

POLITICAL FAVOR, DEVELOPMENT PROJECTS, AND HOUSEHOLD WELLBEING

(THE CASE OF THE GREATER HAMBANTOTA DEVELOPMENT PROGRAM, SRI LANKA)

1.1 Introduction

Often, the main objective of government-implemented projects is to uplift the economic and social well-being of the country. Many projects, therefore, work as building blocks to achieve the socio-economic goals of citizens. Whatever the purpose, when implemented, projects are not always successful and sometimes bring opposite results to the goal (Matthew et al., 2019; Damoah, 2015; Fabian and Amir, 2011; Ackah, 2020). Projects failures are common in many Asian and African countries but not so common in European countries. Many failed projects initiated by governments in developing countries are hampering the economic growth of those countries (Nweze, 2016). Some examples of such failed projects are; power generation projects introduced to African countries, construction projects in Asian countries, and IT projects in the United Kingdom (Shahhossein et al. 2018; Fabian and Amir, 2011; Heeks, 2006, Okereke, 2017).

However, there is no clear criterion for identifying the failure of a project. Various researchers have come up with different definitions to identify the failures of projects (Turner, 1993; Belout & Gauvrean, 2004; Atkinson, 1999; Amachree, 1998; NZekwe et al., 2015; Cousillas et al., 2010). We can see some commonalities used to measure the failure of a project when considering these different definitions. Those are quality, time overrun, cost overrun, need fulfillment, poor project planning and variations of scope & design, etc.

However, some words that are used to define the failure of projects themselves have no definition. For example, poor planning, quality, variation of scope can be stated. Sri Lanka also implemented a large-scale development program in the Hambantota district. The project is called GHDP and includes several large-scale sub-projects such as an international airport, an international port and, an international stadium. It also consists of an extension of highways, railways, and a massive administrative complex. The government received large sums of money from China for these constructions. In the end, however, the port, airport, and stadium were not as commercially successful as hoped.

As mentioned earlier, due to the lack of direct criteria for measuring the success of a project, different people began to argue about the success or failure of the GHDP from different angles based on their political ideology. Some argue that large-scale international market-oriented investments in the district have a direct and indirect impact on local well-being due to the cash flow and job opportunities generated in the area ([Rangajeewa, 2013](#)). Others argue that the locals did not get the job opportunities they had hoped for and that people have become more difficult and anxious due to informal planning and construction ([Mariyathas et al. 2016](#)).

Instead of trying to identify problems and fixing them, people in many developing countries are trying to point out that all actions taken by the political party to which they belong are right, and all actions taken by the opposition party are wrong. No exception for Sri Lanka. Considering both the optimistic and pessimistic arguments, this study investigated whether the GHDP program would have significant impacts on households' well-being in the Hambantota district.

1.1.1 Background

Mr. Mahinda Rajapaksha, who was the President of Sri Lanka from 2005 to 2015, is a resident of the Hambantota district, which was one of the poor districts in Sri Lanka. The total land area of the Hambantota district is 2563 square kilometers and is located 240 kilometers away from the capital. (The distance from the capital, however, reduced to 126km after introducing the highway). The Hambantota district belongs to the dry zone, where about 95 percent of the total population lives in the rural. 97.04 percent of the total population is Sinhalese, and the rest of the 2.96 percent represents all the other communities, including Muslims and Hindus.

Until 2005, Hambantota was just 'one of the other districts' in Sri Lanka that received no local or foreign attention. However, the victory of President Mahinda Rajapaksha on November 17, 2005, presidential election, and the emergence of the leader who ended the LTTE war in 2009 brought the Hambantota district to the forefront of local and international attention.

Mr. Mahinda Rajapaksha had promised at the presidential elections in 2005 that he would bring about massive development in the Southern Province and especially to the Hambantota District. As promised, during his tenure, he introduced a massive development project to revive the Hambantota district, the area where he was born and raised. The first phase commenced in the first quarter of 2006 after the president was sworn on November 19, 2005. The vision of the project was to make Sri Lanka the gateway to Asia.

The name of this huge project was 'Grater Hambantota Development Plan (GHDP)' which included an international port, international airport, international stadium, massive administrative complex, an international convention hall, highways, and railways.

Furthermore, some water supply projects have also been implemented to fulfill the water needs of the people living in the Hambantota district. For example, the estimated cost of the Hambantota Water Supply Project is Rs.2200 million. It was jointly implemented by the China Geological Engineering Corporation and Salcon in collaboration with the National Water Supply and Drainage Board of Sri Lanka. No other city in the country has changed so significantly since independence. In fact, this massive development upheaval is the result of political decisions.

In order to introduce the GHDP, a large amount of money was borrowed from the Export-Import (Exim) Bank of China since the government had no funds to carry out such a large project. For example, the cost of the first phase of the international port was US\$361 million, of which 85 percent was obtained from the Exim Bank of China. The estimated cost of the international airport was US\$209 million, which increased later up to US\$243.7 million. Of which the US\$210 million was obtained from China Exim Bank. Estimate costs for the extension of the highways and the railway lines were US\$180 million and US\$278.2 million, respectively. That money also was obtained from Exim Bank of China. Compared to other multilateral development banks, interest rates on Chinese loans are often higher. Sri Lanka borrowed US\$ 307 million for the first phase of the Hambantota Port at an interest rate of 6.3 percent. However, interest rates of multilateral development banks are mostly 2-3 percent, sometimes even lower than 2 percent ([Jonathan Hillman, 2017](#)). The reason why

Sri Lanka borrows at high-interest rates may be that low-interest lenders are reluctant to take the risk of investing in such huge projects.

The objectives of the project were not only limited to the international market or international trade. It is also expected to uplift the rural and service sector economy with a sustainable design¹, by opening job opportunities to the people living in the area. At the same time, inspiring the tourism industry and generating direct and indirect sources of income are among the objectives of this massive program. Basically, the project moved with the vision of creating a golden future for the people living in the Hambantota district.

However, it is questionable whether the above investments provide benefits to the people living in this area. Some argue that these investments are not truly beneficial to the majority living in the Hambantota district. They point out that projects aimed at the rich (such as international ports, airports, stadiums, etc.) do not benefit the poor (Mariyathas et al. 2016). There are several points to consider in this regard. First, the total population living in the Hambantota district is 599,903. Among them, the urban population is 31,709 that represents 5.28 percent of the population belong to the Hambantota district². The percentage of poor households based on the official poverty line in Hambanthota district in the year 2006 is 10.5 that is high compare to most other districts. Furthermore, 43.7 percent of the total population in the Hambantota district is engaged in the agriculture sector³. Are international airports, stadiums, or ports useful to the inhabitants of such a city

¹ Project planning, Sri Lanka, Available from:
https://www.researchgate.net/publication/348783908_Project_planning_in_Sri_Lanka [accessed Jun 21, 2021].

² source: Census of Population and Housing, Sri Lanka -2011/12

³ Source: Labor Force survey annual report 2010, Sri Lanka

where more than 40 percent of the population depends on agriculture who are relatively poor? Often, when borrowing from China, a large portion of the borrowed money goes back to China. One of the main reasons for this is that you have to agree to different loan terms to get a loan from China. Often, the construction of the project has to be outsourced to a Chinese company. Then, they import consultants, technicians, workers, and machinery from China. Therefore, some point out that the majority of the people engaged in the non-agricultural sector will not benefit much from these massive development projects.

Third, some point out that the income of the population has worsened after the GHDP was implemented ([Mariyathas et al. 2016](#)). For example, Hambantota is located between the capital and Kataragama. Kataragama is a place of worship for Sinhala and Hindu devotees who represent more than 90% of the country's population. Another important place near Kataragama is a wildlife sanctuary which names Yala. Thousands of people from many parts of the country visit the Kataragama Sacred city almost every year. Yala Wildlife Sanctuary is also a major tourist attraction. While passing through Hambantota city, many pilgrims and tourists stop at small shops run by locals along the old road to buy buffalo milk (locally named milk) and local sweets (local name kaludodol). This was the livelihood of many families who lived near the old road.

