Taking Away the Cambodia Water Festival:
The Effect on Household Income and Expenditure

By

SONG, Dabin

Thesis

Submitted to

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Abstract

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This paper examines the effect of the cancellation of the Cambodia Water Festival on household income and expenditure, using data from the Cambodia Socio-Economic Survey from 2009 to 2019. Following the tragic stampede at the 2010 Water Festival in Phnom Penh, the Festival was canceled for four years. Using this natural experiment, this paper addresses the question of how the cancellation of the Water Festival affects household income and expenditure in Cambodia. This study discovers that the cancellation of the Water Festival led to increases in total household income by 10.7% to 12.3% and total expenditure by 4.6% to 6.3%. This increase is primarily driven by households outside Phnom Penh, those with lower incomes, or those headed by males. These findings suggest that the lack of festivals and holidays contributes to Cambodia's economic revitalization. This paper has implications for policymakers seeking a trade-off between holidays and labor productivity, and it provides insights into the optimal level of holidays.

Keywords: *festival, holiday, economic consequence, income and expenditure, development*

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1 Introduction

In 2022, the Itaewon tragedy in South Korea shocked the world. A stampede occurred in a narrow alley in the Itaewon area of Seoul, where too many people had gathered to celebrate Halloween. This incident resulted in the loss of many young lives and has left scars on South Korean society. The cause of this incident is not something that the general public can often imagine.

Surprisingly, however, this was not the first time such a disaster had occurred in the world. Cambodia experienced a similar tragedy during the last day of Bon Om Touk, known as the Water Festival, in Phnom Penh in 2010. Cambodia has one of the highest number of public holidays in the world, documenting approximately 30 days in 2019. The Water Festival is one of Cambodia's largest celebrations among numerous national holidays and events. It is usually held for three days to commemorate the end of the monsoon season. Although almost every province has its own Water Festival, people usually gather in Phnom Penh to celebrate the largest festivals along the Tonlé Sap river. The stampede at the 2010 Water Festival was more severe than the Itaewon tragedy, with 347 people killed and 755 injured (CNN, 2010).

In response to this incident, the Cambodian government canceled the Water Festival for three consecutive years from 2011 to 2013 for various reasons, including condolences, flooding, and the death of the late King Father Norodom Sihanouk. The government held a scaled-down Water Festival in 2014, but canceled the event again in 2015. The full-scale festival finally returned in 2016. Ironically, this series of cancellations has provided an opportunity to study the impact of this historically and culturally significant event on the community. This begs the question, what would happen if one of the most important holidays unexpectedly disappeared?

This paper examines the impact of the cancellation of the Water Festival on Cambodian society, specifically on household income and expenditure. Data from the Cambodia Socio-Economic Survey (CSES) from 2009 to 2019 is used to answer this research question. The survey is organized by the National Institute of Statistics in Cambodia and is one of the most comprehensive surveys in Cambodia. It provides information on various demographic and socioeconomic situations of Cambodian households, including their financial situation, with well-represented samples. Since the CSES provides information on survey months shared by each village, it is possible to calculate the household income and expenditure in a given month. Taking into account the fact that the Water Festival only took place in November and there were successive cancellations after the 2010 tragedy, this paper employs the difference-in-differences (DID) estimation as an identification strategy.

Employing the DID estimation, this study finds that the cancellation of the Water Festival increases households' total income by 10.7% to 12.3% and their total expenditure by 4.6% to 6.3%. These results remain consistent regardless of the type of income and expenditure, differing only in degree. Categories that do not fall under this increasing trend are the other income, which includes family transfers and remittances, and the expenditure on durable goods. These two categories significantly shrink when the Water Festivals are canceled. This paper executes regressions on diverse sub-samples to determine the key characteristics that induce the change in income and expenditure. Although it is a marginal difference, the change is most pronounced in households living outside Phnom Penh and among households with lower incomes. When considering the characteristics of heads of households, this study finds that if the gender of the head of household is male, the expenditure significantly increases when the Water Festival is canceled. In contrast, the gender difference in income is not significant. The findings of this paper contradict those of prior research,

which claims that lower-income households in developing countries allocate a substantial portion of their budget to ceremonies despite limited resources (Banerjee and Duflo, 2007). However, the shift in income and expenditure in the same direction supports the consumption smoothing theory, where households diversify their employment to offset the increased consumption, which eventually leads to simultaneous increases in income and expenditure (Anukriti et al., 2022; Ashraf et al., 2006; Duflo et al., 2011; Morduch, 1995; O'Donoghue and Rabin, 1999, 2001).

This paper also contributes to a vast body of literature on culture and development (Bornhorst et al., 2010; Guiso et al., 2006; Henrich et al., 2001; Nunn, 2012), which finds that there is an undeniable relationship between cultural traits and economic development. However, to the best of my knowledge, little research has been done on non-religious festivals despite their economic value. Montero and Yang (2022) conduct one of the few relevant studies, in which they suggest the existence of a relationship between religious festivals and economic development in Mexico. They find that festivals that coincide with agricultural events, such as harvesting and planting, are negatively associated with regional economies (Montero and Yang, 2022).

This study contributes to the understanding of the impacts of public holidays. Studying the Water Festival's impact provides the economic outcome of the national celebration and public holidays due to the government's provision of three-day holidays during the festival season. That is, the findings of this paper also imply the impact of public holidays in a holiday-rich country, Cambodia, which makes this research more relevant and attractive. This paper sheds light on a developing country while the majority of the extant research related to holidays or the reduction of work hours focuses on developed countries as research targets. Policies encouraging the reduction of work hours should not privilege enjoyed by only developed countries; thus, the results of this study provide an opportunity to consider the possibility of universal adoption of such policies in

various settings.

The remainder of this paper is organized as follows. Section 2 offers a background on the Water Festival in Cambodia. Section 3 provides a conceptual framework of the study, including a research question and a literature review. Data and the identification strategy are explained in Sections 4 and 5, respectively. Section 6 presents the findings of this study. Section 7 presents the robustness checks of the results. Finally, Section 8 provides a conclusion to this study.

