign currency inflows was a major blow to Sri Lanka's central bank. The shortage of reserves at the central bank due to efforts to contain the value of its currency makes it impossible to hold it any longer. Thus, the Sri Lankan currency began to fall (Robinson & Kengatharan, 2020).

Sri Lanka's depreciating currency, a broken economy and stifling debt, the outbreak of war in Ukraine, and the subsequent rise in prices were the final blow (MacDonald, 2022). Supply problems also began to worsen and a strong wave of protests began calling for the removal of the entire Rajapaksa family from power due to inflation and food and energy shortages in Sri Lanka (Premarathna, 2021). The Sri Lankan government has introduced rationing, asked residents not

to leave their homes, provided one day off a week for officials to work in their own gardens to feed themselves, and there were daily power cuts (Palipane & Pieris, 2022).

Sri Lanka's serious economic crisis, with its record inflation rate and possible non-payment of its financial obligations, has prompted families in the country to sacrifice food due to food shortages and high prices (Radhakrishnan, de Wit, Gopikumar, & Bunders, 2022). Not only food, family income is also affected by the crisis in Sri Lanka, where inflation rates have skyrocketed (Bhattacharya & Singh, 2021). The drastic decline in tourism due to the pandemic, with the country completely closed for months to a sector important to its economy, has been a further setback for Sri Lanka. Currently experiencing a severe economic crisis, the country of Sri Lanka has experienced a decline in foreign exchange reserves in the last two years and is drowned by high public and private external debt (George, George, & Baskar, 2022).

An unprecedented economic crisis hit the country of Sri Lanka. With growing food costs and staggering transportation costs, Sri Lanka has seen an annual rate of inflation (Bhattacharya & Singh, 2021). The Sri Lankan government imposed a state of emergency and sent troops all throughout the nation to keep order in the face of ferocious demonstrations (Pieris, 2021). The political dynasty Rajapaksa's irresponsible lending practices and the harm the Covid lockout had on Sri Lanka's tourist sector, is depleting Sri Lanka's foreign exchange reserves. Soon, Sri Lanka was unable to import necessities like food and gasoline or make debt payments (Li, Tjia, Yan, & Hung, 2021).

Actually, the riots were significantly influenced by the prohibition of fertilizer. In Sri Lanka, the agricultural industry is significant to the economy. The state imports synthetic fertilizers for this important business at a cost of hundreds of millions of dollars each year (Senadheera & Jeganathan, 2021). Rajapaksa told the state during his 2019 election campaign that the state will phase out these fertilizers and move to organic farming over a ten-year period. In April 2021, Rajapaksa expedited his intentions by abruptly banning synthetic fertilizers and pesticides. However, more than 90% of Sri Lankan farmers had used chemical fertilizers prior to the ban. After the ban, a staggering 85% experienced crop failure. Of course, the policy related to the ban on synthetic fertilizers by Rajapaksa suddenly destroyed Sri Lanka's economy, which is dependent on agriculture due to Sri Lanka's lack of green agricultural or organic farming infrastructure and people resources (Kataria, Manur, & Pradhan, 2022). Of course, the green economy needs careful preparation in making the transformation from the use of synthetic fertilizers to organic fertilizers (Drean & Bawono, 2021).

Pre-modern agricultural yields only natural foods for the majority of human history, and since food was so scarce, starvation was pervasive despite earlier populations being considerably smaller. One of humanity's finest accomplishments is the long-term decrease in malnutrition globally (McMichael, 2021). A number of groups, in particular environmentalists, aspire to convert the current global food system to an organic one. They believe that contemporary agriculture harms the environment and advocate switching to organic fertilizers like compost and dung that our ancient predecessors would have used. Nevertheless, conventional farming is not only important to feed everyone in the world, but it is also healthier for the environment in many ways (Wegner, Murray, Springmann, Muller, Sokolow, Saylors, & Morens, 2022). Organic farming uses natural fertilizers, which are more polluting than traditional synthetic ones. In addition to increasing yields and enabling people to grow more food on smaller plots of land, fertilizers and insecticides also enable people to farm more intensively. More land may be converted back to natural ecosystems, which are much more diversified than any farm, as

agricultural yields continue to rise. Organic farming promotes nature's recovery (Bux, Lombardi, Varese, & Amicarelli, 2022).