As the new highway and the road systems became operational, the small shops beside the old road closed due to a lack of customers, and many locals lost their livelihoods. Also, most of the residents displaced due to the new construction have been forcibly resettled in the new city ([Mariyathas, 2016](#)). As a result, the livelihoods of inhabitants were disrupted. On the other hand, the new employment opportunities also were grabbed by trained outsiders.

Some researchers state that the GHDP was an ambitious plan but unrealistic ([Rathnayaka, 2017](#)). They show that the GHDP was not really a strategic project to generate economic growth.

“The biggest caveat to Sri Lanka's ambitions in Hambantota is that it is in an extremely rural region that's better known as the domain of migrating elephants. Literally, Sri Lanka and China aimed to build a new city in the middle of the jungle ([Shepard, 2016](#))”.

Feasibility studies have repeatedly pointed out the risks involved in the construction of international ports and airports. However, all those warnings were ignored by the political egocentric agenda. Finally, negative growths were reported by the Hambantota port in 2015 and 2016⁴.

Natural drainage canals in many areas were blocked due to irregular constructions carried out by ignoring the feasibility study reports. Some people point out that natural disasters such as floods in the Hambantota district have increased since the implementation of the project. Moreover, according to the locals, wildlife disasters have increased ([Robertson, 2018](#)). Thousands of acres of forest have been used for development, resulting in the loss of habitat for wild elephants and other animals. As a result, homeless wild elephants began to roam the villages. Therefore, in parallel with the development activities, the human-elephant conflict in the Hambantota district also intensified. The area, on the other hand, is a bird sanctuary, which has disrupted flights ([Vishvajith, 2019](#); [Robertson, 2018](#)). Therefore,

⁴ source: Statistics published by the Central Bank of Sri Lanka

the second objective of this study is to examine whether GHDP has had an impact on disasters in the region.

However, some other researchers point to the positive aspects of the project. According to them, there is no doubt that the Hambantota district is one of the fastest-growing regions in Sri Lanka with unique features. Some point out that the project will improve the living standards of the people in the Hambantota district. They also point out that even adjoining backward areas will become developed districts ([Rangajeewa et al. 2013](#)). On the other hand, others argue that large-scale investment activism will increase cash flow and create jobs⁵. For example, quoting government estimates, [Rangajeewa et al. \(2013\)](#) point out that the international port alone will create 50,000 jobs. Therefore, they believe that this project will increase the income of the people in the area and improve the living standards of the people. However, all the massive construction was done by Chinese companies and employed Chinese workers. Therefore, the residents of the area say that they did not get employment opportunities through this project ([Routledge, 2012](#); [Robertson, 2018](#)). Therefore, the third objective of this study is to identify whether the employment opportunities of the people living in the Hambantota District are different from their counterparts.

Accordingly, there are both positive and negative views on the outcome of this massive development process in the Hambantota District. However, those criticisms often take on a political face. In addition, to the best of my knowledge, no empirical test has yet been

conducted to determine the impact of GHDP (positive, negative, or moderate) on the domestic well-being of the Hambantota District.

I expect that there are significant impacts from the project on household wellbeing in the Hambantota District. Accordingly, the main objective of this study is to investigate the impact of GHDP on household well-being without looking at it from a political angle.

1.2 Household Well-being

The term 'well-being' mainly includes physical well-being, economic well-being, and socio-economic well-being. Recent studies have shown that household well-being cannot be measured using only wealth-based indicators such as household income or per capita income (Alkire and Sarwar 2009; Edward and Zacharias, 2006). Instead, researchers suggested investigating well-being in the broader sense (Brown et al (2005). For example, the Human Development Index (HDI) was developed by Pakistani economist Mahbub ul Haq in 1990 to measure well-being by putting three indicators into a composite index. Three indicators used to prepare the HDI index are income, educational attainment, and life expectancy. Various researchers have shown that it is important to use non-income indicators to measure well-being (Phipps 2002; Di Tommaso 2007; Krishnakumar 2007; Krishnakumar and Ballon 2008; Mabsout 2011, Sarah Brown and Daniel Gray, 2016).

The OECD also was developed an OECD well-being framework which includes a key dimension of current well-being. It includes income & wealth, work & job quality, housing, health, knowledge & skills, environmental quality, subjective well-being, safety, work-life balance, social connections, and civic engagements.

On the other hand, some researchers argue that variables such as asset ownership, debt burden, access to public services also reflect well-being (Zacharias and Thomas, 2009). To find a better solution, Yograj Gautam and Peter Andersen, 2016, assessed the role of livelihood diversification in household well-being in west Nepal. They have developed a composite household well-being index by putting four components with 15 related indicators. The four elements used were food consumption, housing, storage and ownership, and large-scale real estate.

Taking all of the above into account, this study investigates household well-being using income, access to basic amenities, time that takes to access public services, the risk to disasters, household expenses, housing conditions, housing ownership, access to water, sanitary facilities. Although education and health services play an important role in measuring the well-being of households, this study does not investigate the impacts of the project on that services. This is due to the provision of free health and education services to all the people of Sri Lanka.

2.1 Data Description and model specification

The study uses the Household Income and Expenditure Survey (HIES) data from 2002 to 2016 collected by the Department of Census and Statistics (DCS), Sri Lanka. The survey years are 2002, 2006/07, 2009/10, 2012/13, and 2016. The two-stage stratified random sampling methods were used to conduct the surveys. To verify the findings, I have used two data sets (The Demographic and Health Survey Data (DHS) for 2006 & 2016 and The Labor Force Survey (LFS) data from 2002 to 2016).

I have selected Anuradhapura District as the control group in this study. The balance test presented in Table 1.1 is the equilibrium test of all the variables in this study. It tests whether there is a balance between the observed and non-observed covariate treatment and control groups. Only three variables have significant differences. They are Adhoc income, type of walls, and expenditure on health. Of which two coefficients show 5 percent significant levels and the variable of Adhoc income shows 10 percent significance level. Since all the other covariates are balanced, I assumed that both treatment and control groups are matched. The variable income is used to measure household well-being, and it consists of six income categories. They are salaries and wages, agricultural activities, non-agriculture activities, other agriculture activities, other income, and Adhoc income. Income from salaries and wages refers to the income received by working as an employee during the last calendar month⁶. Income from agricultural activities refers to the income received through cultivating paddy and other seasonal crops as an employer or own-account worker. The value-added is derived by deducting input values from the output values. Income from other agricultural activities refers to the income earned through non-seasonal crops and livestock activities. Other income refers to the other payments. The Adhoc income refers to

⁶ Note: This includes tips, commissions, overtime payments received during the last calendar month, and bonus and/or arrears payments received within the last 12

