

Holidays and Economic Growth: Evidence from a panel of Indian States

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Abstract

The number of holidays differs significantly across Indian states. Moreover, some of the governing political parties have been accused of using holidays as a tool either to mollify disgruntled workers or to woo voters before the state elections. In this context, this paper explores the relationship between the number of holidays and economic growth across 24 Indian states, spanning the period 2008-2016, by employing a panel model analysis. The paper presents evidence suggesting that holidays seem to affect growth negatively in the rich states but are inconsequential for the growth performance of the poor states.

Keywords: economic growth; holidays; Indian states; regional economic activity; panel data

JEL Classification: H70; O12; O47; R11

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Introduction

A holiday can be defined as a time off a regular schedule of activities in observance of other periodic activities of religious, cultural and festive significance (see, for example, Amavilah, 2009). Holidays undoubtedly play an important role in the modern human life. The theoretical relationship between holidays and economic growth is somewhat ambiguous. On one hand, working time lost to holidays adversely affects firms' productivity, which, in turn, lowers economic growth. By contrast, it can be argued that private domestic consumption increases during holidays, which will be beneficial for economic growth (see, for example, Ramasamy et al., 2008). Moreover, holidays facilitate social leisure time, which leads to the formation of social capital and improvements in the workers' health (see, for example, Merz and Osberg, 2006). In such cases, the growth-effects of holidays are expected to be positive.

The question that this empirical paper attempts to explore is whether increased leisure time (through more holidays) has any impact on economic growth across the Indian states. The motivation behind this study is twofold. Firstly, the number of holidays differs significantly across the Indian states. For instance, in 2016, the number of holidays in the southern state of Andhra Pradesh was only 15, whereas that in the eastern state of West Bengal was 35;² secondly, some of the state governments, such as those in West Bengal and Uttar Pradesh, have been allegedly involved in 'holiday politics'. For instance, being unable to keep up with the increasing Dearness Allowance (paid by the government to its employees to offset the impact of inflation) in the other states, the West Bengal government has often announced additional holidays for its employees (see, for example, Chakraborty, 2016). The English daily, The Telegraph, reports in 2017 that the current ruling political party in West

² Excludes those holidays that fell on Sundays. The data for Andhra Pradesh and West Bengal were obtained from the General Administration Department of the Government of Andhra Pradesh and WBXPress (West Bengal Government Notification website) respectively.

Bengal has offered at least 10 additional holidays to its employees, since coming to power in the state in 2011. Similarly, the state governments in Uttar Pradesh (UP) have often been suspected of attempting to entice voters via declaration of extra holidays. There has been a 50 percent increase in the number of public holidays in UP during the last decade (see, for example, Hindustan Times, 2015).

In the above context, we attempt, for the first time, to empirically examine how an increase in the number of holidays affects economic growth across the 24 Indian states over the time period 2008-2016. To the best of our knowledge, there exists no empirical study which attempts to estimate the relationship between these two variables in the context of India. This study attempts to extend the literature in this direction.

Review of the relevant literature

The literature on the holiday-growth association is highly limited. A few studies have documented that the amount of leisure time does have an impact on both economic growth and business cycles (see, for example, Eichenbaum et al., 1988; Hek, 1998; Ladrón-de-Guevara et al., 1999; Kydland and Prescott, 1982; Wilensky, 1961). These studies highlight that leisure time should be brought into agent's utility function, provided that they accept a backward curve of labour supply. This implies that households prefer more leisure to additional income, once their average income exceeds certain levels. Furthermore, their findings indicate towards the presence of a strong relationship between leisure time, income distribution, aggregate consumption, interest rates and economic growth. In particular, introducing leisure time into a utility function may lead either to saddle point stability (see, for example, Ioannides and Taub, 1992), or the potential presence of multiple growth paths (see, for example, Ladrón-de-Guevara et al., 1999). Previous research studies introduced leisure time into economic systems. The majority of these studies notices the presence of substitution effects of leisure time on the economy, while the compensation effects of leisure time seem to have been neglected.

The substitution effect of leisure time is defined as the effect that one has to reduce agents' working time and their income in substitution of more leisure, while the compensation effect of leisure time is defined as the effect that leisure activities may enhance individual efficiency and then improve aggregate output.

This paper is also close to the strand of the literature that focuses on both economic growth and business cycles. More specifically, research started analysing the relationship between education time (which belongs to leisure time) and economic growth (see, for example, Chase, 1967; Ryder et al., 1976). These models assume that education does not affect the quality of leisure. In other words, the marginal utility of leisure time is not affected by human capital (see, for example, Ladrón-de-Guevara et al., 1999). Under the assumption that productivity improves when the time spent on education increases (given that education can enhance the competence of human capital), time spent on leisure activities would decrease, because agents wish to increase their income through spending more efforts on education, while working more (see, for example, Ladrón-de-Guevara et al., 1999).

Next, it is the literature on the representative agent model of the aggregate labour market, which further analyses the impact of leisure time on economic growth (see, for example, Hall, 1980; Ioannides and Taub, 1992; Kydland and Prescott, 1982; Lucas and Rapping, 1969; Mankiw et al., 1985). According to this strand of the literature, there is a general implicit price of leisure across all consumers (see, for example, Eichenbaum et al., 1985; Rubinstein, 1974) which, however, has received negative criticism on the hypothesis rationality. Therefore, the literature found new ways to analyse the impact of leisure time on economic growth. More specifically, it provided solid evidence that the relationship between preferences and consumption is not always linear (see, for example, Eichenbaum et al., 1985). This strand introduces both consumption and leisure time into service, while it indicates that multiple equilibria might exist (see, for example, Ladrón-de-Guevara et al., 1999). Moreover, it uses the Cobb-Douglas utility function framework, along with a labour production function, while the dynamic optimal economy by the planner may be either one or two inner point roots, or one outer point root (when no time is spent on education).

