



CREB Research News

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Centre for Research in
Economics and Business
Lahore School of Economics



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EDITORS NOTE

The Centre for Research in Economics and Business (CREB) was established in 2007, as an independent research centre at the Lahore School of Economics, Pakistan. Its primary objective is to conduct policy-oriented research with a rigorous academic perspective on key development issues facing Pakistan and promote public debate on policy issues through conferences, seminars, and publications. CREB organizes the Lahore School's Annual Conference on the Management of the Pakistan Economy, and publishes Working Paper and Policy Paper Series to disseminate the research being done at the Centre.

At CREB, we place great emphasis on building research networks and linkages with researchers, within and outside the country, to bring together people with the right set of skills to help achieve these goals. CREB hosts visiting international scholars undertaking research on Pakistan, facilitates and coordinates research by the faculty at the Lahore School, and administers the postgraduate program leading to the MPhil and MS degrees at the Lahore School.

This is the fourth in a series of research newsletters from CREB, and we hope that it will provide a useful perspective regarding the scope and depth of research being carried out at the Centre. We invite you to visit our website www.creb.org.pk, and browse through our ongoing and completed research.

Introduction

In the short period since its inception, the **Centre for Research in Economics and Business (CREB)**, has built an excellent reputation for the quality of its research. Our faculty and researchers have received funding support from regional partners and international agencies such as British Academy UK, Department for International Development (DIFD), International Growth Centre (IGC), National Science Foundation, USA, Open Society Foundation (OSF) and South Asia Network of Economic Institutes (SANEI).

Our staff are highly skilled in applied research and have been actively involved in projects that help build strong policies. The research interests of our staff include Growth, Political Economy, Economic Policy, Education and Labor Economics – with a special country focus on Pakistan.

This issue of CRN covers the period between April, 2013 and March, 2014. It has information on current research projects at CREB, as well as of events such as the upcoming 10th Annual Conference of the Lahore School of Economics and International Conferences where CREB staff presented papers. This newsletter also includes a list of recent CREB publications and research carried out by the CREB staff individually. Last but not the least it provides abstracts of recently completed MPhil and MS theses.

Research

I. Ongoing Projects

1. **Understanding and Addressing Rural Poverty in Pakistan: Oxford University – Lahore School Collaboration**

With funding from the British Academy and the Lahore School of Economics, researchers at Oxford and CREB are in the final year of a 3-year collaborative program on the Economics of Rural Poverty in Punjab. The collaboration has led to several joint academic projects between the two institutions, involving work between *Marcel Fafchamps, Simon Quinn, and Kate Vyborny* at Oxford, and *Naved Hamid, Azam Chaudhry, Theresa Chaudhry, Hamna Ahmed, Asha Gul, Uzma Afzal and Farah Said* at the Lahore School and *Muhammad Haseeb* at CERP. The collaboration has now far exceeded the scope originally planned, leading to new joint projects that will continue beyond the end of the grant this year.

The collaborative work includes research on the following topics:

a. Patron-Client Relationships and Rural Development in Pakistan

How do social networks and local “patrons” affect household wellbeing and access to public services? Patron-client relationships, or vertical social relationships in which individual powerful “patrons” have multifaceted relationships with “clients”, are said to be key features of both markets and politics in many developing country settings, including rural Pakistan. But how do these relationships work in practice and how do they affect the delivery of government goods and services?