2.2 Data Description

Table 1.1: Balance Test

| Variables | Mean Control | Mean Treated | Difference | t-stat | Pr(T > t) |
|--------------------------------------|--------------|--------------|------------|--------|-------------|
| sex | 0.502 | 0.498 | 0.003 | 0.294 | 0.7684 |
| age | 31.213 | 31.911 | -0.696 | -1.375 | 0.1692 |
| Log level of education | 0.865 | 0.869 | -0.007 | -0.985 | 0.3245 |
| Income- Salaries and Wages | 2180.431 | 2309.653 | -129.222 | -0.692 | 0.4880 |
| Income- Agriculture | 34809.58 | 41221.7 | -6412.12 | -1.081 | 0.2800 |
| Income- Non Agriculture | 1025.636 | 1252.901 | -227.265 | -1.156 | 0.2474 |
| Income- Ad hoc Income | 9680.135 | 6815.637 | 2864.498 | 1.750 | 0.0802* |
| Income- Ad hoc loans | 4271.233 | 4171.178 | 100.054 | 0.082 | 0.9349 |
| Debt - financial institution | 11863.31 | 11434.82 | 431.483 | 0.189 | 0.8498 |
| Debt_ money lenders | 3063.596 | 2023.582 | 1040.014 | 1.464 | 0.1431 |
| Food expenditure | 65278.01 | 46767.76 | 18510.25 | 1.578 | 0.1213 |
| Time to Bus halt | 10.14 | 9.805 | 0.334 | 0.791 | 0.4291 |
| Time to District Medical Office | 32.434 | 31.378 | 1.056 | 1.043 | 0.2971 |
| Time to District Secretariat office | 36.136 | 35.581 | 0.555 | 0.557 | 0.5776 |
| Time to Maternity clinic | 26.028 | 26.978 | -0.95 | -1.206 | 0.2280 |
| Time to M.C. / U.C. / P.C. | 34.73 | 35.306 | -0.575 | -0.555 | 0.5790 |
| Time to School | 21.744 | 20.078 | 1.36 | 2.013 | 0.0443 |
| HH-ownership | 0.939 | 0.941 | -0.001 | -0.396 | 0.6919 |
| HH-Walls | 0.94 | 0.949 | -0.008 | -2.142 | 0.0322** |
| HH-Cooking fuel | 0.13 | 0.14 | -0.01 | -1.644 | 0.1001 |
| Disaster - Wild animal | 0.025 | 0.026 | -0.001 | -0.292 | 0.7701 |
| Disaster - Natural | 0.058 | 0.066 | -0.008 | -0.975 | 0.3295 |
| Non-Food Expenditure - Health | 570.532 | 704.625 | -134.093 | 2.260 | 0.0240** |
| Non-Food Expenditure - Personal care | 286.757 | 310.144 | -23.386 | -2.092 | 0.0360 |
| Non-Food Expenditure – Fuel &Light | 904.129 | 927.044 | -22.914 | -0.512 | 0.6081 |
| Non-Food Expenditure - Clothing | 5196.025 | 5052.423 | 143.6027 | 0.569 | 0.5693 |
| Non-Food Expenditure-Transport | 1751.065 | 1605.51 | 145.555 | 0.876 | 0.3806 |
| Non-Food Expenditure - Other | 34969.13 | 23618.43 | 11350.7 | 1.065 | 0.2870 |

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. M.C stands for Municipal council, U.C. stands for Urban Council, P.C. stands for provincial council

income received by household members by chance or Adhoc gains during the last calendar year. All income variables are reported in log form. During the survey, three questions were asked from respondents, based on the respondent's ability to access electricity, water, and telephone connections from their location. Those questions are; 'Do you have electricity supply (mainline) nearby your area?', 'Do you have telephone facilities in your area?', 'Do you have pipe born line (mainline) nearby your area?'. Answers were given in yes/no forms.

Access to basic facilities was measured using the answers provided for those questions. Proximity to water, electricity, and telephone facilities from home has been used for this purpose. They are binary variables and were considered as 1 if the particular facility was available near the house. Otherwise, those variables are considered as 0.

Three variables have been used to examine the availability of water. First, it considered whether households use safe drinking water⁷ or not. The variable of safe drinking water equals 1 if the household consumes water from a safe water source and 0 if they consume water from an unsafe water source. The name of the second variable related to the water facility is within the premises. It is a binary variable, which equals 1 if the household has access to water within their premises, and 0 otherwise. Water sufficiency is the third variable used to access water facilities. It is also a binary variable, which equals 1 if the household has enough water to drink, bath & wash during the year. As explained earlier, some people living in the Hambantota district claims that they are more prone to disasters after implemented the project. Two binary variables were used to test the authenticity

⁷ Protected well, tap lines, tube wells and bottled water are considered as 'safe water sources'. Water comes through 'Village water projects' were also considered 'safe water sources'. Water from unsafe wells, bowsers, rivers, tanks, rain, and other unprotected water sources can be considered 'unsafe water sources'

here. The first variable relates to natural disaster, which equals 1 if the household unit was affected by any natural disaster during the last 12 months, and 0 otherwise. The next variable is wild animal disasters, which equals 1 if the household unit was attacked by wild animals during the year prior to the survey and 0 otherwise.

Houses with more than 2-bed rooms, Cooking Fuel, Toilet facility, Floor material, Roof material, Wall materials, and Household Ownership are binary variables that I used in this study to examine household well-being through housing conditions. The variable if Houses with more than 2-bed rooms equal 1 if the household has more than two bedrooms and '0' otherwise. The variable of Cooking Fuel equals '1' if the household uses gas or electricity for cooking and '0' if they use kerosene firewood, sawdust, paddy husk, or other material for cooking. The variable of Toilet facility equals '1' if the household uses a water seal toilet (which can be connected to pit/ tank/ drainage system/ piped sewer) and '0' if the toilet is not a water seal/ direct pit/ other unsafe toilets.

The variable of 'floor material' equals '1' if the floor material of the household is cement, teraso, tile, or concrete and 0 for mud, wood, sand, or other material. The variable of 'Roof material' in this study equals '1' if the roof material of the household is tile, asbestos, or concrete, and '0' if metal sheet, takaram, cadjan, Palmyra, straw, other material used by a household to cover their roof. The variable of Wall materials equals '1' if the household use bricks, cabook, cement block, pressed solid block to build the walls and '0' if walls are made by mud, plank, metal sheet, cadjan, Palmyra, other material. Household ownership is another variable that I used to investigate the well-being of the household. The variable equals '1' if the household has constructed/ purchased by an occupant, inherited, freely

received/ received as a gift or compensated and '0' if they rent, lease, encroached the house which they are living at the moment of the survey.

The study also used the time to access government agencies to test domestic well-being. Variables represent the time taken from home to the closest facility. The time is taken to reach the nearest public places from home was considered in this study. Public places are banks, bus halts, District Medical office (DMO), DS office, government dispensary, private dispensary, hospital, maternity clinic, Municipal Council/Urban Council/ Provincial Council (MC/UC/PC), post office, and pre-schools.

Household total food expenditure and its different categories were tested using expenditure in log forms. Food categories tested were cereals, fish, non-alcohol beverages, short eats, vegetables, liquor, and other food types. The total non-food expenditure composes of different expenditure categories. Those are health, fuel & light, personal care, clothing, housing, transport, and other expenditures.

2.3 Model specification

The study used the difference in differences approach to identify the impact of GHDP on household wellbeing. The standard DID model used is as follows;

$$Y_{hdt} = \pi_0 + \pi_1 Post_t + \pi_2 Hamb_{hd} + \pi_3 (Post_t * Hamb_{hd}) + X'_{hdt} \alpha + \varepsilon_{hdt} \dots (1)$$

Where, 'h' stands for households; 'd' stands for district and 't' stands for years. Y_{hdt} represents the outcome variables of household 'h' in district 'd' at time 't'. 'post' is a year dummy that equals one for 2016 and equals zero for 2006. 'Hamb' represents a binary

variable which is one for Hambantota District, and zero for Anuradhapura district. X'_{hdt} represents a set of other variables that can affect outcome variables, such as sector, sex, age, religion, ethnicity, marital status, level of education, etc. \mathcal{E}_{hdt} is the error term. π_0 , π_1 , π_2 , π_3 , α , are parameters supposed to be estimated.

3. Empirical Results

This section discusses empirical findings of the impacts of the GHDP program on household wellbeing in the Hambantota district.