The research on the association between leisure time and economic growth has been brought into a new level within the framework of the real business cycle theory. According to this approach, technological shocks have a strong negative effect on non-working time, i.e. leisure time. Certain empirical findings document that technological shocks sometimes positively affect non-production investment through R&D expenses. Shea (1998) finds that the periodical fluctuation of input factors can be explained partially by technology shocks, while through the framework of sticky-price models and data from seven developed countries, Gali (1999) finds that technical progress could potentially lead to the decline of working time and the increase of leisure time in the short run. In addition, the aggregate output derived from demand shocks has a notable negative correlation with changes in leisure time. The author argues that the primary reason for the presence of periodical economic fluctuations is the impact of demand shocks versus technological shocks. In this framework of discussion, increases in returns and sustainable growth can be explained by working time activities, such as exogenous technological shocks, R&D expenses (see, for example, Barro and Sala-I-Martin, 1992; Jones, 1995a;b), and endogenous knowledge accumulation processes (see, for example, Lucas, 1988; Romer, 1986, 1990). Overall, this literature shows that leisure time can have a compensation effect on both individual efficiency and economic growth (see, for example, Maguire, 2008).

A number of studies use certain new methods or new modelling approaches to illustrate the effects of leisure time. Ortigueira (2000) uses the term ‘qualified leisure’ through an endogenous economic growth model in which ‘qualified leisure’ implies that leisure time can be adjusted by human capital, which represents a certain type of compensation effect of leisure. Weder (2004) uses the term ‘conspicuous leisure’ to define another type of a compensation effect of leisure. His outcome shows that an agent’s utility function is affected by her counterparts’ amount of leisure time. By introducing this type of the externality of leisure into the growth model, he documents that the economy may converge to a saddle stable point. By contrast, Fernandez et al. (2004) suggest that the presence of competitive equilibrium can be indeterminate because of plausible values of the elasticity of inter-temporal substitution of consumption. This occurs because public consumption and leisure cannot be separated in the utility function.

When it comes to the direct association between leisure time and holidays, hours of work lost to holidays may reduce firm productivity; at the same time, holidays may invigorate workers so that their productivity goes up in the post-holiday period. Romer (1990) advances the ‘learning by leisure effect’, according to which, leisure activities, such as holidays and travelling, have a technological externality that enhances creativity, thus, promoting innovations and economic growth. Silver (1995) sees an important role to symbolic representations, such as holidays, that promote the accumulation of trust as capital, which in turn enforces contracts and facilitates economic growth. Ausubel and Grubler (1995) suggest that human longevity substantially depends on leisure; as personal/wage income rises and the workweek shortens, people live longer than before. This leads to higher labour productivity, which indicates that leisure influences human capital building. Merz and Osberg (2006) examine whether holidays facilitate leisure time coordination. They find that holidays do not constrain the annual amount of leisure; instead, they are needed because they are beneficial to social life, thus, contributing to human capital building. This connection is consistent with Amartya Sen’s ‘capabilities approach’ to human welfare, in which welfare is measured by the human development index (HDI) (see, for example, Anand and Sen, 1994; Dolan et al., 2002; Sen, 1979). Ramasamy et al. (2008) estimate the effects of holidays on domestic private consumption in Hong Kong; their findings highlight that increasing holidays by a day a quarter raises private consumption significantly, and consequently GDP also goes up by 0.34 percent.

Methodology and Data

Our modelling effort comes from a standard macroeconomic production function. We specify this function in a manner that it incorporates the number of holidays as an input. In its basic form, the model looks as follows:

$$\text{NSDP}_{it} = \beta_0 + \beta_1 \text{Holidays}_{it} + \beta_2 \text{Pcapital}_{it} + \beta_3 \text{Hcapital}_{it} + \beta_4 \text{Labour}_{it} + \beta_5 \text{Credit}_{it} + \beta_6 \text{Govt}_{it} + a_{1i} + a_{2t} + e_{it} \quad (1)$$

where, in state ‘i’ and at time ‘t’, ‘NSDP’ denotes Net State Domestic Product per capita (Indian Rupee INR, constant 2004 prices), ‘Holidays’ represents number of holidays,³ ‘Pcapital’ and ‘Hcapital’ denote physical capital (proxied by gross fixed capital formation) and human capital (literacy rate) respectively, ‘Labour’ is the size of the labour force, ‘Credit’ stands for state-wise credit deposit ratio of scheduled commercial banks according to place of utilisation and ‘Govt’ denotes developmental expenditure by state governments as percentage of NSDP. Finally, a_{1i} and a_{2t} denote state and time fixed effects, respectively, and ‘e’ is the error term. All variables are expressed in their natural logarithms. The study includes 24 Indian states which cover around 95 percent of the Indian population, spanning the time period 2008-2016. Other states and earlier years could not be included because of data limitations. The data mostly comes from the Reserve Bank of India, Election Commission of India and various other official government websites. Data sources and the list of the states covered in our analysis have been provided in Tables A1 and A2, respectively, in the Appendix.