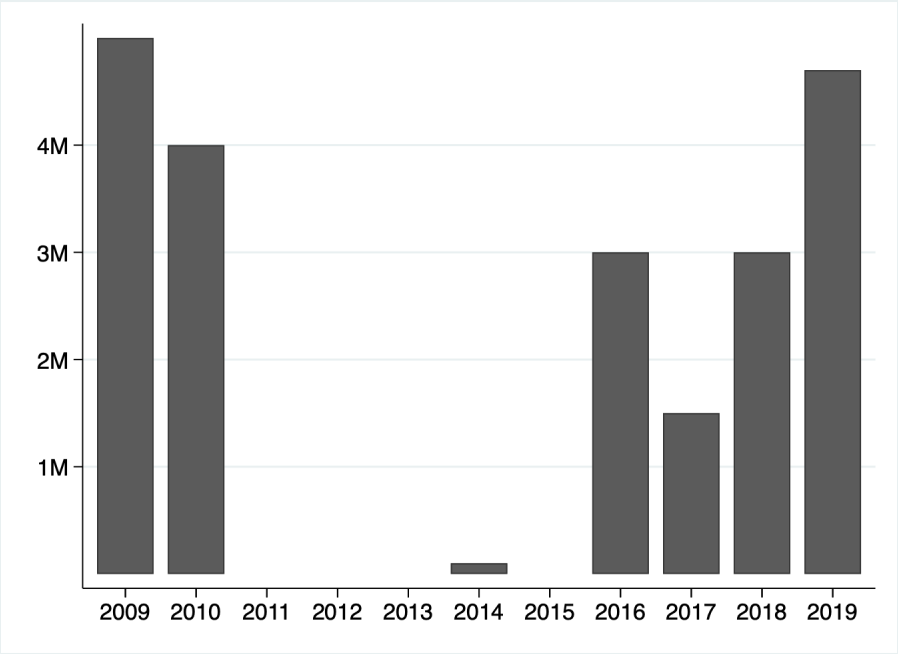
2 Background

On October 29, 2022, the stampede tragedy in Itaewon, Seoul, resulted in 158 deaths and 197 injuries. This terrible tragedy shocked people in South Korea and around the world because it seemed like a rare occurrence. However, this stampede was not the first of its kind in history. Cambodia also experienced a similar disaster during the Water Festival in 2010, which resulted in even greater damage, taking the lives of 347 innocent people and leaving countless others injured (CNN, 2010).

Bon Om Touk, widely known as the Cambodia Water Festival, is a celebration marking the end of the monsoon season. It is one of the most meaningful events in Southeast Asia, particularly in Cambodia, and it is typically held throughout the region in November. However, the largest celebration is held in Phnom Penh along the Tonlé Sap river. A three-day public holiday attracts Cambodian households from all regions of the country to the capital city. As a result, the number of spectators during the season is two times larger than the population of Phnom Penh, as shown in Figure 1. During this event, various festivities take place, including dragon boat races, illuminated floats, and a moon salutation (The Cambodian Circus, 2022). The dragon boat race is the most prominent event and attracts large crowds who spend an entire day watching the races.

The 2010 Water Festival was marred by tragedy when a stampede occurred on the last day of the celebration in Phnom Penh. The festival was held as usual, but one difference from previous years was that the festival was held on a newly built artificial island connected to Phnom Penh for the first time, called Koh Pich, or Diamond Island. An estimated 4 million people reportedly gathered on a narrow bridge connecting Diamond Island and the mainland. The stampede occurred as people attempted to leave the island and encountered others trying to enter, leading to a buildup

Figure 1
Number of Spectators in Water Festivals



Note: This graph shows the estimated number of spectators gathered from various media, not the official figure. The author developed the graph using Stata.

of people on the bridge and eventually a fall and crushing of people who fell in the middle (Thul and Ferrie, 2010). The incident was ranked one of the worst stampedes in history and prompted an apology from Prime Minister Hun Sen, mentioning, “This is the biggest tragedy in more than 31 years after the Pol Pot regime” (Thul and Ferrie, 2010). The Pol Pot regime was a brutal and oppressive government in Cambodia from 1975 to 1979 that resulted in the deaths of approximately 2 million people through forced labor, execution, and starvation. It is considered one of the worst atrocities of the 20th century.

A year after the 2010 tragedy, the Cambodian government canceled the Water Festival due to mass flooding. In 2012, the death of the late King Father Norodom Sihanouk was cited as the reason for the cancellation. The following year, flooding, again, was cited as the reason (Kunthear, 2014). However, some politicians have suggested that the cancellations were, in fact,

due to concerns about attracting large crowds to Phnom Penh again without having fully recovered from the disaster (Kunthear, 2014). After a partial resumption of festivities in 2014 and another cancellation in 2015, the Water Festival was able to fully return in 2016 and continued until the outbreak of COVID-19 in 2020.

Ironically, despite the deep sorrow brought by the disaster, the consecutive cancellations of the Water Festival provide a natural experiment to test the impact of a historically and culturally significant ceremony in one community. Investigating "the missing Water Festivals" will provide insights into the potential economic effects of such events and how they directly impact society.

3 Conceptual Framework

The research question of this paper is as follows: How does the cancellation of the Water Festival affect household income and expenditure? This paper presents three main hypotheses: (1) holding the Water Festival changes the income and expenditure of Cambodian households; (2) the change in income and expenditure shifts in an identical direction in response to the Water Festival; and (3) lower-income families and households living outside Phnom Penh show more significant differences depending on whether the Water Festival is held or not.