3.1.1 Impact of the GHDP on Income, and expenditure on food & non-food items

The most commonly used indicator to measure the well-being of households is income (Luttmer 2005; Senik 2008; Clark and Oswald 1996; Frijters, and Shields 2008). Table 1.2 provides the income of households by six different categories. Columns (1) to (6) refer to income received through salaries and wages, agriculture activities, non-agriculture activities, other agriculture activities, Adhoc-income, and other income, respectively. All dependent variables are in log forms. Salary Income represents income earned 4 weeks prior to the survey date. Income from agricultural activities is represented by the income earned during the cultivation year. Income from non-agricultural activities is represented by the income earned during the month preceding the survey date. All income categories show negative signs relative to the control group after the intervention of the program. Out of those coefficients, three income categories show statistically significant results. They are salaries and wages, agricultural activities, and non-agricultural activities. According to some researchers and government reports, the project aimed to create a large number of jobs. If

that happened, the income from the salaries and wages of households in the Hambantota district would have to be higher than that of the controlled group. However, table 1.2 shows that the income from salaries and wages of the people living in the Hambantota district is 16.5 percentage points lower than the non-treated district in the after-period, relative to the before-period. Although more than 40 percent of the area's population is dependent on agriculture, the GHDP project does not include any component related to the development of agriculture. However, an indirect impact on the agricultural sector can be

Table 1.2: Impact of GHDP on Income of the households

| Description | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------|------------------------------------|----------------------------|----------------------|--------------------------------|---------------------|---------------------|
| | Log Income by different categories | | | | | |
| | Salaries and wages | Income from Seasonal Crops | Non-Agri. activities | Income from Non-Seasonal Crops | Other Income | Adhoc Income |
| Treated | 0.095*** (0.025) | 0.174*** (0.050) | 0.169*** (0.053) | 0.338*** (0.170) | 0.140** (0.055) | 0.146** (0.060) |
| Post | 0.215*** (0.026) | 0.071* (0.041) | 0.163* (0.091) | 0.372*** (0.018) | 0.281*** (0.063) | 0.361*** (0.061) |
| Treated x Post | -0.165*** (0.035) | -0.158** (0.068) | -0.185** (0.077) | -0.033 (0.230) | -0.038 (0.079) | -0.080 (0.087) |
| Controls | YES | YES | YES | YES | YES | YES |
| R2 | 0.41 | 0.27 | 0.27 | 0.23 | 0.30 | 0.23 |
| Observations | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 |

Dependent Variables are income in log forms, by different categories. Columns (1) to (6) represent income from salaries and wages, income from agricultural activities, income from non-agriculture activities, other agriculture income, and Adhoc income.

The variable of salaries & wages refers to the income received through salaries and wages during the last 4 weeks prior to the survey. Income received through agriculture activities refers to the period of cultivation year prior to the survey. The reference period of income through Non-agriculture activities refers to the last calendar month prior to the survey. The periods of income received through other agriculture activities, Adhoc income, and other income refer to the last 12 months prior to the survey.

Salaries and wages refer to the income received by working as an employee during the last calendar month. (Note: This includes tips, commissions, overtime payments received during the last calendar month, and bonus and/or arrears payments received within the last 12)

Agricultural activities refer to the income received through cultivating paddy and other seasonal crops (Seasonal crops include paddy, cereals, vegetables, potatoes, chilies, onions, tobacco, and other seasonal crops) as an employer or own account worker during the last cultivation year. The study refers to the value-added of the output derived by deducting input values from the output values.

Other agricultural activities refer to the income earned through non-seasonal crops (Non-seasonal crops include tea, rubber, coconut, coffee, pepper, betel banana, fruits, etc.) and livestock activities (livestock activities include meat, fish, eggs, milk, other food items related to livestock, horticulture, etc.).

Other income refers to the other payments (other income includes pensions, samurai (welfare payments to the poor), old age payments, tuberculosis/kidney disease payments, education and scholarships, dividends/interest, property rent, boarding fees, remittances Receipts, etc).

Adhoc income refers to loans taken from banks or money lenders, sales/ pawning of assets, withdrawals from saving/ bank deposits/ gratuity fund / provident fund, income receives from associations, welfare societies, health and medical aids, compensation/ insurance, other (lottery & adhoc gains), other commendations, disaster relief payments, etc. Basically, it refers to income received by household members by chance or Adhoc gains during the last calendar year.

All regressions included household controls and district-fixed effects.

expected from the project. However, the table shows that after the program intervention, the treatment group had a significant negative impact on agricultural income compared to the control group. Column 2 of the Table revealed that the agriculture income of households in the Hambantota district is 15.8 percentage points lower than treated district after the GHDP was implemented, relative to the before the intervention of the program. One of the main expectations of the project is to enhance the non-agriculture sector in the district. However, after the introduction of the project, the income of households from non-agricultural activities has also decreased significantly. Column (3) shows that the non-agriculture income of households in the treated district is nearly 18.5 percentage points lower than the non-treated district in the after-period, relative to the before-period. Another important component that researchers used to measure household and individual well-being is expenditure (Heinz-Herbert and Weick, 2015). Among other expenditures, expenditure on food is one of the important factors that can be used to measure household

well-being (McGregor and Borooah, 2009). According to Engels' law, as household incomes increase, the proportion of money they spend on food out of their total income decrease (Engel, 1857). However, it further states that an increase in income of the household increases the total expenditure on foods. Accordingly, we can expect a negative impact on food expenditure since the income of the treatment group decreased after the intervention of the project. Table 1.3 of this section shows the weekly household expenditures for various food items. The first column shows the total cost of the food item.

Columns (2) to (8) in Table 1.3 show household expenditure by different food categories such as grain, fish, non-alcoholic beverages, other foods, snacks, vegetables, and alcohol, respectively. As expected, the total money spent on food items by households of Hambantota district has dropped statistically significant by 5.5 percentage points compared to the households in the treated district in the after-period, relative to the before period. Expenditure on cereal, fish, non-alcohol beverages, other food, and short eats in the treatment group also significantly decreased in the treated district by 9, 5.3, 12.3, 10.2, and 8 percentage points than the non-treated district in the after-period, respectively. Expenditure incurred by households in the Hambantota district on food categories related to vegetables and liquor have also shown a negative sign compared to the non-treated district and the before-period, but that coefficients have not been statistically significant.

The impacts of the project on non-food expenditures on households are given in Table 1.4. Column 1 refers to the total money that households spend on non-food items. Columns (2) to (8) refer to expenditures on different non-food categories such as health, fuel & light,

personal care, clothing, housing, transport, and other expenditures, respectively. Among those, health, transport, personal care, and other expenditure of the household refer to the month preceding the survey date. Expenditure on clothing represents the expenditure incurred for a period of 6 months from the date of the survey. The expenditure on fuel & lights refers to the average monthly expenditure on that category. The coefficients of interest show negative signs for total non-food expenditure as well as all the non-food categories. However, the coefficients of total non-food, clothing, housing, transport, and other expenditures are not statistically significant. The coefficients that refer to expenditures on health, fuel & light, and personal care expenses of the treated district are 8.5, 9.6, and 19.7 percentage points lower than the non-treated districts in the after-period, relative to the before period, respectively.

According to Tables 1.3 & 1.4, the food expenditures of the households are significantly lower than the non-food expenditures. Such an outcome can be expected as poor people spend more of their income on food than on non-food ([Obisesan et al., 2016](#)). The Hambantota district is known as one of the poorest districts in Sri Lanka.

Table 1.3: Impact of GHDP on Food Expenditure of households

| Description | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|----------------|------------------------|----------------------|---------------------|-----------------------|----------------------|---------------------|---------------------|---------------------|
| | Total Food Expenditure | Food Expenditure on | | | | | | |
| | | Cereal | Fish | Non-Alcohol Beverages | Other Food | Short Eats | Vegetable | Liquor |
| Treated | 0.039*** (0.009) | 0.037** (0.011) | 0.146*** (0.018) | 0.031* (0.017) | 0.166*** (0.012) | 0.057** (0.026) | 0.069*** (0.011) | 0.149*** (0.030) |
| Post | 0.209*** (0.022) | 0.39*** (0.031) | 0.198*** (0.037) | 0.177*** (0.046) | 0.259*** (0.032) | 0.258*** (0.053) | 0.272*** (0.017) | 0.065 (0.092) |
| Treated x Post | -0.055*** (0.014) | -0.090*** (0.017) | -0.053** (0.025) | -0.123*** (0.025) | -0.102*** (0.018) | -0.080** (0.037) | -0.023 (0.017) | -0.014 (0.050) |
| Controls | YES | YES | YES | YES | YES | YES | YES | YES |
| R2 | 0.51 | 0.36 | 0.28 | 0.27 | 0.43 | 0.23 | 0.39 | 0.18 |
| Observations | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 |

Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are log variables that indicate food expenditure by types of food. Column (1) shows the total food expenditure of households. Columns (2) – (8) represent expenditure on cereals, fish, non-alcoholic beverages, other foods, short eats, vegetables, and liquor respectively. All regressions included ‘household controls’, and ‘district-fixed effects’.

