

DOCTOR OF PHILOSOPHY IN MANAGEMENT

ESSAYS ON ECONOMICS OF POOR ENVIRONMENT

By

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*To my Wife...
for Inspiration, Support & Love.*

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CONTENTS

Abstract	xi
1 Introduction	1
1.1 Motivation	1
1.2 Contribution	4
1.3 Abstracts	5
1.3.1 Chapter 2	5
1.3.2 Chapter 3	5
1.3.3 Chapter 4	6
1.3.4 Chapter 5	7
2 What Do We Know About Mitigating the Threat of Poor Environment?	8
2.1 Introduction	9
2.2 Background	12
2.2.1 Adaptation	13
2.2.2 Mitigation	14
2.3 Empirical Issues	16
2.3.1 Data	16
2.3.2 Metrics for adaptation, mitigation, and capability . .	17
2.3.3 Functional Form of Climate Variables	18
2.4 Inferential Strategies	20
2.4.1 Panel Models	20
2.4.2 Quasi-Experimental Design	22
2.4.3 Experimental Design	23
2.5 Integrated Assessment Models	23
2.6 Evidence from Economics Literature	26
2.6.1 Adaptation through Migration	26
2.6.2 Adaptation Through Technology	28
2.6.3 Mitigation through Environmental Regulation	29
2.7 Conclusion	31
2.8 Tables	33

3	Smog at the downstream: Abatement cost of delay in Paddy cultivation at the upstream	36
3.1	Introduction	37
3.2	Regulatory Background	42
3.2.1	Sub-Soil Preservation Act	42
3.3	The Problem of Crop Residue	44
3.4	Crop burning and Air Pollution in Delhi	44
3.5	Prior Literature	47
3.6	Data Description	49
3.6.1	Air Quality Monitor Data	49
3.6.2	Weather Data	50
3.6.3	Aerosol Optical Depth and Fire Radiative Power	51
3.6.4	Groundwater data	51
3.7	Plots and Maps	52
3.8	Summary Statistics	55
3.9	Empirical Strategy	56
3.9.1	Heterogeneous Treatment Effect	59
3.10	Results	61
3.10.1	Effects on the PM-10 Concentration	61
3.10.2	Heterogeneity	62
3.11	Robustness Checks	64
3.11.1	Falsification Test:Alternative Exposure Months	64
3.11.2	Placebo Test	65
3.11.3	Border districts Spillover effects	66
3.12	Discussion	66
3.13	Conclusion	70
3.14	Figures	72
3.15	Tables	77
4	Climate Change, Food Productivity, and Adaptation in Production Network	87
4.1	Introduction	88
4.2	Related Literature	94
4.3	Data	95
4.3.1	Agricultural Productivity Data	95
4.3.2	Climate Database	96
4.4	Empirical Strategy	97
4.4.1	Econometric Specification	98
4.4.2	Definition of Extreme Weather	101
4.5	Empirical Results	103
4.5.1	Impact of extreme weather on crop productivity	103
4.5.2	Impact of irrigation and HYV seed	104

4.5.3	Impact of extreme temperature and precipitation on the marginal usage of climate-resilient inputs	106
4.6	Climate Change, Productivity, and Input-Output Structure	108
4.6.1	Metrics for Weather Shock	109
4.6.2	The Environment	110
4.6.3	Producer's Problem	114
4.6.4	Aggregate Social Welfare	117
4.7	Discussion	121
4.8	Conclusion	123
4.9	Figures	124
4.10	Tables	126
4.11	Proofs	135
4.12	Additional Table and Figure	141
5	Bibliography	143
	References	143

