FINAL YEAR RESEARCH PROJECT

Impact of Minimum Wage Policies on Youth Unemployment in Pakistan from a Living Wage Perspective

Under the supervision of Dr. Adnan Haider
(Professor, Economics Department and Research Fellow – CBER)

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INSTITUTE OF BUSINESS ADMINISTRATION KARACHI

Abstract

The employment effects of minimum wages remain a debated issue since the evidence is mixed. Some studies conclude large negative estimates for employment elasticity, some occasional positive estimates, and others conclude employment elasticities of low-skilled groups to be zero. With rising poverty and income inequality in developing countries, labor economics is now more focused upon the link between statutory minimum wages and employment of low-skilled workers, as it provides a means to formulate better-informed policy decisions. Additionally, economists are now shifting to living wage ordinances as a means to improve working and living conditions of workers. This study will be an attempt to analyze what impact minimum wage has upon youth unemployment in Pakistan, a country having the world's ninth largest labor force, with 4 million young people reaching working age each year, and how it compares to the required living wage. The results of this study will have an important bearing and will help redesign labor policies that have maximum impact upon the income and living standards of low-skilled workers.

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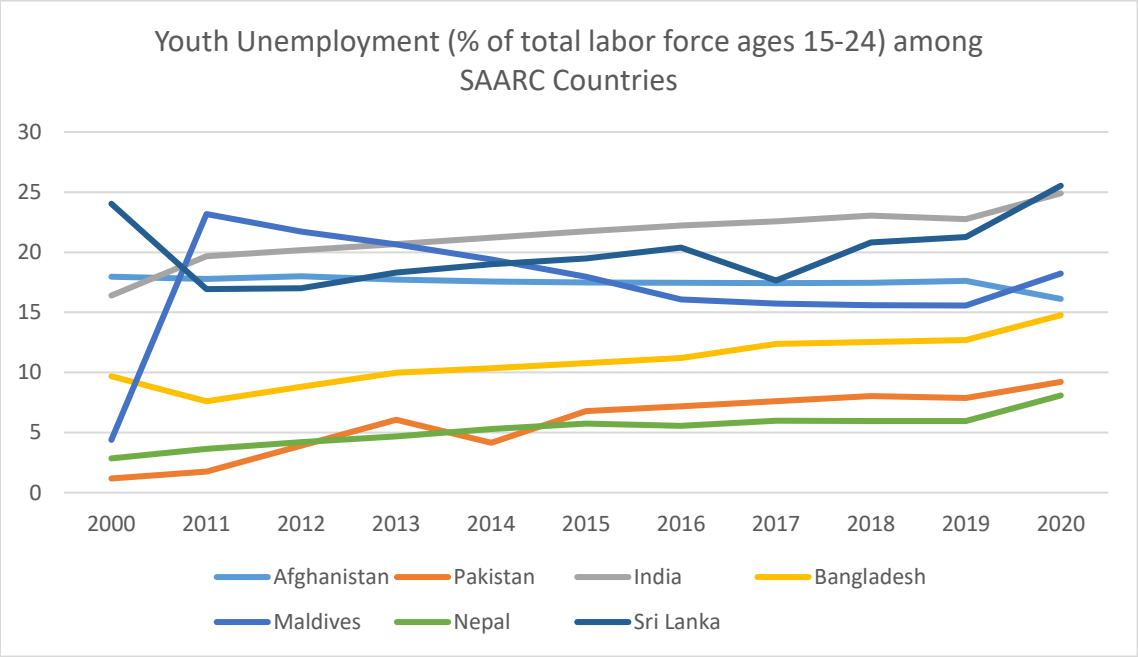
I. Introduction

Over the past few decades, the advancement of a capital intensive economy has led to a worrisome rise in youth unemployment and working poverty rates. Today youth unemployment stands at 13.6% globally, indicating that 67.6 million young people are unemployed and 145 million young workers are experiencing working poverty (Youth unemployment: a global crisis 2020). Unemployment varies substantially by region, with South Asia hosting the largest proportion, i.e. 31%, of unemployed youth among the developing economies (Kabir 2013).



SOURCE: World Development Indicators

In an effort to curb the working poverty of low-skilled workers, economies around the world have inducted minimum wage laws. These aim to prevent workers at the bottom of the income distribution from being exploited by their employers by providing them with enough income to afford a living wage, the amount required for the necessary food, water and shelter. The impact of a rise in the minimum wage is a controversial topic, as higher minimum wages provide means to