Table 1.4 : Impacts of GHDP on Non-Food Expenditure of households

| Description | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|----------------|---------------------------------|-------------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| | Total Nonfood Expenditure | Nonfood Expenditures on | | | | | | |
| | | Health | Fuel & Light | Personal Care | Clothing | Housing | Transport | Other |
| Treated | 0.063** (0.029) | 0.100*** (0.031) | 0.060*** (0.014) | 0.099*** (0.015) | 0.059*** (0.022) | 0.090*** (0.021) | 0.007 (0.030) | 0.403*** (0.046) |
| Post | 0.058 (0.063) | 0.376*** (0.071) | -0.084** (0.035) | 0.383*** (0.039) | 0.305*** (0.051) | 0.056 (0.053) | 0.329*** (0.061) | 0.014 (0.102) |
| Treated x Post | -0.014 (0.041) | -0.085* (0.047) | -0.096*** (0.021) | -0.197*** (0.022) | -0.124 (0.031) | -0.031 (0.029) | -0.042 (0.039) | -0.108 (0.067) |
| Controls | YES | YES | YES | YES | YES | YES | YES | YES |
| R2 | 0.27 | 0.23 | 0.21 | 0.43 | 0.23 | 0.38 | 0.20 | 0.38 |
| Observations | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 |

Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are log variables that indicate non-food expenditure by types of non-food. Column (1) shows the total non-food expenditure of households. Columns (2) – (8) represent expenditure on health, fuel & light⁸, personal care⁹, clothing, housing, transport, and other respectively. All regressions included ‘household controls’, and ‘district-fixed effects’.

⁸ fuel & light includes electricity, solar power, Kerosene oil, firewood, LP Gas, bulbs, candles, batteries, matches, other

⁹ personal care includes toilet soap, toothpaste, toothbrush, cosmetics, perfumes, face cream, Hair oil, cream, dye, Hair cut, dressing

3.1.2 Impact of the GHDP on Housing conditions

Housing status also threatens the health and well-being of humans (Goldstein et al 1990). Some researchers point out that the qualities of properties are significantly linked to the health and well-being of residents (Rolfe et al. 2020; Li-Li Ma, 2018; Evans, Well & Moch, 2003). Table 1.5 of this study shows the impact of GHDP on housing conditions. All dependent variables are dummies. According to table 1.5, coefficients of all variables such as houses with more than 2-bed rooms, cooking fuel, toilet facility, Floor material, Roof material, Wall materials, Household ownership report negative signs. Moreover, all coefficients of interaction terms are statistically significant except the variable of Household Ownership.

Although large-scale development constructions have been carried out in the Hambantota district during the development period, it is clear from the table that the housing conditions in that area have not been improved. Houses with more than 2-bed rooms in the Hambantota district are 15.5 percentage points lower than the non-treated district in the after-period, relative to the before period. Households that use gas or electricity for cooking in the Hambantota district are 5.8 percent lower than the non-treated district in the after-period, compared to the before period. The households that use water seal toilets in the Hambantota district are 3 percentage points lower than the non-treated district in the after period relative to the before period. The households that use permanent materials for floors, roofs, and walls in the Hambantota district are 3.5, 9.2, 8.7 percentage points lower than the non-treated district in the after-period, relative to the before-period, respectively.

Table 1.5: Impacts of GHDP on Household conditions

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|----------------|-----------------------------------|----------------------|---------------------|----------------------|----------------------|----------------------|---------------------|
| Description | Houses with more than 2 bedrooms. | Cooking Fuel | Toilet facility | Floor material | Roof material | Wall materials | Household Ownership |
| Treated | 0.106*** (0.026) | 0.053*** (0.015) | 0.045*** (0.015) | 0.33*** (0.006) | 0.065*** (0.015) | 0.048*** (0.014) | 0.006 (0.013) |
| Post | 0.095* (0.054) | -0.161*** (0.057) | -0.033 (0.020) | -0.011 (0.014) | 0.022 (0.025) | 0.016 (0.021) | 0.180*** (0.037) |
| Treated x Post | -0.156*** (0.036) | -0.058** (0.024) | -0.030* (0.018) | -0.035*** (0.013) | -0.092*** (0.019) | -0.087*** (0.017) | -0.021 (0.016) |
| Controls | YES | YES | YES | YES | YES | YES | YES |
| R2 | 0.15 | 0.10 | 0.08 | 0.09 | 0.13 | 0.12 | 0.05 |
| Observations | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 |

Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are binary variables. Column (1) represents a binary variable which equals 1 if the household has more than 2-bed rooms and zero otherwise. Column (2) represents the variable of cooking fuel which equals 1 if the household uses either gas or electricity for cooking and zero otherwise. Column (3) represents the toilet types of the household which equals 1 if the household uses a water seal toilet and zero otherwise. Column (4) shows the floor material which equals 1 if the household uses permanent material and zero otherwise. Column (5) represents the roof material, which equals 1 if the household has permanent material for the roof and zero otherwise. Column (6) represents wall material which equals 1 if the household has permanent material for the roof and zero otherwise. Column (7) shows the ownership of the house which equals 1 if the house owns by a member of the household and zero otherwise. All regressions included household controls and district-fixed effects.

3.1.3 Impact of the GHDP on access to basic facilities and access to public services.

Another complaint from locals is the misleading road network built in the new city. According to them, the new road network is worse for the inhabitants as well as visitors. The city is no longer directly accessible via the main road. The access road to the city is rerouted around the port (Mariyathas et al., 2016). The project should also take into consideration the facilities of the people living beside the highways during construction. For example, once highways are built, fly-over-bridges must be built to allow people on both sides of the road to cross from one side to the other. Due to budget constraints, such bridges have been built with a large gap. This can cause inconvenience to the public and can also affect the well-being of the home. This situation also may increase the time takes for people to access public places. Table 1.6 shows the time taken by households to reach selected public places after GHDP intervention in Hambantota District. All dependent variables are in the log forms. The variables used for this are the time taken from home to the bank, bus stop, District Medical Center (DMO), Secretariat (DS), Government Dispensary, Private Dispensary, Hospital, Maternity Clinic, Post Office and Preschool. It can be clearly visible that the time is taken to reach public places from households have increased after the intervention of the program. In other words, people living in the Hambantota district need to spend more time to reach public places for their needs now than before.

Table 1.6: Impacts of the GHDP on time take to access public services

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|----------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Description | Bank | Bus halt | DMO office | DS office | Gov. Dispensary | Private dispensary | Hospital | Maternity clinic | MC/UC /PC | Post office | Pre school |
| Treated | -0.102*** (0.007) | 0.002 (0.016) | -0.004 (0.014) | 0.013 (0.013) | 0.061*** (0.014) | 0.020 (0.015) | 0.002 (0.014) | 0.029** (0.013) | 0.015 (0.012) | 0.112*** (0.013) | 0.087** (0.013) |
| Post | 0.250*** (0.019) | 0.272*** (0.030) | 0.404*** (0.040) | 0.307*** (0.038) | 0.375*** (0.038) | 0.435*** (0.041) | 0.402*** (0.038) | 0.384*** (0.038) | 0.483*** (0.039) | 0.177*** (0.034) | 0.183*** (0.029) |
| Treated x Post | 0.164*** (0.011) | 0.091*** (0.024) | 0.034* (0.020) | 0.084*** (0.018) | 0.063*** (0.019) | 0.073*** (0.021) | 0.088*** (0.020) | 0.090*** (0.019) | 0.052*** (0.019) | 0.052*** (0.019) | 0.070*** (0.019) |
| Controls | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| R2 | 0.08 | 0.07 | 0.11 | 0.12 | 0.13 | 0.14 | 0.12 | 0.12 | 0.16 | 0.11 | 0.10 |
| Observations | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 | 3317 |

Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables indicate the time taken to access public services from home. Those are in natural log forms. Accordingly, columns (1) – (11) represent the time taken from home to bank, bus halt, DMO office, DS office, government dispensary, private dispensary, hospital, maternity clinic, MC/UC.PC, post office, pre-school respectively. DMO stands for District Medical Office, DS stands for Divisional Secretariat office, MC stands for Municipal council, UC stands for Urban Council, PC stands for Provincial Council. All regressions included ‘household controls’, and ‘district-fixed effects’.