We start by checking the order of integration of the variables by employing the Pesaran (2007) unit root test. The unit root results indicate that all our variables are I(1), i.e. they are stationary in first differences (Table 1). Therefore, we express all the variables in our model in first differences, instead of levels.

³ All holidays that fell on Sundays have been excluded from the analysis.

Table 1: Pesaran (2007) unit root test results

Variable	Level	1 st Difference	Conclusion
Holidays	-1.969	-2.956**	I(1)
NSDP	-2.006	-2.834*	I(1)
Pcapital	-2.566	-3.465**	I(1)
Hcapital	-0.283	-2.532*	I(1)
Govt	-1.352	-2.553*	I(1)
Labour	-1.873	-3.209**	I(1)
Credit	-1.929	-2.569*	I(1)

Note: The null hypothesis is that there is unit root. *, ** and *** represent statistical significance at 10 percent, 5 percent and 1 percent respectively.

Moreover, the effects of policy variables like government spending, capital formation and industrial credit are often felt on the economy with a lag. According to the Akaike Information Criterion, the optimal number of lags for our model is 1. Therefore, instead of estimating the equation 1, we estimate the following equation:

$$\Delta\text{NSDP}_{it} = \beta_0 + \beta_1\Delta\text{Holidays}_{it} + \beta_2\Delta\text{Pcapital}_{it} + \beta_3\Delta\text{Pcapital}_{it-1} + \beta_4\Delta\text{Hcapital}_{it} + \beta_5\Delta\text{Hcapital}_{it-1} + \beta_6\Delta\text{Labour}_{it} + \beta_7\Delta\text{Credit}_{it} + \beta_8\Delta\text{Credit}_{it-1} + \beta_9\Delta\text{Govt}_{it} + \beta_{10}\Delta\text{Govt}_{it-1} + a_{1i} + a_{2t} + e_{it} \quad (2)$$

where, Δ denotes the first difference operator; Pcapital_{it-1} , Hcapital_{it-1} , Credit_{it-1} and Govt_{it-1} stand for one-year lagged values of physical capital, human capital, bank credit and government spending, respectively.

Next, we insert some controls for political ideology in our econometric model. Hypothetically speaking, the behaviour or ideology of politicians are expected to affect economic policies. The “Partisan theory” of macroeconomic policy is based on the idea that left-wing governments are more likely to pursue expansive policies than the right-wing governments, which lead to lower unemployment and higher growth, albeit running the risk of higher inflation (Hibbs, 1994). That is because left-wing parties appeal primarily to the labour base whereas right-wing parties appeal primarily to the capital owners and hence are more concerned with maintaining a low inflation (see, for example, Hibbs, 1977).

In addition to the size of the government budget, the ideology of ruling party may also affect the composition of the budget. The clientele of the incumbent party may value spending in certain sectors more than that in others. By shifting the composition of spending towards those sectors, the incumbent party will try to signal that their preferences are close to those of voters, implying that they will choose high post-election spending on those same goods (see, for example, Drazen and Eslava, 2010). Herwartz and Theilen (2017) argue that public spending can be broadly categorised into two parts- social spending and non-social spending. The former consists of, among other categories, health care, old age, survivors, incapacity-related benefits, family programmes, active labour market programmes and housing programmes. More social spending is expected to benefit the low-income groups the most. Non-social spending includes expenditure on infrastructure, security and administration. Higher expenditures on the ‘non-social’ categories more than proportionally favour the middle- and upper-income classes.

The empirical evidence on the impact of political ideology is somewhat ambiguous though. Potrafke (2011) examines whether government ideology has influenced the allocation of public expenditures in OECD countries and concludes that government ideology hardly influences budgetary affairs. Jensen (2010) argues that in traditionally left-wing countries, there is a strong positive association between right-wing government and social spending. Chatterji et al. (2015) demonstrate that political ideology of the governing party does not affect state-level public education expenditure in India.

Nonetheless, we expand Equation (2) by including three sets of political interaction dummy variables. We categorise the political parties in India into four groups, namely, ‘Centrist’, ‘Left’, ‘Right’ and ‘Regional’, where ‘Centrist’ denotes the Indian National Congress party, ‘Left’ stands for the communist parties, ‘Right’ represents the Bharatiya Janata Party, and, lastly, ‘Regional’ includes all the regional parties which do not have a notable national presence, but are influential in their home states. The variable ‘Centrist’ takes the value of 1 for state ‘i’ in year ‘t’, if the Congress party is in power in that state in that particular year, and 0, otherwise. Similarly, other political dummy variables have been defined.

It can be asserted that the composition of physical capital accumulation (‘Pcapital’) and government spending (‘Govt’) may be influenced by the ideology of the ruling party and, therefore, the growth effects of these variables may vary depending on who is in power. Hence, we incorporate interaction terms (Pcapital*Centrist, Pcapital*Left, Pcapital*Right and Pcapital*Regional; Govt*Centrist, Govt*Left, Govt*Right and Govt*Regional) into Equation (2). The hypothesis is that the growth effects of government spending will be more pronounced in states governed by centrist and left parties, as opposed to that in states governed by the right-wing party (BJP). In contrast, for physical capital accumulation, we hypothesise that the growth effects will be enhanced when the right-wing party (BJP) is in power, as opposed to the centrist, left or regional parties. That is because right wing parties are hypothetically expected to promote private investments more than leftist or centrist parties. In the case of physical capital accumulation, we treat the regional parties as the control variable and in the case of government spending, we treat the BJP (‘Right’) as the control variable.