3.1 Festival and Development

This paper is closely related to a considerable body of literature on culture and development. As Guiso et al. (2006) and Nunn (2012) argue in their works, the strong relationship between culture and development has been demonstrated throughout history. Many insightful researchers have demonstrated this relationship in practical ways (Bornhorst et al., 2010; Henrich et al., 2001 and many others). However, research on festivals and development has been largely overlooked in academia. Nevertheless, a few studies have examined the impact of festivals or ceremonies on the economy while primarily focusing on religious festivities. Montero and Yang (2022) investigate the economic consequences of Mexican Catholic Patron Saint Days. Using variations in dates of the festivals across regions, they find that "agriculturally coinciding" festivals negatively affect regional economies in the long run. Religious devotion may cause people to postpone timely agricultural activities, including planting and harvesting, which are critical to agricultural economies (Montero and Yang, 2022). Suzuki (2021) studies how families in Mexico afford expenses for the costly Quinceañera, a coming-of-age ceremony. In Latin American countries, this important tradition of celebrating a girl's 15th birthday requires extensive resources, putting a financial strain

on lower-income households. Suzuki (2021) shows that despite having limited financial resources, lower-income families spend more on celebrations and finance them through savings, bank transfers, or increased labor supply of family members. Some academic work has contributed to the understanding of the impact of religion and religious behavior on economic development. Buser (2015) suggests that families with higher incomes show more dedication to the church and contribute more to religious community building. Campante and Yanagizawa-Drott (2015) claim that there is a negative association between economic growth and Ramadan fasting, but the event brings more happiness among Muslims. In contrast, not much research has been done on non-religious festivals or ceremonies. Thus, this paper attempts to study the economic outcomes of a non-religious but culturally important event in Cambodia.

3.2 Public Holidays

Studying the impact of the Water Festival can also provide insight into the impact of public holidays since the Cambodian government announces a three-day holiday during the festival season. Cambodia boasts one of the highest number of public holidays in the world. Mergoupis and Steuer (2003) find that income and demographic factors determine holiday participation across several countries. They argue that an increased probability of holiday-taking is associated with changes in income. Wagner (2021) analyzes the effect of "the lost holiday" that falls on a weekend but is not replaced and shows a positive relationship between GDP growth and other holidays, inferring that fewer working days were recovered by other working days, or the consumption during holidays. One study investigates the impact of holidays on domestic tourism expenditure in China (Wei et al., 2018). Wei et al. (2018) find the effect of holidays to be significant and robust overall; in contrast, they find the effects of national festivals and memorial days to be statistically

insignificant. One notable effect from an economic perspective is the "pre-holiday effect" on the stock market. Many scholars provide evidence that stock prices tend to rise on the last trading day before a holiday in numerous countries, including Portugal (Gama and Vieira, 2013), the United States (Dumitriu and Stefanescu, 2020), and South Africa (Alagidede, 2008), while some argue such effects diminish (Vergin and McGinnis, 1999). However, the change in income and expenditure in response to holidays is still in question. Furthermore, the existing literature presents contradicting arguments over whether the effect on income and expenditure is significant. Therefore, this empirical study provides a suitable opportunity to comprehend the economic potential of holiday-taking or a temporary economic shutdown.

3.3 Income and Expenditure

Many authors have recognized that lower-income households in developing countries allocate a vast proportion of their budgets to celebrations (Banerjee and Duflo, 2007; Suzuki, 2021). In particular, Banerjee and Duflo (2007) reported a significant proportion of impoverished households in India, South Africa, Pakistan, Indonesia, and Côte d'Ivoire spend their budget on festivals and family events. Prior studies also the previous studies shed light on procrastination behavior toward anticipated costly expenditures (Ashraf et al., 2006; Duflo et al., 2011; O'Donoghue and Rabin, 1999, 2001; Suzuki, 2021). Their research suggests that people are reluctant to prepare financially in advance for expenses related to festivals and ceremonies and only begin to save money shortly before an event. Meanwhile, Morduch (1995) and Anukriti (2022) pointed out that in risk-averse households, especially in low-income economies, expanded consumption levels are smoothed out by diversifying labor supply. Other scholarly works provide ideas about the decision-making process of households' expenditure allocation (Bobonis, 2009; Browning et al.,

1994; Browning and Chiappori, 1998). In addition to the aforementioned studies, there is a wide variety of research on general household finance in the existing literature (Beshears et al., 2018; Brounen et al., 2016; Campbell, 2006; Gomes et al., 2021).

4 Data

This paper exploits the CSES data from 2009 to 2019 to examine the impact of canceling the Water Festival on the income and expenditure of Cambodian households. The CSES is one of the most extensive surveys organized by the National Institute of Statistics in Cambodia. Starting from 1994, it has provided various information directly related to citizens' lives across regions, such as daily records of food consumption, income and expenditure by categories, employment information, health and education status, and so on. By using data from this survey, it is possible to estimate the physical, economic, and social well-being of Cambodian people.

The CSES survey investigates the income of Cambodian households according to five categories: monthly salary, agricultural income, non-agricultural income, other income, and total income. Monthly salary provides information about household earnings regardless of the industrial sector and source of income. Agricultural income is obtained by subtracting the annual cost from the annual income and dividing it by 12 months. Non-agricultural income is income generated in any sector other than agriculture. Other income includes family transfers or remittances. Last, total income is the sum of the other four types of income. Regarding household expenditure, the survey provides six types of consumption from the CSES: food, non-food, health, education, durable goods, and total expenditure. Food expenditure shows the amount that Cambodian households spend on food. Non-food expenditure is expenditure other than food. Health and education expenditures are the amounts spent on health or education for family members. Durable goods include furnishings and home appliances; usually expensive goods that have long purchase cycles. last, the total expenditure is calculated as the sum of the five aforementioned categories. Providing different categories of income and expenditure allows for the analysis of the leading sources of

income or consumption that respond to the shock.

For the independent variables, I manually gather the Water Festival information from various news articles discussing whether the festival was held and if so, the dates it was held. The CSES questionnaires provide the survey months and years. Using this information, I identify the households answered in November and those answered in the year of missing Water Festivals. I also collect basic information on households and household heads to be controlled for, including the industry of the main occupation of the head, employment status of the head, residential area of the household, and income level of the household. Furthermore, I also include the consumer price index (CPI) from the International Monetary Fund to account for the extended data sample period. The CPI in 2010 is 100.

One issue of concern is that the CSES questionnaire does not specify the exact date of the survey, so it may be difficult to adequately represent the survey month. For example, if a survey is answered at the end of the month, the income and expenditure data suitably represent that month. In contrast, if a survey is conducted at the beginning of the month, the records of income and expenditure reflect the previous month. To overcome this problem, I compare the regression estimations before and after the survey months. The estimation results show no significant differences, which could be considered valid research.