Another commonly used indicator for measuring domestic well-being is access to basic facilities such as water, electricity, and telephone connections. For example, a 'composite household well-being index' was prepared by Yograj & Peter (2016) by incorporating access to basic facilities.

Table 1.7: Impacts of GHDP on access to the basic facilities: electricity and telephone lines

| Description | (1) | (2) |
|----------------|------------------------------|----------------------|
| | Near to the basic facilities | |
| | Power supply | Telephone line |
| Treated | 0.037** (0.014) | 0.136*** (0.022) |
| Post | -0.014 (0.017) | -0.312*** (0.037) |
| Treated x Post | -0.037** (0.015) | -0.041 (0.032) |
| Controls | YES | YES |
| R2 | 0.07 | 0.06 |
| Observations | 3317 | 3317 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. *p<0.10, **p<0.05, ***p<0.01. Dependent Variables are binary variables. Column (1) represents 'the availability of electricity supply (mainline) nearby the household area'. Column (2) represents 'the availability of telephone facility nearby the household area'. All regressions included 'household controls', and 'district-fixed effects.*

In this study, I also investigated the accessibility to basic facilities. Table 1.7 examines the impact of the project on the ability to access electricity and telephone services from home. The dependent variables shown in the table are dual variables. Each variable was assumed to be equal to 1 if the access required to obtain the relevant facility was near the house. The proximity of the power supply to the households of the Hambantota district is 3.7 percentage points lower than the control district after the implementation of the project.

As mentioned in the first chapter, water supply projects were implemented to meet the water needs of the Hambantota district. As the Hambantota area belongs to the arid zone, it is necessary to provide proper water supply facilities to implement large-scale projects. (However, compared to the large-scale projects implemented in the Hambantota district, the water supply project does not belong to that category of large-scale projects). As mentioned earlier, the National Water Supply and Drainage Board dealt with water projects. Basically, water projects have directly targeted the households. The study next examines the impact of GHDP on the water availability of households. To measure it, three variables were used: Safe drinking water, Water within premises, and Water sufficiency. All three dependent variables are binary variables. The variable of Safe drinking water equals 1 if the household consumes safe water and 0 otherwise. The variable of water within premises equals 1 if the water is available within their households. Water sufficiency is the last variable in table 1.8, which equals 1 if the household has enough water to drink, bath & wash during the year, and 0 otherwise. The results show that the supply of drinking water to households in the Hambantota district is 27 percentage points higher than that of the controlled group after the intervention of GHDP, relative to the before period.

Availability of water supply to the premises of households in the Hambantota district is 9 percentage points higher than the treated district in the after-period, compared to the before period. However, it cannot be said that there is enough water throughout the year for their daily needs.

Table 1.8: Impacts of the GHDP on access to water facilities

| Description | (1) | (2) | (3) |
|----------------|----------------------|-----------------------|--------------------|
| | Water availability | | |
| | Safe drinking water | Water within premises | Water sufficiency |
| Treated | 0.063*** (0.013) | 0.293*** (0.022) | 0.039** (0.016) |
| Post | -0.302*** (0.023) | -0.252*** (0.042) | -0.042 (0.027) |
| Treated x Post | 0.270*** (0.022) | 0.090*** (0.030) | 0.017 (0.021) |
| Controls | YES | YES | YES |
| R2 | 0.16 | 0.18 | 0.026 |
| Observations | 3317 | 3317 | 3317 |

Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are binary variables. Column (1) represents 'the availability of safe drinking water to use'. Column (2) represents 'the availability of water within the household'. Column (3) indicates 'whether the household has sufficient water to use'. All three regressions included 'household controls', and 'district-fixed effects'.

3.1.4. Impacts of the GHDP on safety from disasters

According to the OECD well-being framework, the safety of individuals and households also needs to be considered. Accordingly, Table 1.9 was obtained to identify the impact of the project on housing disaster risks. Both dependent variables in table 1.9 are binary variables. The dependent variable of the first regression is Natural disaster, which equals 1 if the housing unit was affected by any natural disaster during the last 12 months, and 0 otherwise. The dependent variable in the second column is Wildlife Disasters, which is equal to 1 if there has been a wildlife attack on the housing unit in the last 12 months, and 0 otherwise. The results indicate that households in the Hambantota district affected by natural disasters are 6.2 percentage points higher than the non-treated district in the after-period, relative to the before

Table 1.9: Impacts of the GHDP on safety from disasters

| Description | (1) | (2) |
|----------------|---------------------|-----------------------------|
| | Disaster | |
| | Natural Disaster | Disaster due to wild animal |
| Treated | -0.019 (0.012) | -0.015* (0.008) |
| Post | -0.022 (0.016) | -0.001 (0.007) |
| Treated x Post | 0.062*** (0.016) | 0.038*** (0.010) |
| Controls | YES | YES |
| R2 | 0.016 | 0.012 |
| Observations | 3317 | 3317 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are binary variables. Column (1) represents natural disasters. Column (2) represents 'disasters due to wild animals. Both regressions included household controls and 'district-fixed effects.*

period. The animal attacks on households in the Hambantota district are 3.8 percentage points higher than the non-treated district after the GHDP was introduced compared to the before period.

3.2 Robustness Check:

3.2.1 Robustness Check: Income

The results of the major findings on income can also be verified by tables 1.10 and 1.11. I have used the HIES data set and equation 2 of this study to obtain table 1.10. The table shows the impact of the project on household income in considering Hambantota as the treatment district and all other districts as controlled districts.

**Table 1.10: Robustness Check: Impact of GHDP on household Income
(The Control group: Other districts except for Hambantota)**

| The Control group is rest of the whole districts | | | |
|--|----------------------|------------------------|----------------------------|
| Description | (1) | (2) | (3) |
| | Log Income from | | |
| | Salaries and wages | Agriculture activities | Non-Agriculture activities |
| Treated | 0.069*** (0.018) | 0.305*** (0.046) | 0.041 (0.210) |
| Post | 0.360*** (0.010) | 0.680*** (0.083) | 0.353*** (0.020) |
| Treated x Post | -0.089*** (0.024) | -0.026 (0.059) | -0.028 (0.050) |
| Controls | YES | YES | YES |
| R2 | 0.43 | 0.20 | 0.29 |
| Observations | 41,047 | 41,047 | 41,047 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. *p<0.10, **p<0.05, ***p<0.01. Dependent Variables are income in log forms, by different categories. Columns (1) to (3) represent income from salaries and wages, income from agricultural activities, income from non-agriculture activities.*

The variable of salaries & wages refers to the income received through salaries and wages during the last 4 weeks prior to the survey. Income received through agriculture activities refers to the period of cultivation year prior to the survey. The reference period of income through Non-agriculture activities refers to the last calendar month prior to the survey. All regressions included household controls and district-fixed effects.

As the main findings, results reported in Table 1.10 also show negative signs for all income variables, and among them, income received through salaries & wages, highly statistically significant. Apart from that, two different data sources have been used to check the robustness of the results. First, I have used Labor Force Survey data to check the validity of the findings of the household income. However, the Labor Force Survey does not collect information on income from detailed categories such as income from wages and income from non-agricultural activities. Rather, it basically records the total income of households. The accuracy of the key findings was tested using equation (1) with the workforce data.

Results are reported in Table 1.11. The dependent variable is income and is expressed in log form.

Table 1.11: Robustness Check: Impact of GHDP on household Income (using LFS data)

| Description | (1) |
|------------------------|----------------------|
| | Total Income |
| Treated | 0.093 (0.069) |
| Post | 0.515*** (0.048) |
| Treated x Post | -0.145 ** (0.057) |
| Controls | YES |
| District fixed effects | YES |
| Year Fixed effects | YES |
| R2 | 0.22 |
| Observations | 1,389 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. *p<0.10, **p<0.05, ***p<0.01. The dependent variable is in log form. Column (1) represents total Income(in log form) considering Anuradhapura district as the control group. The regression included household controls and district-fixed effects.*

When Anuradhapura district is considered as the control group, the result is shown in the first column. The first column shows the regression results obtained by considering the Anuradhapura District as the controlled group. The results shown in Table 1.2 using the HIES data source are very similar to the results given in Table 1.11. On average, therefore, both data sources report closely similar results, confirming the validity of the findings of this study.