LIST OF TABLES

2.1	Summary of findings on Parametric and Non-parametric functions	34
2.2	Summary of findings on Adaptation and Mitigation actions	35
3.1	Summary Statistics on Monitoring Stations	77
3.2	Summary Statistics on PM-10	78
3.3	Parallel Test	79
3.4	Effects of the SSPA on PM_{10} , DID with Temperature Interaction	80
3.5	Heterogeneous effect of SSPA across area type	81
3.6	Heterogeneous effect of SSPA with extreme meteorological conditions	82
3.7	Robustness to Alternative Exposure Duration (Falsification Test)	83
3.8	Alternative outcome variable: Sulfur Dioxide(Placebo Test)	84
3.9	Estimates with alternative control groups, based on distance from the treatment group (Spillover Effect Test	85
3.10	Effects of the SSPA on PM_{10} with Punjab and Haryana as control group	86
4.1	Estimates for the impact of extreme temperature and precipitation on rice and wheat productivity at Germination Stage	127
4.2	Estimates for the impact of extreme temperature and precipitation on rice and wheat productivity at Growth Stage	128
4.3	Estimates for the impact of extreme temperature and precipitation on rice and wheat productivity at Harvest Stage	129
4.4	Estimates for the marginal utilization of Irrigation and HYV seeds with variation in temperature	130
4.5	Estimates for the marginal utilization of Irrigation and HYV seeds with variation in precipitation	131
4.6	Estimates for the marginal utilization of Irrigation and HYV seeds with variation in lag temperature	132
4.7	Estimates for the marginal utilization of Irrigation and HYV seeds with variation in lag precipitation	133

4.8	Estimates for the marginal utilization of Irrigation and HYV seeds with variation in temperature	134
4.9	District Level Summary Statistics on Rice and Wheat	142

LIST OF FIGURES

3.1	The Conceptual Framework	46
3.2	Spatial Distribution of AOD in 2008 (left) and 2010 (right) averaged between 10th October to 30th November	73
3.3	Trend of log PM-10 in Delhi (Treatment) and Uttar Pradesh and Bihar (Control)	73
3.4	Regression fit of log PM-10 in Delhi (Treatment) and Uttar Pradesh and Bihar (Control)	74
3.5	Trend of Fire Radiative Power in Punjab and Haryana for the year 2008 and 2010	75
3.6	State-wise groundwater extraction, 2006-07	76
3.7	Trends Groundwater Storage in Punjab and Haryana, 2002-2017	76
4.1	Spatial distribution of change in the annual precipitation (L) and temperature (R), 1966-2011	124
4.2	Trends in the mean and standard deviation for annual precipitation (L) and temperature (R)	125
4.3	Summary of Effectiveness of Irrigation and HYV	141

ACRONYMS

AOD	Aerosol Optical Depth
CES	Constant Elasticity of Substitution
CGWB	Central Groundwater Board
CPCB	Central Pollution Control Board
CRB	Crop Residue Burning
DID	Difference-in-Difference
IO	Input Output
PM10	Particulate Matters of diameter 10 micro mts
PBLH	Planetary Boundary Layer Height
RSPM	Residual Suspended Particulate Matters
SOX	Oxides of Sulfur
SSPA	Sub-Soil Preservation Act
NOX	Oxides of Nitrogen
NASA	National Aeronautics and Space Administration
IAM	Integrated Assessment Models
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
VDSA	Village Dynamics in South Asia

Abstract

The advent of environmental degradation due to air and water pollution, the decline in water table, and climate change have necessitated the design of mitigation and adaptation strategies that minimize the risk efficiently. Prior literature in environmental economics provides evidence on the local impact of adaptation and mitigation actions with minimal emphasis on their associated externality and general equilibrium effect. This thesis addresses these gaps in the literature in the following manner. First, I evaluated the non-localized externality of the groundwater regulation which was implemented in Punjab and Haryana. I find that the delay in crop residue burning due to the regulation increased the concentration of PM_{10} by 22 percent in Delhi. The observed impact is mediated through the change in wind direction and decline in temperature. Second, I analytically show that climate change adaptation in the agriculture sector through the demand of additional inputs impacts the aggregate social welfare. The additional inputs reduce the impact of productivity loss in the agriculture sector due to climate change on the aggregate social welfare. The significance of this thesis is that it informs our theoretical understanding of the general equilibrium effect of adaptation and empirical understanding of the non-localized externality of mitigation actions.

Keywords: Crop residue burning; Air Pollution; Non-Localized Externality; Climate Change; Climate Adaptation; Production Network