As discussed in Section 1, some of the regional parties are suspected of involving in ‘holiday politics’, so we insert interaction terms of political ideology variables with ‘holidays’ and take the regional parties (Holidays*Regional) as the control variable in this case. The aim of this approach is to explore whether the growth effects of holidays are contingent on the ideology of the government. The augmented model can be expressed as follows:

$$\Delta\text{NSDP}_{it} = \beta_0 + \beta_1\Delta\text{Holidays}_{it} + \beta_2\Delta\text{Pcapital}_{it} + \beta_3\Delta\text{Pcapital}_{it-1} + \beta_4\Delta\text{Hcapital}_{it} + \beta_5\Delta\text{Hcapital}_{it-1} + \beta_6\Delta\text{Labour}_{it} + \beta_7\Delta\text{Credit}_{it} + \beta_8\Delta\text{Credit}_{it-1} + \beta_9\Delta\text{Govt}_{it} + \beta_{10}\Delta\text{Govt}_{it-1} + \beta_{11}\text{Govt*Centrist}_{it} + \beta_{12}\text{Govt*Left}_{it} + \beta_{13}\text{Govt*Regional}_{it} + \beta_{14}\text{Pcapital*Centrist}_{it} + \beta_{15}\text{Pcapital*Left}_{it} + \beta_{16}\text{Pcapital*Right}_{it} + \beta_{17}\text{Holidays*Centrist}_{it} + \beta_{18}\text{Holidays*Left}_{it} + \beta_{19}\text{Holidays*Right}_{it} + a_{1i} + a_{2t} + e_{it} \quad (3)$$

where in state ‘i’ and time ‘t’, the variable ‘Govt*Centrist’ takes up a non-zero and positive value if the centrist party (Congress) was in power, and 0, otherwise. Similarly, all other interaction variables have been defined.

Panel Model Analysis and Discussion

Table 2 below presents the summary statistics for the key variables considered in this paper.

Table 2: Descriptive Statistics (No of obs=216)

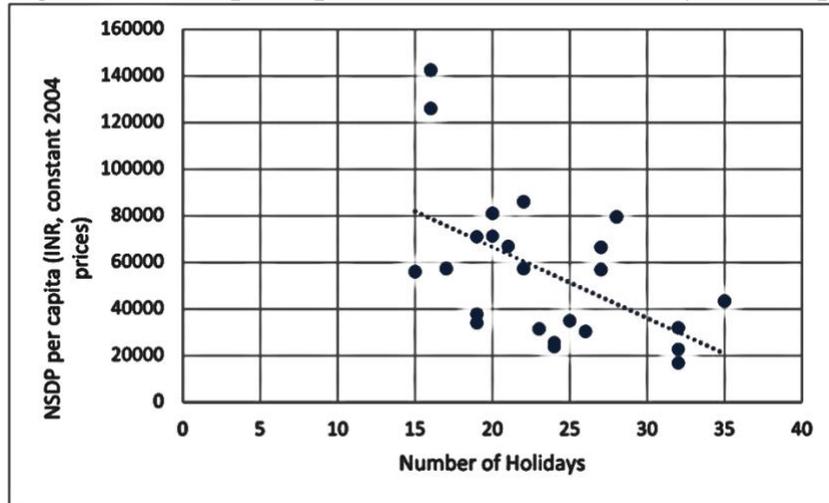
Variable	Mean	Standard Deviation	Minimum	Maximum
Holidays	22.47	6.64	7	40
NSDP	45,598.97	26,208.65	10,297	1,42,615.7
Pcapital	1,29,414.4	1,61,896.3	3.2	996491.6
Hcapital	75.51	8.28	57.36	95.36
Govt	15.12	7.18	4.64	47.25
Labour	4,17,422.1	435097.2	2313	2003759
Credit	62.33	25.57	26.6	122.2

Source: Authors’ own calculations.

The average number of holidays offered by the 24 Indian states are around 22, over the time period 2008-2016. However, there are significant cross-state variations as evidenced by the high standard deviation and range. For instance, the 2nd richest state in our sample, Goa, offered only 7 holidays in the year 2008, whereas the poorest state in India, Bihar, offered 40 holidays in 2008 and 2010. There are huge dispersions in the levels of economic prosperity as well. Bihar had a per capita NSDP of only INR 10,297 in 2008 while, on the other hand, the richest state, Delhi, had a per capita NSDP of INR 91,845, which is nearly 9 times higher than that of the former. Human capital stocks vary significantly with some states registering literacy rates comparable to the developed countries (95.36 percent in Kerala in 2016). In contrast, poor states are lagging significantly in educational attainments (Bihar and Rajasthan with around 63 and 66 percent literacy rates, respectively). There is considerable variation in the size of the public sector as well. For instance, in states like Maharashtra, Gujarat and Punjab, government expenditure as percentage of GDP are only about 8.4 percent, 9 percent and 9.3 percent, respectively, during the 2008-2016 period. Whereas, in north-eastern states like Tripura, public sector plays a much larger role (22 percent).

The primary variable of interest in the context of this study is 'Holidays'. A preliminary examination of the holiday-NSDP per capita relationship for 2016 indicates towards a negative correlation (correlation coefficient= -0.54) between the two variables.