These questions are being explored by *Azam Chaudhry* (Lahore School), *Muhammad Haseeb* (CERP) and *Kate Vyborny* (Oxford University/Lahore School) initially with data collected from the Lahore School's PERI survey and a new survey. The researchers have developed several research papers analyzing these data, which examine questions including how local context affects the patron-client relationship, how political connections affect targeting of government programs, and whether different types of program design make programs for the poor more robust to the influence of patronage. The researchers have presented this work in Lahore at the LEDRS seminar series, as well as at seminars and conferences in Oxford, Ottawa, and Paris, and anticipate submitting papers for publication later this year.

b. Learning about Flood Risk: Evidence from a Field Experiment in Pakistan

Farah Said, Uzma Afzal (Lahore School) and *Ginger Turner* (The Wharton School) investigated how individuals learn about flood risk through the experience and observation of flood events. The study tested the theory that individual risk perceptions and preferences could change with disaster experience, even when controlling for variation in initial asset constraints and losses. The aim was to improve on previous studies by matching game choices with survey data that included questions on expectations, asset, information sets, and timing by complementing surveys with experimental design.

A main contribution of this study was to improve the identification of individual loss measures, to test whether variation in flood damages at an individual level can explain differences in observed risk aversion changes. This research was particularly innovative in the Pakistan context, where there has been little work to date on behavioral economics. Findings on behavioral changes are forthcoming in an international journal and in an UN Environmental Programme book on warning systems for climate change. A working paper on changes in risk perceptions and attitudes is now available.

The authors are also collaborating with Karen Cambell (the Wharton School) on a component on household resilience to shocks in the environment

c. *Evaluating the Impact of Punjab's Girls Stipend Program*

The government of Punjab, starting in 2004, offered a conditional cash transfer (CCT) of Rs 200 per month, to girls in class 6 to 8 with minimum 80 percent attendance, in order to increase the educational attainment of girls in districts with less than 40 percent literacy. The program was later was extended up to grade 10.

Using data collected in 2009 from the Punjab Consanguinity survey in conjunction with data currently being collected from the new Punjab Rural Household Survey (supported by the British Academy and Lahore School of Economics), *Theresa Chaudhry* (Lahore School) and *Muhammad Haseeb* (CERP) aim to evaluate the impacts of this CCT by means of a difference-in-differences approach, comparing eligible girls to their non-eligible elder sisters in both stipend and non-stipend districts.

d. *Rural Household Finance and Child Outcomes*

Theresa Chaudhry (Lahore School) and *Gwendolyn Tedeschi* (Manhattan College) will be looking at child outcomes

(education and child labor) as they relate to microfinance borrowing, using data collected through the Punjab Rural Household Survey (supported by the British Academy and Lahore School of Economics). They will also get a detailed picture of rural households' finances, including borrowing and savings behaviors, taking place through both formal and informal sources, including microfinance institutions, moneylenders, friends and family, and committees.

2. *Caste, Social Exclusion and Education in Rural Punjab: World Bank and CREB joint Research Initiative*

This Lahore School funded research was a collaboration between *Tayyaba Tamim* (Lahore School) and *Rehan Jamil* (World Bank). They used a multiple case study design and mixed methods approach to capture, in-depth, the processes by which caste-based social exclusion shapes the educational opportunity for the marginalized castes in rural Punjab. Three villages were selected from the PERI 2011 data based on geographical spread, caste and religious complexity and lowest school enrollment. The study used Amartya Sen's capability approach to human development to evaluate educational opportunity in the space of capabilities and opportunities, in combination with forms of social exclusion identified by (Whitley, 2005) and Pierre Bourdieu's social critical theory to analyze the results.

Data from 105 interviews and questionnaires revealed that the caste-based social exclusion stemming from socioeconomic dimension refracted into active and passive forms of institutional exclusionary processes at macro and micro levels, across temporal, spatial and social planes on the one hand; and unfavorable inclusion of the low castes in their own groups, on the other hand; forcing the poorest and most excluded castes to self-deselect themselves from accessing educational opportunity. The results of the study are in the process of being published as a World Bank Working Paper; CREB Working Paper; and in British Educational Research Journal and Education studies.

3. Analysis of Technology in the Sialkot Soccer Ball industry

The project has been developed under the firm capabilities programme of the *International Growth Centre (IGC)* and is led by a team of researchers including *Azam Chaudhry* and *Shamyla Chaudry* (Lahore School), *David Atkin* (Yale University), *Amit K. Khandelwal* and *Eric Verhoogen* (Columbia University).