Table 1 shows the summary statistics for the entire period from 2009 to 2019. The top 5% and bottom 5% of the data are winsorized to omit miscoded information and outliers. The total number of observations is 55,155 households. Columns (1) and (2) report the mean and standard deviation of each variable, respectively. Column (3) shows the number of observations. In Tables 1 and 2, Khmer Riel (KHR) is computed in U.S. dollars (USD) since Cambodia has almost stable exchange rates between the two currencies (4,000 KHR = 1 USD). However, in the empirical

analysis, the original currency is used for a precise calculation. Panels A and B in Table 1 show the income and expenditure variables, respectively, and Panel C shows the demographic characteristics that are controlled for and used as criteria for sub-samples. According to Panel A, the average total income is 593.26 USD, with a large distribution. Panel B shows that the mean of total expenditure (1,452.98 USD) is much larger than that of total income, and the mean of non-food expenditure is 10 times greater than that of food expenditure. Panel C shows the distributions of various demographic characteristics. The mean indicates the percentage of such households. The lower- and higher-income households are determined based on the median income. Households living in Phnom Penh account for 16% of the total households. One-third of the respondents work as employees, while the rest are employers or self-employed. Of the respondents, 48% work in agriculture, indicating that the data from this survey is well representative of the population as Cambodia is one of the largest agricultural economies in the world.

Table 1
Summary Statistics

	Mean (1)	S.D. (2)	Observation (3)
Panel A. Income			
Salary	328.15	383.00	32,516
Agricultural income	290.81	7,243.17	38,819
Non-agricultural income	452.81	2,192.86	17,711
Other income	71.02	605.41	32,316
Total income	593.26	6,292.99	54,156
Panel B. Expenditure			
Education expenditure	18.60	48.03	55,155
Health expenditure	21.08	130.32	55,154
Durable expenditure	153.00	445.86	55,153
Food expenditure	192.02	127.25	55,146
Non-food expenditure	1,068.32	2,075.27	55,155
Total expenditure	1,452.98	2,329.91	55,155
Panel C. Demographic Characteristics			
Lower-income households	0.51	0.50	55,155
Higher-income households	0.49	0.50	55,155
Residence in Phnom Penh	0.16	0.37	55,155
Residence not in Phnom Penh	0.84	0.37	55,155
Employee	0.33	0.47	48,976
Employer/Self-employed	0.66	0.47	48,976
Agricultural sector	0.48	0.50	48,773
Manufacturing sector	0.08	0.26	48,773
Service sector	0.45	0.50	48,773

Note: Cambodia Socio-Economic Survey from 2009 to 2019 is employed in this research. CPI is considered (the year 2010 = 100). KHR is converted to USD for better understanding only in summary statistics and baseline study (KHR 4,000 = USD 1). 90% winsorization is applied for any possibilities of outliers and miscoded values.

5 Identification Strategy

To examine the impact of canceling the Water Festivals in Cambodia, I use the facts that the festival was canceled for four years after the tragedy, and the Water Festival has only been held in November for the past two decades. It is possible to use the DID estimation due to these factors. Numerous researchers in the field of econometrics have adopted the DID estimation in their papers to effectively argue the two-stage difference in policies or shocks.

The economic impact of the cancellation of the Cambodian Water Festival can be estimated using the following regression equation 1:

$$Y_{hcmt} = \beta Treat_m * Canceled_t + X'_{hcmt}\phi + \delta_c + \gamma_m + \tau_t + \varepsilon_{hcmt} \tag{1}$$

I match the month of the Water Festival, November, with the survey month provided on CSES and execute the DID estimation. The outcome variable Y_{hcmt} is a log of income or expenditure of the household h in the Cambodian commune c at survey month m and survey year t. All outcome variables are aggregated at a household level. $Treat_m$ is a binary variable that equals 1 if the survey month m is November, and 0 otherwise. $Canceled_t$ is also a binary variable that equals 1 if the Water Festival is not held in the survey year t, from 2011 to 2015 (excluding 2014), and 0 otherwise. $Treat_m * Canceled_t$ allows interaction between two variables. β is therefore the coefficient of interest which shows the effect of canceling the Water Festival on the income and expenditure of households. δ, γ, and τ are commune-, survey month-, and survey year-fixed effects, respectively. I do not include the fixed effect for households since the CSES is not a panel dataset but a pooled cross-section; thus, the survey does not follow up with the same households over time. The same IDs are shared every year, but it does not necessarily mean that

they are precisely the same households. X'_{hcmt} is a vector of controls that includes the industry of the main occupation of the household head, employment status of the household head, residential area of a household, and household income level. ε is the error term clustered at the commune level.

Table 2 compares baseline characteristics of the treatment groups before the tragedy (2009-2010). Since the tragedy occurred on the last day of the Water Festival in 2010, 2010 has also been included in the baseline characteristics. Column (1) reports the treatment mean – households with a survey month of November, and column (2) reports the control mean. The differences between the two groups and their P-values are shown in columns (3) and (4), respectively. The key identifying assumption is that the unobservables are orthogonal to households affected by the Water Festival. There should be no statistical difference between the characteristics of treated households and those of control households before the shock. The joint p-value from Table 2 provides evidence for this assumption. Specifically, the only difference is the distribution of households with higher and lower incomes. The reason behind this difference may lie in regional differences since the survey month is determined based on the village, and each village has identical survey months.