Figure 1: NSDP per capita and Number of Holidays Scatterplot, 2016



Source: Authors' own calculations based on data from Reserve Bank of India and other sources (see Table A1).

The richer states, on average, enjoy a lower number of holidays as compared to the poorer states. For instance, Delhi and Goa were the two richest states in India in 2016 with NSDP per capita of INR 142,615.73 and INR 125,966 respectively. The number of holidays in the same year in those two states was 16. Conversely, Bihar and Uttar Pradesh were two of the poorest states in India, with NSDP per capita of INR 16,893 and INR 22,880, respectively. Both states offered double the number of holidays (32) to their employees, as compared to Delhi and Goa in 2016. West Bengal ranked 14th out of the 24 states in the sample, in terms of NSDP per capita, and offered the highest number of holidays (35) in 2016, amongst all states.

Full Sample Estimation

We start by estimating the initial equation (Equation 2) by employing a Random Effects Model, given that the Breusch-Pagan Lagrange Multiplier (LM) test results indicate that there is a significant random effect in the panel data. However, those results seem to suffer from cross-sectional correlation and first order autocorrelation, as suggested by the Pesaran test and Wooldridge test results reported in Table A3 in the Appendix. Consequently, we do not report the Random Effects Model results in the paper.⁴ One way to control for the problems of first order serial correlation and cross-sectional dependence is to use pooled OLS regression with panel corrected standard errors. The estimates (Column I) are robust to heteroscedasticity, contemporaneously cross-sectional correlation, and first-order autocorrelation (see, for example, Hoechle, 2007). Next, we estimate the fully specified model (Equation 3) through the Roodman (2009a, b) improvement of the Arellano and Bond (1991) General method of Moments (GMM) method, which has been established in contemporary development literature to produce more efficient estimates and restrict the proliferation of instruments. There is ample evidence in the growth literature that there can be problems of endogeneity while estimating production functions (see, for example, Gavin and Perotti, 1997; Jaimovich and Panizza, 2007). In other words, it is possible that there is a reverse causality flowing from economic growth towards government spending or capital accumulation. For example, a larger or richer economy generates higher revenues for the government, which enables the latter to undertake higher public spending. Similarly, steady economic growth persuades both the government and private firms to invest into the economy and thus physical capital stock expands faster in richer states. In the presence of such endogeneity, the results presented in Column 1 can be biased. Therefore, we apply the Arellano-Bond GMM estimation method, which overcomes any potential problems of endogeneity mentioned above. This approach to panel data models also involves the use of a dynamic effect through the inclusion of a lagged dependent variable ($L.\Delta NSDP$) as an explanatory variable. The lagged dependent variable eliminates any problem of autocorrelation.

⁴ Results are available upon request.

Table 3: Panel model estimation for full sample

Independent Variables	Linear Regression with Panel Corrected Standard Errors (I)	Arellano-Bond GMM Estimation (II)
L. Δ NSDP		0.207** [0.040]
Δ Holidays	-0.031* [0.071]	-0.023* [0.098]
Δ Pcapital	-0.007 [0.230]	-0.004 [0.441]
Δ Pcapital _(t-1)	-0.012* [0.072]	-0.005 [0.314]
Δ Hcapital	0.978** [0.050]	0.895 [0.768]
Δ Hcapital _(t-1)	1.083** [0.047]	0.920 [0.527]
Δ Labour	-0.010 [0.787]	0.016 [0.195]
Δ Credit	0.003 [0.982]	-0.042 [0.178]
Δ Credit _(t-1)	-0.059* [0.087]	-0.069*** [0.000]
Δ Govt	-0.015 [0.392]	0.001 [0.447]
Δ Govt _(t-1)	-0.004 [0.832]	0.008 [0.493]
Govt*Centrist		-0.000 [0.362]
Govt*Left		0.000 [0.856]
Govt*Regional		0.000 [0.895]
Pcapital*Centrist		-0.000 [0.988]
Pcapital*Left		-0.000 [0.849]
Pcapital*Right		-0.000 [0.813]
Holidays*Centrist		-0.000 [0.935]
Holidays*Left		0.001 [0.749]
Holidays*Right		0.000 [0.910]
Constant	0.051*** [0.000]	0.057** [0.48]

State fixed effects	YES	
Time fixed effects	YES	
AR2		[0.000]
R ² (adjusted)	0.113	0.207
No. of observations	164	139
Wooldridge test for autocorrelation H ₀ : No first-order autocorrelation	[0.000]	
Sargan Test H ₀ : Overidentifying restrictions are valid		[0.478]

Note: The dependent variable is growth rate in NSDP per capita (Δ NSDP). AR2 denotes the autocorrelation test (of second order) in relevance to the null hypothesis of autocorrelation. *, ** and *** denote statistical significance at 10 percent, 5 percent and 1 percent respectively. Heteroskedasticity-robust standard errors have been used. P-values are presented within parentheses.