The Sialkot soccer ball cluster is made up of a large number of manufactures who export approximately 60 million hand-stitched soccer balls each year, accounting for about 70 percent of global production. But over the last few years, the amount of soccer balls produced in Sialkot has fallen.

This project aims to better understand the technologies within the industry and determine the characteristics of the firms that are able to identify and implement new technologies.

The research team has developed a cost saving technology which it has given to a number of soccer ball manufacturers in Pakistan in order to determine the factors affecting technology adoption in firms and technology spillovers between firms. The research team has also looked at how misaligned incentives between firms and employees can affect technology adoption. As of date the project has collected data on the Sialkot soccer ball sector with a baseline survey conducted in January 2012, has shared the technology with a group of soccer ball manufacturers in May 2012 and has conducted six rounds of follow up surveys with the firms. The endline survey will be conducted in the fall of 2014. The preliminary data analysis was presented at the IGC Growth Week in September 2012 and September 2013 in London and to the Government of Punjab. After these presentations the Secretary Finance and the Secretary Industries, Punjab Government used the project's findings to propose and initiate an Innovation Development Fund (IDF).

Currently, the Punjab Government has initiated this fund and the Lahore School is represented on its executive board.

4. Incentivizing Attendance in Production Teams

The project has been developed under the firm capabilities programme of the *International Growth Centre (IGC)* and is led by a team of researchers including *Theresa Chaudhry (Lahore School)* and *Muhammad Haseeb (CERP)* and *Christopher Woodruff (University of Warwick)*. They have attempted to test whether short-term financial incentives can be used to decrease worker absenteeism in one of Gujrat's leading fan factories. The factory intends to move production from batches performed by teams to assembly lines in order to remain competitive.

In early 2012, workers from eight work groups (teams) were surveyed on demographic characteristics, work habits, and team interactions. From February to June 2012, two incentive schemes, one based on individual attendance and one based on meeting a team attendance target, were rotated among the eight teams on a monthly basis.

Early results indicated that the team attendance target appeared to have some effect on coordinating workers' absences. In order to build stronger evidence, we are currently evaluating data from a second round of the experiment conducted in 2013 of the team attendance incentive against a control group on a larger sample of 22 teams.

5. Incentivizing Development: A Field Experiment on Third Tier Organizations in Pakistan

The project is collaboration between *Kate Vyborny* and *Simon Quinn (University of Oxford)*, *Asha Gul* and *Hamna Ahmed (Lahore School)* and the Pakistan Poverty Alleviation Fund. The project is designed as a Randomized Controlled Trial (RCT) in which approximately 700 Third Tier Organizations spread across Pakistan will be analyzed to assess the impact of self-reporting and non-financial incentives on organizations' performance. The performance of these organizations will be measured along two dimensions: (i) governance and inclusion; and (ii) service delivery. The baseline survey for the project is expected to be carried out in April 2014 and the field experiment expected to span over a period of two years.

6. Benchmarking of Productivity in Pakistan's Readymade Garment Sector

The project has been developed under the International Growth Centre (IGC) and is led by a team of researchers including *Theresa Chaudhry, Azam Chaudhry (Lahore School)* and *Christopher Woodruff* and *Rocco MacChiavello (University of Warwick)*. There is significant potential for expansion in Pakistani exports especially keeping in mind the fact that the European Union has recently granted Pakistan GSP

Plus status. That said, expanding exports must be accompanied by improvements in productivity if any export surges are to be sustained over the coming years. The researchers are working together to benchmark the productivity of garment factories in Pakistan. The pilot phase of the project will be used to understand bottlenecks to increasing productivity with the aim to develop productivity-enhancing interventions for the sector, to be evaluated through the method of a Randomized Controlled Trial (RCT).