Table 2
Baseline Characteristics by Treatment Group

	Treatment Mean (1)	Control Mean (2)	Difference (3)	P-value (4)
Panel A. Income				
Salary	144.79	139.96	4.83	0.60
Agricultural income	245.33	90.92	154.41	0.44
Non-agricultural income	313.90	460.42	-146.52	0.28
Other income	22.73	19.57	3.16	0.74
Total income	380.00	320.16	59.84	0.71
Panel B. Expenditure				
Education expenditure	9.07	10.24	-1.18	0.18
Health expenditure	11.43	10.27	1.16	0.52
Durable expenditure	86.00	100.29	-14.29	0.14
Food expenditure	131.01	129.68	1.32	0.59
Total expenditure	741.39	759.48	-18.09	0.54
Panel C. Demographic Characteristics				
Lower-income households	0.75	0.80	-0.05***	0.00
Higher-income households	0.25	0.20	0.05***	0.00
Residence in Phnom Penh	0.12	0.13	-0.01	0.15
Residence not in Phnom Penh	0.88	0.87	0.01	0.15
Employee	0.26	0.28	-0.02	0.09
Employer/Self-employed	0.73	0.71	0.02	0.12
Agricultural sector	0.55	0.53	0.02	0.12
Manufacturing sector	0.07	0.08	-0.00	0.57
Service sector	0.37	0.39	-0.02	0.13
Joint orthogonality test				0.61

Note: Cambodia Socio-Economic Survey from 2009 to 2019 is employed in this research. CPI is considered (the year 2010 = 100). KHR is converted to USD for better understanding only in summary statistics and baseline study (KHR 4,000 = USD 1). 90% winsorization is applied for any possibilities of outliers and miscoded values.

6 Results

6.1 When Water Festivals Are Canceled

Table 3 reports the regression estimates of the impact of canceling the Water Festivals on the income and expenditure of Cambodian households from 2009 to 2015, as calculated from equation 1. Since the government resumed the Water Festival in 2016, the limited periods can effectively capture the impact of a canceled Water Festival. Columns (1) - (5) and columns (6) - (11) report the log of income and the log of expenditure of Cambodian households, respectively. Specifically, column (1) reports the monthly salary of Cambodian households, and column (2) shows the monthly agricultural income. Column (3) reports the non-agricultural income and the other income is shown in column (4). Column (5) presents the total income, which is the sum of columns (1) to (4). Columns (6) and (7) report food and non-food expenditure, respectively. Columns (8) and (9) respectively report education and health expenditure. Column (10) reports spending on durable goods, and column (11) is the sum of columns (6) to (10). The set of controls is not included in this regression estimation.

Table 3 shows that income and expenditure are both increased regardless of their types, except for durable goods expenditure and other income. Specifically, agricultural and non-agricultural incomes rise by 12% and 15%, respectively. This increase leads to a 10.7% increase in total income, which is surprisingly large. Food and non-food expenditure also grow by 5.5% and 4.9%, respectively and they are statistically significant at a 5% level. When the Water Festival is canceled, people allocate a considerable amount of money to health (36.3%), and the impact is significant at a 1% level. However, despite the overall increase in expenditure, the spending on durable goods decreases by 21%. Therefore, the results from Table 3 indicate that Cambodian households earn

Table 3
Effect of Canceled Water Festivals

	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0392	0.121*	0.157**	-0.165	0.107**	
	(0.038)	(0.063)	(0.054)	(0.149)	(0.039)	
Mean Log of Dep. Var	13.40	12.16	13.03	10.01	13.62	
Observations	24,028	30,358	14,278	23,445	41,993	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0550**	0.0490**	0.0111	0.363***	-0.210**	0.0460**
	(0.020)	(0.019)	(0.055)	(0.067)	(0.071)	(0.020)
Mean of Dep. Var	13.27	14.49	10.45	10.58	11.79	14.93
Observations	42,704	42,704	25,121	20,123	42,561	42,704

Note: Cambodia Socio-Economic Survey from 2009 to 2015 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses. $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

more and spend more when the Water Festival is not held. This result contradicts the findings from the previous literature that argues that households spend more to enjoy festivals and earn more to cope with the increased spending. Nevertheless, when festival-related expenditures are taken into account, the significant drop in durable goods expenditure is striking, which may conversely infer that people are more willing to open their wallets to expensive goods during the festival season.

6.2 When Water Festivals Are Resumed

It is worth investigating how household income and expenditure are affected by the full-scale resumption of the Water Festival. Looking at the situation from the opposite perspective can reveal how people respond to the resumption of the Festival in terms of their work and financial allocation. This study determines whether household income and expenditure behave precisely in the opposite way or if another pattern is found. Table 4 presents the estimates for when the Water Festival takes place from 2011 to 2019. In this case, instead of the $Canceled$ variable, I used

a binary variable, named $Held$, which equals 1 when the festival is held, and 0 otherwise. The overall column arrangement of Table 4 is the same as Table 3.

Despite the adjusted period and a different variable, Table 4 reports the exact opposite case shown in Table 3. The results of Table 4 indicate that, excluding other income and expenditure on durable goods, the earnings and spending of Cambodian households decrease when the festival resumes. Interestingly, other income substantially increases by 44.5%, which is statistically significant at a 1% level. Regarding expenditure, food and non-food expenditures dropped by 7.6% and 10.8%, respectively, as shown in columns (6) and (7). There are no significant impacts shown in columns (8) to (10) while showing decreasing trends for education and health and the increasing trend for durable goods. Both total income and expenditure decrease approximately by 10%.

Table 4
Effect of Resumed Water Festivals

	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXHeld$	-0.120**	-0.0670	-0.124	0.445***	-0.0960**	
	(0.041)	(0.101)	(0.096)	(0.122)	(0.040)	
Mean Log of Dep. Var	13.87	12.30	13.49	10.49	14.06	
Observations	25,105	26,913	12,370	25,557	39,059	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXHeld$	-0.0764***	-0.108**	-0.000206	-0.145	0.0936	-0.0949**
	(0.021)	(0.044)	(0.067)	(0.084)	(0.079)	(0.037)
Mean Log of Dep. Var	13.53	14.91	11.17	10.97	12.19	15.32
Observations	39,626	39,633	22,670	19,370	37,363	39,635

Note: Cambodia Socio-Economic Survey from 2011 to 2019 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Held$ is also a binary variable that equals 1 if the Water Festival was held in the survey year and 0 otherwise. $TreatXHeld$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses.
$^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

6.3 Heterogeneous Effects

This study uses sub-samples to identify the heterogeneous effects of the cancellation of the Water Festival. I utilize four different sub-groups: regional, income, education, and gender differences. The results show that the effects on income and expenditure are primarily driven by households outside Phnom Penh, households with lower income, and households headed by males.