The results do hint towards a negative association between holidays and economic growth, even though the effect is marginally significant. According to the Arellano-Bond results, everything else constant, an increase in the growth rate of holidays by 1 percent decreases growth rate of NSDP per capita of Indian states by about 0.02 percent. Among other control variables, human capital stock seems to be another predictor of growth in the case of Indian states though the impact seems to be sensitive to different estimation methods. There is no positive impact of credit by commercial banks on the growth performance of the Indian states. If anything, we find that an increase in ‘Credit’ affects economic growth negatively in India and the negative impact (though statistically insignificant for poor states as seen later) is upheld in the successive analysis as well, as seen in Table 4. This lack of any growth effect of ‘Credit’ reflects the inefficiency of the financial sector of India, as observed by past

studies, such as, Patra and Ghosh Dastidar (2018). The net non-performing assets (NPA) ratio (as a percentage of net advances) of the Indian banks have persistently increased from 1.7 percent in 2012 to 8.5 percent in 2016 over the recent years (see, for example, Reserve Bank of India, 2016). On the other hand, nonperforming loans (as a percentage of total gross loans) have increased from 2.45 percent in 2008 to 7.6 percent in 2016 (see, for example, World Bank, 2016). These trends indicate towards a lack of efficiency of financial intermediation, which may have offset the potential growth effects of the volume of credit given out by the banks in our data. Reddy (2002) cites legal impediments, time-consuming nature of asset disposal process, and manipulation by debtors using political influence as the primary reasons behind such high levels of industrial bad debts in India.

Rich vs Poor States

As mentioned earlier, there are significant differences in economic attributes between the affluent and less affluent regions in India and, consequently, we hypothesise that the nature of the relationship between NSDP and holidays may vary across states. The mean NSDP of the states in our sample during the time period considered by this study is INR 45,558. Those states whose average NSDP is above the mean have been categorised as ‘rich’ and ‘poor’, otherwise. Table A4 provides the details of the categorization of states as per this criterion.

Next, we re-estimate the growth-holidays nexus separately for the two samples by employing the Arellano-Bond dynamic panel model approach. We found previously that political ideology did not matter in the context of Indian states. This finding is in line with earlier studies on India (see, for example, Chatterji et al., 2015). Therefore, we only draw inferences from our estimation results of Equation 2 below. However, it should be noted that our key findings stay unaltered even when insert the ideology variables.⁵

⁵ Results withheld for the sake of brevity but available on request.

Table 4: Panel model estimation of Equation 2 for rich and poor states

Independent Variables	Arellano-Bond GMM Estimation (Rich States)	Arellano-Bond GMM Estimation (Poor States)
L. Δ NSDP	0.181** [0.028]	-0.054 [0.697]
Δ Holidays	-0.025** [0.034]	0.000 [0.943]
Δ Pcapital	-0.008 [0.278]	-0.008 [0.197]
Δ Pcapital _(t-1)	-0.017** [0.037]	-0.002 [0.601]
Δ Hcapital	2.169** [0.450]	0.609 [0.991]
Δ Hcapital _(t-1)	1.040 [0.491]	-1.146 [0.815]
Δ Labour	-0.056 [0.139]	0.084** [0.039]
Δ Credit	-0.008 [0.975]	-0.023 [0.525]
Δ Credit _(t-1)	-0.123*** [0.001]	-0.041 [0.288]
Δ Govt	-0.011 [0.658]	-0.003 [0.933]
Δ Govt _(t-1)	-0.039 [0.121]	0.004 [0.288]
Constant	0.046*** [0.000]	0.039* [0.056]
State fixed effects	YES	
Time fixed effects	YES	
AR2	[0.000]	[0.000]
R ² -adjusted	0.232	0.082
No. of observations	66	73
Sargan Test H ₀ : Overidentifying restrictions are valid	[0.153]	[0.772]

Note: The dependent variable is growth rate in NSDP per capita (Δ NSDP). AR2 denotes the autocorrelation test (of second order) in relevance to the null hypothesis of autocorrelation. *, ** and *** denote statistical significance at 10 percent, 5 percent and 1 percent respectively. P-values are presented within parentheses.

The econometric findings indicate that the nature of the relationship between holidays and economic growth does differ across the two groups of states. Only in the case of the rich states, a growth in the number of holidays affects economic growth negatively and significantly. Everything else constant, if the growth rate in the number of holidays accelerates by 1 percent, the economic growth rate slows down by approximately 0.025 percent in the case of the rich states. In the context of the poor states, the association between the two variables is statistically insignificant. This difference in growth effects of holidays across the two groups probably explains why the relationship comes out to be marginally significant when we perform the full sample estimation in Table 3. We argue that the finding- holidays do not affect growth in poor states-is primarily driven by the fact that the economies of these states are still much more agrarian as compared to their more affluent counterparts. The table below compares the rural-urban population ratio of the five most affluent and five least affluent states in our sample.

Table 5: Rural-Urban Population Ratio, 2011

Richest 5 States	Rural-Urban Population ratio
Delhi	0.07
Goa	0.61
Maharashtra	1.21
Haryana	1.87
Gujarat	1.35
Poorest 5 States	Rural-Urban Population ratio
Bihar	7.85
Uttar Pradesh	3.49
Manipur	2.31
Assam	6.10
Madhya Pradesh	2.62

Source: Government of India (2011), Population Census.

Note: The population census is conducted every 10 years. 2011 is the latest year for which data was available.