7. Microcredit and Microsaving for Microenterprises in Pakistan

Marcel Fafchamps (Stanford), *Simon Quinn* (Oxford), *Giovanna d'Adda* (Birmingham) are working with *Naved Hamid*, *Farah Said* and *Uzma Afzal* from the Lahore School are designing a Randomized Control Trial to compare the effectiveness of micro-savings and micro-loans as means for households to manage risk and liquidity. This study will be conducted in collaboration with the National Rural Support Programme (NRSP) and is supported by the International Growth Centre (IGC). The fieldwork is scheduled for August, 2014.

II. Completed Projects

Public Vs Private Schooling Choice at the Household Level

With a grant from *Open Society Institute (OSI) Privatization in Education Initiative (PERI)*, researchers led by *Masooma Habib*, *Hamna Ahmad* and *Sahar Amjad* (Lahore School) undertook a study titled *Determinants of School Choice – Evidence from Punjab, Pakistan*. The study addressed the following overarching question: Why do parents choose low cost private schools when free public schools are available? The main emphasis of the study in answering this question was on the role of parents' perceptions in school choice while controlling for a range of child, household and school specific characteristics. The study was based on a sample of 1024 rural households in 64 clusters spanning over 8 *tehsils* and 7 districts of the Punjab.

Findings of the study have been published in *Education, Privatisation and Social Justice: Case studies from Africa, South Asia and South East Asia* and as *CREB Working Paper No. 01-13 Determinants of School Choice: Evidence from Rural Punjab, Pakistan*.

For more information please visit: <http://www.creb.org.pk/researchproject>

CREB Publications

CREB publishes papers to bring research being done at the Centre to a wider audience. **Working Paper series** comprise of rigorous analytical and empirical research studies while the **Policy Paper series** publishes papers more directly targeted towards a policy audience. The papers published since the last Annual Conference are listed below:

- **CREB Working Paper No. 03-13**
The effects of Agglomeration on the Formation and Scale of Operation of New Firms
Maryiam Haroon
- **CREB Working Paper No. 04-13**
Labor Pooling as a Determinant of Industrial Agglomeration
Najam uz Zehra Gardezi
- **CREB Working Paper No. 01-14**
Resource Misallocation and Aggregate Productivity in Punjab
Muhammad Haseeb and Theresa Chaudhry
- **CREB Working Paper No. 02-14**
Attitudes Towards Risk in the Wake of a Rare Event: Evidence from Pakistan
Farah Said, Uzma Afzal and Ginger Turner

To view the complete list of papers in both series please visit:

<http://www.creb.org.pk/Publications>

Staff Research Publications

CREB staff have produced research which has been published in national, international journals and edited volumes. A list of publications since the last Annual Conference is given below:

1. **Exports: Lessons from the Past and the way forward.** Book chapter 6 in *Pakistan: Moving the Economy Forward*, May 2013
Hamna Ahmed, Naved Hamid and Mahreen Mahmud
2. **Private Schooling: Determinants and Implications for Social Justice in Rural Punjab, Pakistan.** In *Education, Privatisation and Social Justice: Case studies from Africa, South Asia and South East Asia*, 2013
Hamna Ahmed, Sahar Amjad, and Masooma Habib
3. **What Matters in Child Health: An Instrumental Variable Analysis.** *Child Indicators Research*: Vol 6, (Issue 4) 2013
Uzma Afzal
4. **The State of Health in Pakistan: An Overview.** *Lahore Journal of Economics*, 18: SE, September 2013
Uzma Afzal and Anam Yusuf
5. **Inequality of Opportunity and Poverty in Pakistan.** Book chapter 17 in *Pakistan: Moving the Economy Forward*, May 2013
Azam Chaudhry, Theresa Chaudhry, Muhammad Haseeb, Uzma Afzal