Conventional agriculture is growing more effective in wealthy nations, utilizing fewer inputs to produce more food. Fertilizer use has barely increased and pesticide use has decreased. The world is fed by conventional agriculture. Global agricultural output increased dramatically during the Green Revolution of the 1950s and 1960s, with food supply reaching about 3,000 kcal per day globally in 2017, up from more than 2,000 in 1961. Although hunger has returned, this time it is due to conflict, export restrictions, and bad government policies rather than a shortage of food production capability. The prohibition of fertilizers is not the only issue causing Sri Lanka's economy to suffer. The hasty implementation of the prohibition and the challenge of getting enough organic alternatives also contributed significantly to the harm (Pasqualetti, 2021). Sri Lanka is a country that has received enough attention after Covid 19. Sri Lanka with its controversial policies related to the environment and tax reductions has an impact on Sri Lanka's economy after Covid 19 (Ranasinghe, Sammani, & Perera, 2021). On the other hand, infrastructure development is needed to encourage Sri Lanka's economic growth (Fathima Rinosha, & Mohamed Mustafa, 2021). Therefore, this study investigates how environmental degradation is affected by human capital, economic growth, and infrastructure investment from 1985 to 2020 in Sri Lanka.

Research Method

We make use of secondary data gathered from the World Bank, Penn World, and the Global Footprint Network. The econometric equation with ARDL model used in this study, which employs an annual period from 1985 to 2020, is as follows:

$$\Delta EC_t = \psi EC_{t-1} + \beta_1 HCap_t + \psi_1 \Delta HCapt_{-1} + \beta_2 GDP_{t-1} + \psi_2 \Delta GDP_{t-1} + \beta_3 IInv_{t-1} + \psi_3 \Delta IInv_{t-1} + \beta_4 NRes_{t-1} + \psi_4 \Delta NRes_{t-1} + \psi Dx_{t-1} + e_t$$

$$\Delta CO2_t = \psi CO2_{t-1} + \beta_1 HCap_t + \psi_1 \Delta HCapt_{-1} + \beta_2 GDP_{t-1} + \psi_2 \Delta GDP_{t-1} + \beta_3 IInv_{t-1} + \psi_3 \Delta IInv_{t-1} + \beta_4 NRes_{t-1} + \psi_4 \Delta NRes_{t-1} + \psi Dx_{t-1} + e_t$$

e_t stands for error correction, β for long-term coefficient, and ψ for short-term coefficient in the dynamic ARDL modeling models with the two parameters presented. To measure how quickly the imbalance is being corrected, Dx is used. EF is Ecological Footprint, EG is Economic Growth, HC is human capital, NR is Natural Resources Depletion, GX is Infrastructure Investment.

Result and Discussion

We examine the sustainability of Sri Lanka's economy and environment using statistical analysis of the factors shown in Table 1.

Table 1. Descriptive data analysis

	Obs	Mean	Std.Dev	Min	Max
EC	36	0.282	0.071	0.225	0.375
CO2	36	11.011	1.993	6.991	14.522
Hcap	36	1.47	0.211	1.117	1.654
GDP	36	4.295	1.792	0.991	6.715
Iinv	36	22.992	17.011	3.192	59.981

NRes	36	1.195	0.399	0.71	1.901

The descriptive statistics can be well illustrated in table 1 regarding the minimum, maximum, average, and standard deviation data for each variable. To get optimal results from the analysis, the optimal lag test is carried out which is presented in table 2.