Table 5
Regional Difference

Panel A. Phnom Penh						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0506	-0.327	-0.0154	-1.643***	0.00694	
	(0.033)	(0.550)	(0.075)	(0.320)	(0.041)	
Mean Log of Dep. Var	13.99	11.42	13.55	10.74	14.23	
Observations	5,449	363	3,623	2,453	6,866	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.105***	0.0702	-0.182*	0.453***	-0.0676	0.0770*
	(0.032)	(0.043)	(0.083)	(0.144)	(0.059)	(0.038)
Mean Log of Dep. Var	13.74	15.12	11.88	10.59	13.26	15.59
Observations	6,925	6,925	4,197	2,465	6,915	6,925
Panel B. Outside of Phnom Penh						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0261	0.144**	0.250***	0.0838	0.125**	
	(0.039)	(0.061)	(0.054)	(0.168)	(0.046)	
Mean Log of Dep. Var	13.23	12.17	12.85	9.930	13.50	
Observations	18,579	29,994	10,655	20,992	35,127	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0410	0.0347	0.0593	0.343***	-0.251**	0.0324
	(0.023)	(0.032)	(0.053)	(0.083)	(0.090)	(0.030)
Mean Log of Dep. Var	13.17	14.36	10.17	10.58	11.51	14.80
Observations	35,779	35,779	20,924	17,658	35,646	35,779

Note: Cambodia Socio-Economic Survey from 2009 to 2015 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5 shows the regional difference between Phnom Penh and outside Phnom Penh. Although the Water Festival is celebrated throughout the region, the largest one is in Phnom Penh. Many people residing in rural areas typically travel to Phnom Penh to enjoy the festival during the season. In Table 5, Panel A illustrates the impact on households in Phnom Penh. Panel B shows the effect on households outside Phnom Penh. Interestingly, the income and expenditure for households outside Phnom Penh generally increase, as seen in Table 3. In comparison, the households in Phnom Penh show some mixed impacts depending on their categorization. Incomes, including agricultural, non-agricultural, and total income, increase among households outside Phnom Penh. In contrast, Phnom Penh households experience a substantial shrink in the other income sector, while other changes in income remain insignificant. Regarding expenditure, both regions show similar impacts, excluding a marginal drop in education expenditure in Phnom Penh and a 25% reduction in durable goods among households outside Phnom Penh.

To determine the difference between households based on income, I divide the households into higher- and lower-income groups according to the median value of income. Table 6 presents that the income difference is not as pronounced as the regional difference. Panels A and B report the regression results for higher-income and lower-income households. The results show that non-agricultural income marginally increases among lower-income households, while higher-income households show no difference in income. Among lower-income households, Food and education expenditures increased by 5.6% and 12.3% respectively, while the higher-income groups show a decreasing trend or none at all. Both types of households experience significant growth in health expenditure when the Water Festival is canceled, but the health expenditure for the higher-income group is 14.3%p higher than the lower-income group. Last, consumption of durable goods decreased in both groups, but the coefficient on lower-income households is more significant.

Table 6
Income Difference

Panel A. Higher-Income Households						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.00318	0.148	-0.0826	-0.439	0.00557	
	(0.059)	(0.179)	(0.057)	(0.256)	(0.041)	
Mean Log of Dep. Var	13.97	13.06	13.78	10.56	14.74	
Observations	12,135	10,419	7,060	9,900	16,862	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0168	-0.00205	-0.143*	0.460***	-0.180*	0.000445
	(0.026)	(0.033)	(0.069)	(0.142)	(0.088)	(0.028)
Mean Log of Dep. Var	13.56	15.05	11.09	10.86	12.74	15.46
Observations	17,579	17,579	11,224	8,106	17,552	17,579
Panel B. Lower-Income Households						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0202	-0.0190	0.0986*	-0.0603	-0.0160	
	(0.037)	(0.054)	(0.048)	(0.110)	(0.037)	
Mean Log of Dep. Var	12.82	11.69	12.26	9.607	12.86	
Observations	11,730	19,871	6,953	13,432	25,084	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0569***	0.0142	0.123*	0.317***	-0.307***	0.0185
	(0.017)	(0.022)	(0.061)	(0.073)	(0.075)	(0.020)
Mean Log of Dep. Var	13.07	14.09	9.933	10.38	11.13	14.56
Observations	25,084	25,084	13,760	11,861	24,968	25,084

Note: Cambodia Socio-Economic Survey from 2009 to 2015 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7
Education Difference

Panel A. More Educated Head						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0451	0.133*	-0.0689	0.132	0.131**	
	(0.051)	(0.069)	(0.090)	(0.192)	(0.047)	
Mean Log of Dep. Var	13.47	11.99	13.19	10.08	13.58	
Observations	8,566	9,648	4,224	7,840	14,419	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.00453	-0.0289	-0.151**	0.429***	-0.139	0.00475
	(0.033)	(0.042)	(0.068)	(0.066)	(0.105)	(0.039)
Mean Log of Dep. Var	13.27	14.44	10.56	10.59	11.74	14.91
Observations	14,632	14,632	8,018	6,325	14,570	14,632
Panel B. Less Educated Head						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0375	0.0540	0.215**	-0.246	0.102**	
	(0.044)	(0.067)	(0.070)	(0.147)	(0.045)	
Mean Log of Dep. Var	13.36	12.24	12.97	9.977	13.64	
Observations	15,304	20,636	9,760	15,465	27,533	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0776***	0.0795**	0.0564	0.337***	-0.284***	0.0591**
	(0.020)	(0.027)	(0.056)	(0.102)	(0.071)	(0.027)
Mean Log of Dep. Var	13.27	14.51	10.40	10.57	11.82	14.94
Observations	28,033	28,033	16,945	13,635	27,952	28,033

Note: Cambodia Socio-Economic Survey from 2009 to 2015 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses. $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

Table 7 reports the regression results based on the education difference between household heads. The two groups are defined according to the educational level of the household head: 0 to 6 years of schooling is defined as less educated, and 6+ years of schooling is defined as more educated. Although a high level of education does not necessarily mean that a household has a high level of income and consumption, the relationship between the level of education and occupation

is reflected. Table 7 shows that, in terms of income, both groups experience an increase in total income (0.131 for more educated and 0.102 for less educated). In contrast, the non-agricultural income of households shifts in a different direction. The more educated group shows no difference in non-agricultural income, while the less educated group earns a statistically significant 21.5% more of this type of income. Regarding expenditure, households with more educated heads show little or no decline, excluding health expenditure. Meanwhile, families with less educated heads increase their expenditure, excluding durable goods (-0.284).