6. **The Opportunities and Pitfalls of Pakistan's Trade with China and other Neighbors.** Book chapter 14 in *Pakistan: Moving the Economy Forward*, May 2013 Sarah Hayat and Naved Hamid
7. **Choice of Anchor Currencies and Dynamic Preferences for Exchange Rate Pegging in Asia.** *Lahore Journal of Economics*, 18(2), 2013 Syed Kumail Abbas Rizvi, Bushra Naqvi and Nawazish Mirza
8. **The Dynamics of Exchange Rate Regime in Saudi Arabia.** *Actual Problems in Economics*, 9 (147), 2013 Nawazish Mirza, Syed Kumail Abbas Rizvi and Bushra Naqvi
9. **The Pricing of Size, Book to Market and Financial Leverage in Euro Stocks.** *Economic Research*, Vol 26(2) 2013 Nawazish Mirza and Syed Kumail Abbas Rizvi
10. **The Effect of Early Flood Warnings on Mitigation and Recovery during the 2010 Pakistan Floods.** In *Preventing Disaster: Early Warning Systems for Climate Change*, United Nations Environmental Programme (Forthcoming April 2014) Ginger Turner, Farah Said, Uzma Afzal and Karen Campbell
11. **Microinsurance Demand after a Rare Event: Evidence from a field experiment in Pakistan.** *The Geneva Papers on Risk and Insurance – Issues and Practice* (Forthcoming 2014) Ginger Turner, Farah Said and Uzma Afzal
12. **Rethinking The Role of L1 in L2 Learning.** *BNU Journal of Education*, 2013, Vol 1 Tayyaba Tamim
13. **Languages in Education and Implications for Poverty Reduction.** *Lahore Journal of Policy Studies*, (forthcoming 2014) Tayyaba Tamim
14. **Languages in education and symbolic violence in Pakistan.** In Ersch, E. & Solly, M. (Eds.) *Language and Globalization*, Cambridge Scholar publications (forthcoming 2014) Tayyaba Tamim
15. **Education, Rent seeking and the Curse of Natural Resources.** *Economics & Politics*. Vol 26, Issue 1, March 2014 Waqar Ahmed Wadho

To view the complete list of CREB staff research please visit:

[http://www.creb.org.pk/Staff research](http://www.creb.org.pk/Staff%20research)

More from the Centre

Annual Conference on the Management of the Pakistan Economy

The Centre organizes the Lahore School's Annual Conference on the Management of Pakistan's Economy. The proceedings of the Conference are published in a special issue of the Lahore Journal of Economics. This year's conference is titled **“Pakistan in the Global Economy – Opportunities and**

Challenges". Previous conferences have focused on a range of themes covering topics in growth, trade, and development.

For more information on current and past conferences please visit:
www.creb.org.pk/conferences

CREB Staff at the Centre for the Study of African Economies (CSAE), University of Oxford

Researchers at CREB and the Centre for the Study of African Economies (CSAE), University of Oxford are partnering on joint work to research economic development and poverty reduction in Pakistan. The British Academy International Partnerships programme, along with the Lahore School of Economics, supported exchange visits between the CSAE and the Lahore School of Economics to build capacity of the early career researchers at the Lahore School. Four Research Fellows from CREB visited the University of Oxford during October last year to attend lectures and seminars. The researchers also presented preliminary findings and received valuable feedback in the CSAE Research Workshops. *Uzma Afzal* and *Farah Said* presented initial results from their study **investigating how individuals learn about risk and altruism from a rare natural event**. *Hamna Ahmed* and *Asha Gul* presented the **design for a Randomized Control Trial to measure the impact of incentives** offered by donors to the

community NGOs across Pakistan, in collaboration with the Pakistan Poverty Alleviation Fund (PPAF).

CREB Staff at Beaconhouse National University Conference

Tayyaba Tamim, Senior Research Fellow at CREB presented her paper on ***Languages in Education, Social Capital and Development*** at the Conference on Language, Educational Policies and Practices held on 15th March, 2014 in Lahore.