About 60-65 percent of the rural population in India were engaged in agricultural activities over the last decade, which implies that blue- and white-collar jobs only constitute about 35-40 percent of the rural workforce (see, for example, Hnatkovska and Lahiri, 2014). Contrary to that, more than 90 percent of the urban workforce were engaged in the blue- and white-collar jobs. Hence, the employees who are affected by government policies on holidays predominantly belong to the urban population. As Table 5 indicates, the rich states are significantly more urbanised than the poor states. In the poorest states of Bihar and UP, the rural-urban ratios are whopping 7.85 and 3.49, respectively, whereas that in the richest states of Delhi and Goa are only 0.07 and 0.61. Even if we compare the poor group with large rich states like Maharashtra and Gujarat still the difference in ratios is considerably large. Moreover, the Government of India census data suggests that during 2001-2011, the rural population has declined in some of the affluent states like Goa (by 19 percent) and Kerala (by 26 percent), while, on the other hand, less affluent states like Bihar have witnessed a 24 percent increase in the same. According to World Bank (2019), around 45 percent of the total workforce in India were engaged in agriculture in 2016. However, in poorer states like Bihar, Assam, Madhya Pradesh and Uttar Pradesh, the percentage of the workforce involved in agrarian activities had been around 77 percent, 75 percent, 62 percent and 55 percent respectively in 2016 (see, for example, Government of Assam, 2017; Government of Bihar, 2019; Mamgain and Verick, 2017; PRS, 2016a). On the other hand, Delhi had less than 1 percent of its working population working in the primary sector in 2016 (see, for example, Government of Delhi, 2017). According to the Government of India Ministry of Labour website, Goa had only 16 percent of its population involved in agriculture even as early as in 2000-01. Other rich states like Maharashtra and Haryana had 51 percent and 40 percent of their workers involved in agrarian activities in 2016 respectively (see, for example, PRS 2016b; Singh and Singh, 2017). Another affluent and the most literate state in India, Kerala, only had around 5.9 percent of its workforce in agriculture (see, for example, The Hindu, 2016). Thus, it could be argued that a significantly higher percentage of the workforce in the poor states are engaged in agrarian activities and are, subsequently, outside the purview of official holiday entitlements. We therefore do not see any significant effect of this variable on economic growth in the case of poor regions.

This difference in effect across the two groups is observed for other control variables as well. In the case of the poor states, it seems that only an increase in the labour force size leads to economic growth whereas the labour force size does not play any role in the economic performance of rich states. An acceleration in the growth rate of human capital promotes economic growth in the rich states whereas this factor is inconsequential for the poor states. The finding, that physical capital accumulation has a negative or no association with growth, is contrary to the predictions of neoclassical growth theories. Allocation and growth effects of both human and physical capital depend on the institutions of the country. Hall et al. (2010) argue that in countries with good institutions—where the social, political, and legal rules provide for secure property rights and unbiased contract enforcement—investments in capital generates a positive return for society as a whole. By contrast, in countries with poor institutions, increases in capital stock lead to negative growth rates as additions to the capital stock tend to be employed in rent-seeking and other unproductive activities. Many other empirical studies have noted this ineffectiveness of human capital in the context of other developing economies. Easterly (2001) notes that despite larger increases in schooling than any other region since 1960, sub-Saharan African countries remained stuck in poverty, whereas Asian tigers, such as South Korea and Taiwan, register much faster economic growth with much smaller increases in education levels. In cross-country growth regressions, Pritchett (2001) finds no association between increases in human capital and the rate of growth of output per worker. He puts forward three possibilities that could explain this lack of any relationship: the newly created educational capital has gone into privately remunerative, but socially unproductive activities; there has been slow growth in the demand for high-skilled labour, so supply has outstripped demand, and returns to schooling have declined rapidly; finally, the education system has failed, so schooling provides few (or no) skills.

The lack of efficient institutions and high incidence of corruption is indeed an issue in India. In 2018, the country ranked 78th out of 180 countries in the Corruption Perceptions Index (CPI) published by Transparency International.⁶ Likewise, India registered an abysmal rank in institutional quality (73rd out of 191 countries) according to the Institutional Quality Index 2017 published by the World Bank. However, the problem seems to be worse in the poorer states, because both physical and human capital failed to play any role in the growth process of the same. We argue that, in addition to the institutional factors, this lack of effect of human capital in poor states can also be attributed to the ‘brain drain’, whereby many skilled and semi-skilled workers from the poorer states migrate to the metropolitan cities and industrial and technological hubs located in the rich parts of India, such as, Mumbai (Maharashtra), Bangalore (Karnataka), Delhi, and Gurugram (Haryana) for employment opportunities. The Economic Survey of India 2016-17, published by the Ministry of Finance of India, also notes that the affluent states of Tamil Nadu (1013,000), Kerala (900,000), Maharashtra (507,000) and Delhi (466,000) experienced the largest net migration of people, aged 20-29 years, during the period 2001-2011, whereas the less affluent states of Uttar Pradesh (-5834,000), Bihar (-2695,000), Madhya Pradesh (-765,000) and Rajasthan (-791,000) experienced the largest out-migration of the same cohort during that period amongst all Indian states.

The impact of fiscal policy (government spending) is inconsequential as far as India’s growth performance is concerned. This lack of impact can probably be attributed to the misallocation of resources. As highlighted in the Economic Survey 2016-17, welfare spending in India suffers from significant misallocations. In fact, the districts that house the highest number of poor people are the ones that suffer from the greatest shortfall of funds in terms of social programmes. Resources allocated to districts are often a function of the districts’ ability to spend them (see, for example, Anand, 2018). Generally, the richer states have better administrative capabilities to implement the government schemes efficiently and, therefore, they end up getting more funds at the expense of the poorer districts. Such misallocations lead to the exclusion of the deserving

⁶ The Corruption Perceptions Index ranks 180 countries by their perceived levels of public sector corruption according to experts and businesspeople. The index employs a scale of 0 to 100, where 0 is highly corrupt and 100 is very clean (retrieved from the Transparency International website: <https://www.transparency.org/cpi2018>).

poor from any access to government welfare benefits, leakages to non-poor and benefits to corrupt local actors, all of which reduce the growth effects of public spending.