The gender of the head of the household is also considered. In Table 8, Panel A shows the regression results when a female is the head of a family, and Panel B shows the results when a male is the head of a family. When the Water Festival is canceled, among female-headed households, salary increases by 17.4% and non-agricultural income falls sharply by 44.8%. In comparison, if the head of the family is a man, non-agricultural income increases by 26.6%, and total income rises by 13.1%. Looking at the change in consumption, the overall trend for female heads decreases, especially in the non-food sector, durable goods, and total consumption. Surprisingly, for male heads, overall expenditure increases, especially in the food, non-food, and health sectors, which leads to an increase in total expenditure.

Table 8
Gender Difference

Panel A. Female Head						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.174**	0.0475	-0.448***	-0.186	0.0732	
	(0.057)	(0.090)	(0.096)	(0.192)	(0.068)	
Mean Log of Dep. Var	13.36	11.55	12.93	10.22	13.34	
Observations	5383	6290	2674	5847	9331	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	-0.0402	-0.194***	-0.130	0.170	-0.499***	-0.158***
	(0.032)	(0.047)	(0.113)	(0.161)	(0.066)	(0.040)
Mean Log of Dep. Var	13.09	14.21	10.41	10.48	11.14	14.66
Observations	9,469	9,469	4,384	4,385	9,431	9,469
Panel B. Male Head						
	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0107	0.150	0.266***	-0.177	0.131**	
	(0.041)	(0.089)	(0.058)	(0.147)	(0.043)	
Mean Log of Dep. Var	13.41	12.32	13.07	9.940	13.70	
Observations	18,432	23,916	11,319	17,417	32,555	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0900***	0.128***	0.0522	0.382***	-0.122	0.113***
	(0.017)	(0.022)	(0.062)	(0.065)	(0.077)	(0.022)
Mean Log of Dep. Var	13.32	14.57	10.47	10.60	11.98	15.01
Observations	33,129	33,129	20,512	15,533	33,024	33,129

Note: Cambodia Socio-Economic Survey from 2009 to 2015 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

7 Robustness Checks

To check the robustness of this study, I employ three different regressions. First, regression estimations include additional demographic controls, including the industry of the main occupation of the household head, employment status of the household head, residential area of households, and household income level, which is denoted as X'_{hcmt} in equation 1. Second, regression estimations include extended sample periods from 2009 to 2019. Last, estimations with extended periods include additional demographic controls. In all three regression tables, I employ $Canceled$ variables to catch the impact of the cancellation of the Water Festival on income and expenditures. As a result, I find that the estimates remain constant, thereby supporting the validity of this research.

Table 9
Robustness Checks: Effect of Canceled Water Festivals with Additional Controls

	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0238	0.0221	0.0919	-0.117	0.0246	
	(0.033)	(0.061)	(0.053)	(0.155)	(0.027)	
Mean Log of Dep. Var	13.37	12.23	13.03	9.899	13.64	
Controls	Yes	Yes	Yes	Yes	Yes	
Observations	21,057	27,435	13,127	20,096	37,104	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0325	0.0238	0.0218	0.347***	-0.269***	0.0202
	(0.018)	(0.019)	(0.055)	(0.080)	(0.063)	(0.016)
Mean of Dep. Var	13.27	14.50	10.44	10.52	11.81	14.94
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,756	37,756	22,967	17,395	37,632	37,756

Note: Cambodia Socio-Economic Survey from 2009 to 2015 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Regressions are controlled for demographic characteristics, including the industry of the main occupation of household heads, employment status of household heads, residential area of households, and households' income levels. Standard errors clustered at the commune level are in parentheses. $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

Table 9 shows the impact of canceled Water Festivals on the income and expenditure of Cambodian households with demographic controls included in regression estimations. The column arrangement of Table 9 is identical with previous estimation tables – columns (1) to (5) report various categories of income and columns (6) to (11) report types of expenditure. The results show that most of the impact is canceled out due to the additional controls, excluding health and durable goods. This implies that the difference in household characteristics is valid, as we have seen from the regression results of heterogeneous effects. However, the increasing trend among income and expenditure variables still exists when the Water Festival is canceled. Table 9 shows that the health expenditure increases by 34.7% and the durable goods expenditure decreases by 26.9% even with the controls. It means the positive impact on health expenditure and decreasing impact on durable goods expenditure is robust regardless of household characteristics.

Table 10
Robustness Checks: Extended Periods

	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0913**	0.0850	0.156**	-0.348***	0.123***	
	(0.036)	(0.057)	(0.059)	(0.106)	(0.032)	
Mean Log of Dep. Var	13.63	12.21	13.19	10.26	13.80	
Observations	32,499	38,804	17,610	32,298	54,156	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0728***	0.0666**	0.0314	0.265***	-0.136**	0.0634**
	(0.015)	(0.023)	(0.040)	(0.063)	(0.059)	(0.021)
Mean of Dep. Var	13.38	14.65	10.68	10.76	11.90	15.08
Observations	55,146	55,153	32,193	26,383	52,780	55,155

Note: Cambodia Socio-Economic Survey from 2009 to 2019 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Standard errors clustered at the commune level are in parentheses. $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

To further test for robustness, I also use an extended sample period from 2009 to 2019. The previous regression estimates show the split periods before and after the 2010 tragedy, providing a clear way to capture the exact change immediately after the shock. However, regressions with extended periods can show the widespread impact of the cancellation of the Water Festival over the entire period. The results in Table 10 are reasonably consistent with Table 3. Most income and expenditures, regardless of type, generally increase. However, other income and expenditures for durable goods consistently show decreasing trends. Table 11 shows results with additional controls. Although some impacts have become weaker or marginal, the overall increasing trend is still evident.