Table 2. VAR lag order selection criterion

Lag	logL	LR	FPE	AIC	SC	HQ
0	-109.7112	NA	0.030211	8.091231	7.912432	7.972231
1	-11.34226	169.9224	0.000199	1.901192	2.992421	3.295622
2	10.92113	35.72324	0.0000337	1.272613	2.924424	2.092143

A lag duration of 2 is recommended by the majority of lag selection criteria. A stationarity test is necessary since the ARDL estimate requires steady data. Table 3 presents the stationarity test.

Table 3. Unit Root Test

PP Test						
	EC	CO2	GDP	IInv	HCap	NRes
t-Stat.	-1.5012	-1.0911	-2.4922	-4.8111	-1.2231	-1.7124
Prob.	0.3592	0.4912	0.0195	0.0061	0.5928	0.1928
First diff.	d(EC)	d(CO2)	d(GDP)	d(IINV)	d(HCap)	d(NRes)
t-Stat.	-3.8983	-5.0124	-11.9252	-13.9641	-5.9142	-3.9011
Prob.	0.0004	0.0000	0.000	0.0000	0.0000	0.0001
ADF Test						
	EC	CO2	GDP	IInv	HCap	NRes
t-Stat.	-1.1241	2.9242	2.4628	-3.0412	-1.9881	-1.0914
Prob.	0.3914	0.3114	0.0191	0.0039	0.5012	0.2021
First diff.	d(EF)	d(CO2)	d(EG)	d(GX)	d(HC)	d(NR)
t-Stat.	-2.1141	-4.7924	-8.0943	-6.0925	-6.1924	-4.0619
Prob.	0.0097	0.0000	0.000	0.0000	0.0002	0.0001

All variables were stationary at the initial difference, unit root tests determined by the outcomes of the PP test and ADF test. Table 4 displays the results of an ARDL limit test for EF and CO2 emissions.

Table 4. Bounds test

CO2		EC		
Test Stat.	Value	Test Stat.	Value	K
F-Stat.	4,582	F-Stat.	9,9226	4
Crit. Value				
Signif.	10 bound		11 bound	
10%	2.29		3.19	
5%	2.71		3.92	
2.5%	3.19		4.01	
1%	3.69		4.95	

The calculated F statistical values both for indicators exceed the upper bound at the 5% level of significance, indicating that the dependent variable is cointegrated with the independent variable in both models. The results of the dynamic ARDL estimate are shown in Table 5.

Table 5. The Dynamic ARDL Estimation Results

	CO2	EC
ECT	0.199	0.199
	1.79	2.09
HCap	-2.592	0.0129
	-2.94	1.89
HCap t-1	4.594	0.199
	1.89	1.71
GDP	0.299	0.192
	2.61	1.79
GDP t-1	0.401	1.902
	2.74	2.27
IInv	1.291	0.392
	0.91	1.89
IInv t-1	4.792	1.79
	1.92	3.19
NRes	-0.402	-0.203
	-1.99	-4.09
NRes t-1	-1.292	-0.0203
	-1.79	-2.01
N	35	35
R square	0.8117	0.8011

The acronym ECT in this study stands for error correction speed. It was evident from the dynamic ARDL data that ECT was important in both situations. CO2 is significantly impacted negatively by HC over time. According to the ARDL findings, both environmental damage indices were found to have a considerable beneficial impact on economic growth over the long and short terms. The Indonesian government's investment in infrastructure was shown to have a considerable beneficial impact on environmental damage indices. Economic growth and infrastructure development in Sri Lanka have an impact on environmental degradation in Sri Lanka which is enough to be a serious concern.

Conclusion

Over time in long term, CO2 has a bad relationship with natural resources and human capital, but a strong relationship with economic growth and infrastructure development. In order to preserve the environment, human capital plays a crucial role, and infrastructural development is necessary to boost the economy. Human capital investment is the most important thing in improving Sri Lanka's economy.

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