Conclusion

The number of holidays differs significantly across the Indian states, from only 15 in Andhra Pradesh to 35 in West Bengal for the year 2016. Some of the local governments (like those in West Bengal and Uttar Pradesh) are even accused of using holidays as a tool either to mollify disgruntled workers or woo voters before the state elections. In this context, the paper explored the empirical relationship between the number of holidays and economic growth for 24 Indian states, spanning the time period 2008-2016. The panel model analysis for the entire sample did indicate towards a negative (though somewhat weak) holiday-growth association. Subsequently, the analysis disaggregated the sample into rich (or, more affluent) and poor (or, less affluent) states and re-estimated the relationship. The new results indicated that there was a dynamic association between growth in the number of holidays and economic growth as the relationship differs across the two groups. Holidays did seem to affect growth negatively in the rich states but were inconsequential for the growth performance of the poor states. Holidays offered by state governments affect the employees in blue- and white-collar jobs, whereas majority of the workforce of the poor states are involved in agrarian activities. Therefore, the analysis argues that holiday policies of the governments failed to exert any influence on the growth of the poor states.

Among other control variables, physical capital accumulation played a negative (or, no) role in the growth process which is indicative of the inefficiency of the institutions in India that encourages high levels of corruption and rent-seeking activities. Human capital accumulation did affect growth positively in the rich states but failed to affect growth performance of the poor states. The latter group does not only suffer from poor state-level institutions, but also experience brain drain as there are significant outward migration of skilled and semi-skilled workers from poor regions towards the technological and financial hubs located mostly in the affluent regions.

As far as policy implications are concerned, the results indicate that there is a trade-off between the number of holidays (increased leisure time for workers) and economic growth for the rich states. Therefore, instead of rewarding more holidays to their employees, these states may consider alternative forms of benefits (probably, benefits that are monetary in nature, such as, higher perks and commission payments) for their workers. In the context of the laggard states, these results should not be used to conclude that the absolute number of holidays does not matter. These states, on average, offer a considerably larger number of holidays compared to the rich states and even though that is not affecting their growth at the moment because of the occupational structure of the workforce, offering so many holidays and, worse, playing ‘holiday politics’ are symptomatic of the larger problem of inefficient institutions and incompetent governance which acts as an obstacle as these states actively seek to structurally transform into secondary and tertiary sector-driven economies.

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Appendix

Table A1: Data sources

Variable	Source
NSDP per capita	Handbook of statistics on Indian economy 2016 from Reserve Bank of India.
Size of Labour Force	Handbook of statistics on Indian states, Reserve Bank of India
Gross Fixed Capital Formation (INR Million, constant 2004 prices)	Handbook of statistics on Indian states, Reserve Bank of India
State-wise Credit Deposit ratio of scheduled commercial banks according to place of utilisation	Handbook of statistics on Indian states, Reserve Bank of India
Government Spending	State Finances: A Study of Budgets, Reserve Bank of India
Literacy rate	Handbook of statistics on Indian states, Reserve Bank of India
Ideological variables (ideology of governing party in states)	Election Commission of India website
Holidays	www.officeholidays.com ; wbxpress.com ; holidaystracker.com ; gad.gujarat.gov.in ; www.jk.gov.in ; www.assamyellowpage.com ; manipur.gov.in ; www.jharkhand.gov.in ; Karnataka Employers' Association website; raj.nic.in ; www.wbfin.nic.in ;

Table A2: States included in the study

Andhra Pradesh	Assam
Bihar	Chhattisgarh

Goa	Gujarat
Haryana	Himachal Pradesh
Jammu & Kashmir	Jharkhand
Karnataka	Kerala
Madhya Pradesh	Maharashtra
Manipur	Odisha
Punjab	Rajasthan
Tamil Nadu	Tripura
Uttar Pradesh	Uttarakhand
West Bengal	Delhi

Table A3: Random Effects Model Diagnostic Tests

Diagnostic Test	P-value
Breusch and Pagan LM test for random effects H ₀ : No significant difference across units (i.e. no panel effect).	[0.000]
Pesaran test for cross-sectional dependence H ₀ : No cross-sectional dependence.	[0.000]

Table A4: List of Rich and Poor States

Rich States	Mean NSDP (2008-2016)
Delhi	115069.8
Goa	107781.9
Maharashtra	65067.22
Haryana	63992.98
Gujarat	63871
Tamil Nadu	58202.62
Kerala	56335.11
Uttarakhand	53861.98
Himachal Pradesh	53194
Punjab	48789
Karnataka	46130
Sample Average NSDP-INR 45598	
Poor States	Mean NSDP (2008-2016)
Tripura	43284.02
Andhra Pradesh	42550.92
West Bengal	35047.56
Rajasthan	29252
Chhattisgarh	28429.17
Jammu and Kashmir	28398.95
Jharkhand	27753.99
Odisha	26200
Madhya Pradesh	24584.22
Assam	22429.6
Manipur	21947.08
Uttar Pradesh	18939.7
Bihar	13258.28

Note: All figures are expressed in INR (Indian Rupee). Average NSDP for all states in our sample is INR 45,598 for the time period 2008-2016.