Within education, language can be a major source of resurrecting existing inequitable structures which nest poverty and deprivation. This paper takes up the much-debated question of languages in education in Pakistan and analyzes its implications in terms of poverty reduction. The paper uses Amartya Sen's capability approach to human development and Bourdieu's theory to explore the differential outcomes of languages in education for private and government school participants in Pakistan. The study uses qualitative methodology, in-depth ethnographic interviews, participant observation and documentary analysis. Data from 16 cases revealed that the languages in education, within the current language policy transformed into symbolic capital. This through mutual cognition and intersubjectivity set-off processes which constrict the social capital of the

government school participants, creating social stratification, affecting collective agency and restricting opportunities for advancement for the disadvantaged despite their education. The paper argues that the question of language in education must be conceptualized with reference to the national language policy.

Student Research Completed in 2013:

Mphil Theses

1. *Impact of Parent's Subjective Aspirations on Schooling Investments in Rural Punjab*

Anam Ashraf (Supervisor Kate Vyborny)

Human capital accumulation is deemed as a key indicator in the development process. By conducting a cross sectional empirical analysis, we identify parental subjective aspirations as a causal channel which impacts investment decisions regarding schooling of children. This study utilizes the 2010-11 Privatization in Education Research Initiative (PERI) dataset for children aged 5-14 who are currently enrolled in a school. The aim of this study is to; (i) assess the impact of differences in subjective aspirations between communities on schooling investment, (instrumented by the arrival of a factory) and, (ii) assess how different

capabilities of siblings can influence investment decisions of parents. By exploiting exogenous variation in the arrival of new factories to a community and household fixed effects technique, parents' desire for the level of education they want for their child plays a major role in shaping up investment behaviour, but aspirations which are motivated by external factors such as arrival of new factories have a more pronounced impact on investment in schooling than differences in aspirations caused by dissimilarity between siblings.

2. *Socioeconomic Determinants of Maternal Health Behavior in Pakistan: An Instrumental Variable Approach*

Shandana Shahid Dar (Supervisor Uzma Afzal)

Empirical studies have established that the use of maternal health services is related to social and cultural structures, household factors and personal characteristics of women such as education and health knowledge. Using the 2006-07 Pakistan Demographic Health Survey (PDHS) information on women aged 15-49 who had given at least one birth in the three years prior to the survey, this study aims to; (i) determine which socioeconomic factors affect maternal health care utilization behavior of women, and (ii) identify the pathway through which effect of women's education is transmitted to their maternal health seeking behavior. Empirical analysis

is conducted using instrumental variable technique and community fixed effects. The results of the analysis indicate that women's predisposing factors such as educational attainment, child's birth order, spouse's educational attainment and type of occupation, along with female empowerment are important determinants of maternal health seeking behavior of women in Pakistan.

3. Education, Employment and Women's Household Empowerment in Pakistan

Duryab Fatima (Supervisor Kate Vyborny)

Their research uses data from the Pakistan Social and Living Standard Measurement Survey 2007-2008 to conduct an empirical analysis of the relationship between education, employment and women's household empowerment in Pakistan. Household empowerment is measured through married women's say in the decisions pertaining to family planning and decisions concerning expenditure on food, clothing, medical and recreation. The paper uses the linear probability model with fixed effects. In order to address the reverse causality between employment and empowerment, district cotton production was used as an instrument for employment. The study finds that education and employment have a significant effect on women's say in certain household decisions but not in all of them.