Table 11
Robustness Checks: Extended Periods with Additional Controls

	Salary	Agricultural inc	Non-agricultural inc	Other inc	Total inc	
	(1)	(2)	(3)	(4)	(5)	
$TreatXCanceled$	0.0696**	-0.0363	0.0776	-0.325**	0.0183	
	(0.028)	(0.056)	(0.050)	(0.113)	(0.023)	
Mean Log of Dep. Var	13.60	12.29	13.19	10.14	13.83	
Controls	Yes	Yes	Yes	Yes	Yes	
Observations	28,536	35,072	16,203	27,704	47,798	
	Food exp	Non-food exp	Education exp	Health exp	Durable exp	Total exp
	(6)	(7)	(8)	(9)	(10)	(11)
$TreatXCanceled$	0.0540***	0.0356	0.0307	0.274***	-0.189***	0.0357
	(0.015)	(0.024)	(0.038)	(0.071)	(0.054)	(0.021)
Mean of Dep. Var	13.38	14.67	10.67	10.70	11.91	15.09
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	48,710	48,714	29,430	22,813	46,647	48,716

Note: Cambodia Socio-Economic Survey from 2009 to 2019 is employed in this research. CPI is considered (the year 2010 = 100). All monetary variables are in log form. $Treat$ is a binary variable that equals 1 if the survey month is November and 0 otherwise. $Canceled$ is also a binary variable that equals 1 if the Water Festival was canceled in the survey year and 0 otherwise. $TreatXCanceled$ is the interaction term of two binary variables. Commune-, survey month-, and survey year-fixed effects are included. Regressions are controlled for demographic characteristics, including the industry of the main occupation of household heads, employment status of household heads, residential area of households, and households' income levels. Standard errors clustered at the commune level are in parentheses.
$^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

8 Conclusion

This section summarizes the leading research findings, examines how they relate to the research objectives and questions, and discusses their significance and implications. In addition, the limitations of the study are assessed, and possible avenues for future research are suggested.

8.1 Summary of Findings

This study explores the impact of the Water Festival on Cambodian households' income and expenditure. Similar to the Itaewon Stampede in South Korea in 2022, Cambodia suffered a great amount of loss on the last day of the 2010 Water Festival. As a result of this incident, the Cambodian government canceled the full-scale Water Festival in Phnom Penh for four years between 2011 and 2015, with only a small-scale event being held in 2014. This study analyzes how the cancellation of the culturally important Water Festival affected the lives of Cambodian families. This paper posits three primary hypotheses. First, the presence of the Water Festival affects the income and expenditures of Cambodian households. Since the Water Festival has been held in November for the past two decades, the two-stage difference between November and the other months and years with and without the Water Festival is captured. Second, the direction of the shift in income and expenditure is identical in response to the presence of the Water Festival. This statement supports the consumption smoothing theory that households expand their income sources to smooth out their increased consumption (Anukriti et al., 2022; Ashraf et al., 2006; Duflo et al., 2011; Morduch, 1995; O'Donoghue and Rabin, 1999, 2001). Third, the lower-income families and households residing outside Phnom Penh experience more significant impacts based on whether or not the Water Festival is held. Overall, the results indicate that canceling the Water Festival results in an increase of 10.7% to 12.3% in total income and an increase of 4.6% to

6.3% in total expenditure. However, the other income category, which includes family transfers, remittances, and expenditure on durable goods, does not follow this upward trend. The change in various demographic characteristics is only slightly noticeable. However, the increasing trend that occurs when the Water Festival is canceled is mainly observed in households outside Phnom Penh, those with lower incomes, or those with male heads.

The results of this research support the three primary hypotheses of this study and are fairly consistent with existing research. However, one finding of this study contradicts previous research that argues that low-income households in developing countries tend to spend a large portion of their budget on festivities (Banerjee and Duflo, 2007). I find that people tend to spend more when they cannot participate in celebrations. However, the robust and significant decline in spending on durable goods may support Banerjee and Duflo's findings. Since durable goods typically require substantial financial resources, it is plausible that the festival triggers this conspicuous consumption.

8.2 Significance and Implications

This paper is noteworthy for its unique focus on changes in income and expenditure. While many studies have explored these topics as part of assessing community welfare, few have delved into them as deeply as this one. The disaggregation of income and expenditure precisely presents which sources are driving the change as a function of the presence of the Water Festival. The significance of this paper is further amplified by its investigation into the absence of culturally and historically significant events that embody the identity and spirit of a community. This idea contributes to the research on culture and economic development. Moreover, Cambodia, a country with one of the world's highest numbers of public holidays, presents another unique perspective.

With the Cambodian government offering three days of public holidays during the Water Festival, this paper can also be regarded as an examination of the impact of holidays on household income and expenditure. In an era when work-life balance is increasingly becoming a policy priority worldwide, this paper serves as a prompt to reevaluate the true meaning and significance of holidays. Furthermore, while most studies on work hours reduction or holidays have focused on developed countries, this paper presents the case of a developing and holiday-rich country. This background has implications for policymakers seeking a trade-off between holidays and labor productivity in different economic settings.

This research is triggered by a tragic stampede incident, which provides a poignant backdrop to the study. By identifying the long-term effects of the stampede tragedy 13 years ago in Cambodia, this paper suggests a path forward for other countries that have experienced similar tragedies, such as South Korea.

8.3 Limitations and Future Research

Despite the significance and astuteness of this research, there are several limitations that future studies should address. First, this study hypothesizes that CSES respondents may have participated in or been affected by the Water Festival. Since the festival is one of the most important events in the country, it is assumed that it would have affected the entire Cambodian population. In order to more accurately observe the impact of the festival in future studies, it would be beneficial to know whether respondents actually attended the festival. Another limitation is that this paper only examines the economic characteristics of the festival. As the CSES questionnaires provide information on the overall well-being of Cambodians, future research could explore the various socioeconomic impacts of the festival and the holiday in more detail. Finally, due to limited data

from 2021, this paper was unable to determine the recent impacts of the Water Festival. Since the Cambodian government decided to reduce the number of public holidays in 2020, future research should examine the effects of this recent change in order to effectively address the economic impact of the holidays.

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