3.2.2 Robustness check: Water supply results

The impact of the water project on the well-being of households in the Hambantota District was studied under Table 1.8 of the previous section. In this section, the DHS data was used

Table 1.12: Robustness Check: Impact of GHDP on household facilities (using DHS data)

| Description | (1) | (2) |
|----------------|---------------------|-----------------------|
| | Water availability | |
| | Safe drinking water | Water within premises |
| Treated | -0.013 (0.016) | 0.113*** (0.026) |
| Post | -0.034** (0.014) | -0.317*** (0.022) |
| Treated x Post | 0.085*** (0.021) | 0.432*** (0.038) |
| Controls | YES | YES |
| R2 | 0.015 | 0.16 |
| Observations | 3250 | 3250 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. *p<0.10, **p<0.05, ***p<0.01. Dependent Variables are binary variables. Columns (1) and (2) represent the availability of safe drinking water and within the premises at the household, respectively. All regressions included household controls.*

to verify those findings by employing the same equation. The DHS survey collects data on the water availability of households in detail. However, it does not collect data on water sufficiency. Therefore, I have used the rest of the two variables reported in Table 1.8 to investigate the validity of the estimates. Results are reported in Table 1.12. Findings are consistent with the baseline estimates both in signs and significant levels that confirm the validity of the results.

4.3 Robustness check: Household conditions

DHS data have been used to test the feasibility of key findings on housing conditions. After considering the questions and definitions of both surveys, I have selected variables of toilet facility, floor materials, roof materials, and housing ownership to verify the results of household conditions. Results are reported in Table 1.13.

Table 1.13: Robustness Check: Impact of GHDP on household conditions (using DHS data)

| Description | (3) | (4) | (5) | (6) |
|----------------|----------------------|----------------------|----------------------|-------------------|
| | Household conditions | | | |
| | Toilet facility | Floor material | Roof material | Housing Ownership |
| Treated | 0.039*** (0.006) | 0.077*** (0.008) | 0.067*** (0.006) | 0.008 (0.008) |
| Post | 0.096*** (0.006) | 0.138*** (0.007) | 0.100*** (0.005) | -0.007 (0.006) |
| Treated x Post | -0.054*** (0.009) | -0.062*** (0.010) | -0.085*** (0.008) | -0.006 (0.010) |
| Controls | YES | YES | YES | YES |
| R2 | 0.023 | 0.039 | 0.024 | 0.043 |
| Observations | 12,839 | 12,839 | 12,839 | 12,839 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are binary variables. Column (1) represents the toilet types of the household which equals 1 if the household uses a water seal toilet and zero otherwise. Column (2) shows the floor material which equals 1 if the household uses permanent material for the floor and zero otherwise. Column (3) represents the roof material, which equals 1 if the household has permanent material for the roof and zero otherwise. Column (4) shows the ownership of the house which equals 1 if the house owns by a member of the household and zero otherwise. All regressions included household controls.*

Heterogeneous effects

Although the GHDP project has affected all households and individuals in the Hambantota area, it can have different impacts on urban and non-urban households. I have, therefore, investigated the heterogeneous impacts of the GHDP by sector by employing equation (2).

$$Y_{hsdt} = \beta_0 + \beta_1 post + \beta_2 Hamb_{hd} + \beta_3 Sector_{hs} + \beta_4 (post_{ht} * Sector_{hs}) + \beta_5 (Hamb_{hd} * Sector_{hs}) + \beta_6 (Hamb_{hd} * post_{ht}) + \beta_7 (Hamb_{hd} * post_{ht} * Sector_{hs}) + X'_{hdt} \theta + \varepsilon_{hjt} \dots (2)$$

Where 'h' stands for households; 'd' stands for districts; 's' stands for the sector and 't' stands for years. 'Y' represents the outcome variable. 'post' is a year dummy that equals one 2016 and equals zero for the period 2006. 'Hamb' represents a binary variable which is one for Hambantota District, and zero for Anuradhapura District. The sector is a dummy variable which equals 1 if the household belongs to an urban area and 0 if the household belongs to the rural area. X'_{hdt} represents a set of other variables that can affect child health, the wealth of the family, wealth, Sex, religion, ethnicity, marital status, education levels, etc. ε_{hjt} is the error term. β_0 , β_1 , β_2 , β_3 , β_4 , β_5 , β_6 , β_7 , and θ , are parameters.

The estimates from equation (2) are reported in table 1.14. It shows the heterogeneous impacts of the GHDP project on income by sector and the sex of the household head. According to the results reported in table 1.14, there are no different impacts on income between male-headed

Table 1.14: Triple DID – Heterogeneity by sector and household headship

| Description | (1) | (2) | (3) | (4) | (5) | (6) |
|--|-----------------------|---------------------|------------------------|--------------------|----------------------|---------------------|
| | Household Income from | | | | | |
| | Salaries and wages | | Non agriculture sector | | Other | |
| Panel A : Heterogeneity by Sector | | | | | | |
| Treated | 0.099*** (0.031) | | 0.135** (0.060) | | -0.181*** (0.056) | |
| Post | 0.514*** (0.029) | | 0.527*** (0.064) | | 0.788*** (0.057) | |
| Urban | 0.397*** (0.044) | | 0.192* (0.101) | | 0.323*** (0.108) | |
| Treated x Post | -0.111*** (0.041) | | -0.118 (0.083) | | 0.009 (0.081) | |
| Treatment x Urban | -0.116* (0.059) | | 0.101 (0.117) | | 0.185 (0.152) | |
| Post x Urban | -0.046 (0.069) | | 0.549* (0.301) | | 0.059 (0.224) | |
| Treatment x post x Urban | -0.280*** (0.109) | | -0.231** (0.102) | | -0.052 (0.305) | |
| Panel B : Heterogeneity by household headship | | | | | | |
| Treated | | -0.086 (0.110) | | -0.105 (0.146) | | -0.253** (0.106) |
| Post | | -0.211** (0.092) | | 0.331** (0.162) | | 0.643*** (0.098) |
| Male_Headed_HH | | -0.046 (0.082) | | 0.181 (0.135) | | -0.48*** (0.092) |
| Treated x Post | | 0.042 (0.142) | | 0.062 (0.199) | | 0.129 (0.139) |
| Treatment x Male_Headed_HH | | 0.212* (0.113) | | 0.321** (0.157) | | 0.174 (0.123) |
| Post x Male_Headed_HH | | 0.306*** (0.095) | | 0.201 (0.173) | | 0.248** (0.116) |
| Treatment x post x Male_Headed_HH | | -0.227 (0.146) | | -0.264 (0.215) | | 0.255 (0.168) |
| Controls | YES | YES | YES | YES | YES | YES |
| R2 | 0.29 | 0.38 | 0.26 | 0.27 | 0.19 | 0.28 |
| Observations | 3,317 | 3,317 | 3,317 | 3,317 | 3,317 | 3,317 |

Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are income in log forms. Columns (1) - (2) represent income from salaries and wages. Columns (3) & (4) represent income from agricultural activities, and columns (5) & (6) represent income from non-agriculture activities. The variable of salaries & wages refers to the last 4 weeks prior to the survey. Income received through agriculture activities refers to the cultivation year prior to the survey. Income through Non-agriculture activities refers to the previous calendar month. Odd columns of the table show heterogeneity by

sector and even columns show heterogeneity by sex of the head of the household. All regressions included household controls.

and female-headed households. However, the table shows that the GHDP has a significant effect on the urban sector compared to the non-urban sector for income earned through Salaries & wages and income earned through non-agriculture activities. The findings show that the probability of income receives through salaries and through non-agriculture activities are