4. The Impact of Remittance versus Parental Absence on Children's Well-being in Rural Punjab

Nida Jamil (Supervisor Kate Vyborny)

This study aims to look at how migration impacts children back home in terms of schooling and child labor by quantifying both aspects of migration, i.e. remittance and parental absence. This paper particularly focuses on the case where the father is the migrant. A Panel Analysis is done using the Panel created by the "Multiple Indicator Cluster Survey (MICS)" 2007 and "Privatization in Education Research Initiative (PERI)" 2011. 820 households were used in the Analysis with the children following within the age bracket of 5-14 years. We use Instrumental Variable Approach along with Household Fixed Effects and Random Effects to deal with possible endogeneity. We conclude that remittance does benefit but does not completely substitute for the absent father. This effect is particularly seen for children who already lacked a mother as well due to death or divorce.

5. Measuring Gender Disparity in Enrollment Rates, Type of School and Years of Education of Children in Pakistan

Maham Khalid (Supervisor Rabia Arif)

Gender bias in developing countries like Pakistan restricts educational opportunities for girls in comparison to boys. This thesis

attempts to determine the role of gender disparity in enrollments of children falling in the age bracket of 5 years-18 years across Pakistan. Using the data from PSLM 2010-2011, the study utilizes the Oaxaca decomposition along with Probit estimation method to measure gender gap through explained and unexplained variation in overall school enrollments across Pakistan and enrollments in public vs. private schools for three levels of education: primary, middle/secondary and higher secondary.

The results interestingly show that strong pro-male bias exists only in overall enrollment rates however, disaggregation of enrollments at private/public school choice and across three levels of educations indicate strong pro-female preference in the study.

6. Factor Price Equality in Pakistan

Resham Naveed (Supervisor Theresa Chaudhry)

Relative factor price equalization is a central result of international trade theory. This paper tests for relative factor price equality across districts of Punjab using the methodology developed by Bernard Redding and Schott (2009) using CMI (2000-01, 2005-06). Results indicate that there is absence of relative factor price equalization due to uneven distribution of factors in Punjab. Non production workers (white collar workers) are relatively scarce in Punjab which is resulting into a wage

premium for non production workers. Worker quality is adjusted by using Mincerian wage equation as worker quality could be an explanation for wage differential between white collar and blue collar workers. Similar results are observed and it can be concluded that there is uneven distribution of factors across districts of Punjab even after controlling for worker quality differences.

7. Impact of Child Labor on Schooling Outcomes of Children Living in Rural Punjab, Pakistan

Meera Shafqat (Supervisor Masooma Habib)

This paper analyzes the relationship between child labor and schooling outcome, measured by grade-for-age, of children living in rural Punjab. The endogeneity between child labor and schooling was controlled by the use of an instrumental variable. Using Multiple Indicator Cluster Survey (MICS) 2007-08, an inverted U-shaped relationship between the two was found, through the two stage least squares instrumental variable technique. The threshold level upto which a child can engage in labor without adversely affecting his studies was found out to be approximately 15 hours per week, implying that children living in rural Punjab can work for 15 hours per week without it affecting their grade attainment. Children having younger siblings and additional school going

siblings will suffer in terms of grade attainment due to the added responsibility placed on them by their household.

8. *Relative Wage Variation and Industry Location within Districts of Punjab*

Zunia Tirmazee (Supervisor Theresa Chaudhry)

The aim of this paper primarily is to see whether departures from relative factor price equality leads to differences in the mix of industries that regions produce. Bernard et al (2002) suggests four reasons as to why, even with trade, relative factor prices should vary across regions, namely: i) multiple cones of diversification, ii) region-industry technology differences, iii) agglomeration and iv) increasing returns to

scale. However this paper specifically deals with cones of diversification as an explanation of relative factor price equality. Regions characterized by relative factor price equalization have greater number of industries that they produce in common, or to be more precise, this paper aims to test the proposition that that larger the differences in the relative wages of two regions the smaller is the number of industries that they produce in common. This geographic variation in relative wages of workers and therefore the industrial production finds its justification in the basic predictions of the neoclassical theory of trade which suggests that regions with an abundance of a factor have a higher concentration of industries that use that factor intensively than regions with a scarcity of that factor.

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