Table 1.15: Triple DID – Heterogeneity by sector on disasters

| Description | (1) | (2) |
|--------------------------|----------------------|-----------------------------|
| | Natural disaster | Disaster due to wild animal |
| Treated | -0.036** (0.014) | -0.019** (0.010) |
| Post | -0.082*** (0.012) | -0.043*** (0.008) |
| Urban | -0.105*** (0.011) | -0.049*** (0.007) |
| Treated x Post | 0.084*** (0.018) | 0.045*** (0.012) |
| Treatment x Urban | 0.088*** (0.021) | 0.025** (0.011) |
| Post x Urban | (0.081*** (0.012) | 0.043*** (0.008) |
| Treatment x post x Urban | -0.136*** (0.024) | -0.051*** (0.013) |
| R2 | 0.012 | 0.018 |
| Observations | 3317 | 3317 |

*Notes: Coefficients with robust standard errors are reported in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent Variables are binary variables. Column (1) represents natural disasters. Column (2) represents disasters due to wild animals. Urban is a binary variable which equals 1 if the household belongs to the urban sector and 0 for the non-urban sector.*

statistically significantly decrease on households in the urban sector in the Hambantota district relative to the control group after the GHDP was implemented. Table 1.15 shows the heterogeneous impact of the project on urban and rural areas with respect to disasters. The findings show that the probability of being affected by natural disasters and disasters due to wild animals in households in the urban sector is lower by 13.6 percentage points and 5.1 percentage points, relative to their counterparts.

Discussion and Conclusion

The study focuses on the consequences of large-scale investments based on political decisions by using the diff-in-diff approach. It also examines the impact on the domestic well-being of medium or small-scale projects such as water supply targeted at the general population in the area. According to the results of this study, the income earned from the salaries, agricultural and non-agricultural activities of the people of the Hambantota district has decreased after implemented the GHDP, compared to the control group. As household incomes fall, so do their expenses. During the development decade, the expenditures on foods have been decreased by 5.5 percent. Moreover, expenditures on food items have been declined more than the expenditures on non-food items. The results of this study are consistent with previous studies

As household incomes fall, so does their spending on certain non-food items. Out of these expenditures, personal care, fuel and lighting, and health care expenditure in the Hambantota District are lower by 19.7, 9.6, and 8.5 percentage points than the control district after the intervention of the project, respectively. According to the new city plan

introduced for the Hambantota district, the time required for people to travel from their homes to public places has increased. Irregular development projects carried out in disregard of the feasibility study reports have increased the vulnerability of the people in the area to natural and wildlife disasters. Income received through salaries and through non-agriculture activities of the households in the urban sector of Hambantota district is more affected than the non-urban sector after the GHDP was implemented compared to before. However, the water projects implemented targeting the people of the area have had a significant positive impact on the drinking water needs of the people.

Introducing large-scale projects suitable for a luxurious lifestyle will not meet the needs of the poor. Care should be taken when planning projects to uplift the living standards of the people living in such areas where more than 40% of the population depends on agriculture for their livelihood. Today, Sri Lanka is experiencing the consequences of politicians not listening to the views and advice of experts in the field when making their decisions. It is important to have an accurate estimate of the expected returns on loans before investing. Developing large-scale infrastructure by borrowing at high-interest rates without proper planning or study is very risky. Therefore, policymakers need to prepare policies that are needed to prevent such situations in the future.

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APPENDIXES

Appendix 1:

Income and expenditure related indicators of Treatment and Control districts, 2006/07

| Description | Hambantota | Anuradhapura |
|------------------------------|------------|--------------|
| Richest 20% | 50.3 | 49.0 |
| Poorest 20% | 5.2 | 5.4 |
| Middle 60% | 44.4 | 45.7 |
| Poorest 40% | 14.9 | 15.3 |
| Mean income | 0.45 | 0.43 |
| Per capita income | 0.44 | 0.42 |
| Income receivers income | 0.50 | 0.50 |
| Per capita income | 5,789 | 5,913 |
| No. of income receivers | 1.8 | 1.6 |
| Household size | 4.2 | 3.7 |
| Income receivers mean income | 13,474 | 13,662 |
| Mean household income | 24,076 | 21,995 |
| Agriculture income | 4,250 | 3,869 |
| Non-agriculture income | 3,957 | 3,607 |
| Total monetary income | 20,878 | 19,103 |
| Salaries and wages | 7,595 | 6,061 |
| Other cash income | 2,628 | 3,275 |
| Income by chance/Adhoc | 2,448 | 2,291 |
| Non-monetary income | 3,198 | 2,891 |
| Total Expenditure | 20,568 | 20,290 |
| Food Expenditure | 8,293 | 7,254 |
| Food ratio | 40.3 | 35.8 |
| Non-food Expenditure | 12,275 | 13,036 |
| Non-food ratio | 59.7 | 64.2 |
| Mean household Expenditure | 0.36 | 0.41 |
| Per capita Expenditure | 0.34 | 0.40 |

Source: Household Income and Expenditure Survey Final Report 2006/07

Appendix 2:

References for Income categories

| | |
|--------------------------------------|---|
| Salaries and wages | Salaries and wages refer to the income received by working as an employee during the last calendar month. (Note: This includes tips, commissions, overtime payments received during the last calendar month, and bonus and/or arrears payments received within the last 12) |
| Agricultural activities | Agricultural activities refer to the income received through cultivating paddy and 'other seasonal crops' ('Seasonal crops' refers to paddy, cereals, vegetables, potatoes, chilies, onions, tobacco, and other seasonal crops) as an employer or own account worker during the last cultivation year. The study refers to the value-added of the output derived by deducting input values from the output values. |
| Other agricultural activities | Other agricultural activities refer to the income earned through non-seasonal crops('Non-seasonal crops' refers to tea, rubber, coconut, coffee, pepper, betel banana, fruits, etc.) and livestock activities('livestock activities' refers to meat, fish, eggs, milk, other food items related to livestock, horticulture, etc.). |
| Other income | Other income refers to the other payments(other income refers to pensions, samurai (welfare payments to the poor), old age payments, tuberculosis/kidney disease payments, education, and scholarships, dividends/interest, property rent, boarding fees, remittances Receipts, etc.). |
| Adhoc income | Adhoc income refers to loans taken from banks or money lenders, sales/ pawning of assets, withdrawals from saving/ bank deposits/ grativity / provident fund, income receives from associations, welfare societies, health, and medical aids, compensation/ insurance, other (lottery & Adhoc gains), other commendations, disaster relief payments, etc. The reference period for the Adhoc gains during the last calendar year. |

Source: HIES – questionnaire, Department of Census and Statistics

Appendix 3:**References for Non-Food categories**

| | |
|---------------------------|--|
| fuel & light | includes electricity, solar power, Kerosene oil, firewood, LP Gas, bulbs, candles, batteries, matches, other |
| personal care | Toilet soap, toothpaste, toothbrush, cosmetics, perfumes, face cream, Hair oil, cream, dye, Haircut, dressing, other |
| Health expenditure | Fees to private medical practitioners, Ayurvedic consultation fees, consultation fees to specialist, payment for private hospitals and nursing homes, purchase of medical and pharmaceutical products, spectacles, other |
| Clothing | Clothing & textiles, tailoring charges, Footwear & other personal effects |
| Housing | Housing rent, taxes, water bills |
| Transport | Train/bus/van/taxi/ship/airlines fees, maintenance of private vehicles (petrol & other fuel, oil, tire, spare parts, repair of vehicles, license & insurance fees, other |

Source: HIES – questionnaire, Department of Census and Statistics

Appendix 4 :

References for Housing conditions

| Variable | Description |
|--|---|
| Houses with more than 2 bedrooms. | The number of bedrooms is greater than 2 |
| Cooking Fuel | Firewood, Gas, Kerosene, electricity, sawdust, paddy husk, other |
| Toilet facility | Water seal, pour-flush, pit, other |
| Floor material | Cement, Terrazzo, tiles, mud, other |
| Roof material | Tile, Asbestos, concrete, metal sheet, cadjan, Palmyra, straw, other |
| Wall materials | Bricks, cabook, cement blocks, pressed soil blocks, mud, plank, metal sheet, cadjan, Palmyra, other |
| Household Ownership | The house own by a person living in that house |

Source: HIES – questionnaire, Department of Census and Statistics