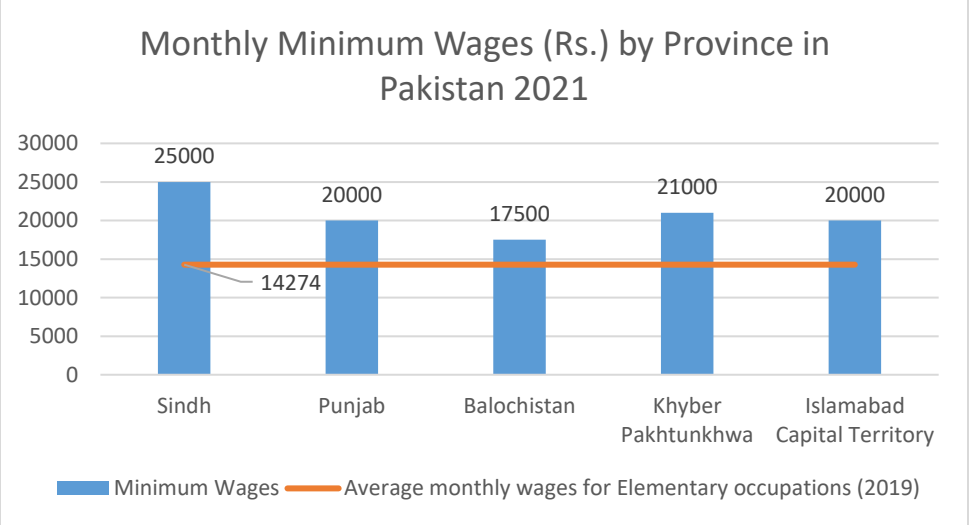
exit poverty due to its positive effect on family income levels. However, its negative effects may constitute nationwide inflation and widespread job loss, especially for low-skilled workers – indicating a direct impact on youth employment (Vázquez et al. 2017).

With population and income inequality, both, on the rise, increasing studies are researching the link between an increase in the minimum wage and youth employment. There is ample literature and empirical evidence to prove this link for developed economies, though a consensus proves elusive. Some studies report large positive elasticities (Gittings and Schmutte 2016), some report large negative elasticities (Addison et al. 2013), while some conclude no disemployment effects (Dube et al. 2010), and no job loss (Cengiz et al. 2019). Hence, no concrete conclusion has been reached. Further, very little research has been done on the employment effects of minimum wages in developing countries, which report a negative correlation between the two and direct dependence on the sector being studied (Ghellab 1998). No research has been done conducted on this topic for Pakistan.

Minimum Wage laws, however, do not guarantee the required standard of living since, with growing inflation, the cost of living varies between cities and provinces. As a result of such complications, labor economics is now considering living wages as an alternative to statutory minimum wages. This legislation has almost negligible visibility in Pakistan, with related research only been conducted on rural and urban Sialkot (Sayeed and Dawani 2019).

Four million youth reach the working age in Pakistan every year. Unfortunately, the unemployment rate keeps rising, with it being 13.3% for 15-19 year-olds and 11.8% for 20-24 year-olds in 2019, in contrast to 10.4% and 11.6%, respectively, in the prior year (Pakistan LFS 2018-19). Assuming the youth is low-skilled, their wages are directly affected by the minimum wage laws in the country. The minimum wage has come under the governance of provinces since

the 18th Amendment to the Constitution of Pakistan. The minimum wage for unskilled adults and juvenile workers was revised to Rs. 20,000 per month in 2021 by the federal government, however, it has created job loss, is unable to neutralize the inflation impact, and falls short of the required living wage. Therefore, understanding the mechanics of minimum wage, living wage and the impact it has upon unemployment in Pakistan is crucial for better development policy and planning to make informed public policy decisions.



SOURCE: WageIndicator.org; Pakistan Labour Force Survey 2018-19, Pakistan Bureau of Statistics

The subsequent sections of this study constitute the objectives of this paper, an overview of previous literature done on the subject, descriptive analysis of existing data, the methodology applied, and the significance of this study.

II. Objectives of the Study

In Pakistan, minimum and living wage laws and their impact upon youth unemployment have been the least focus of empirical research. Studies assessing the relationship between minimum wage and employment in developing and transition economies are limited, but even more limited is the

assessment of this relationship for youth. This is due to a relatively smaller fraction of workers being employed in the formal sector of developing countries, low compliance with the minimum wage legislation by employers, and the non-availability of data. Some developing countries for which this relationship has been tested are Indonesia, Brazil, Botswana, Kenya, and Mexico (Ghellab 1998); however, no such study for Pakistan exists, reinforcing the opinion that development policy decisions in Pakistan are not informed and evidence-based.

Out of 220.9 million, 64% per cent of the country's population is under 30 years and 29% lies in the 15-29 age group, depicting a youth bulge. However, the labor force participation rates are only 31.9% for 15-19 year-olds and 53.1% for 20-24 year-olds. This suggests that Pakistan is not utilizing around half of its highly productive youth to drive the economy. These low-skilled workers work at minimum wages, earning Rs. 17500 monthly in 2019, which was significantly lower than the Rs. 30000 per month living wage advocated by the Pakistan Institute of Labour Education and Research (PILER). Rising working poverty and increasing inflation, combined with the fact that 44% of 15-19 year-olds live in low-income families and 22% live in poor families, makes it imperative to enact efficient statutory minimum wages that ensure the provision of a living wage and avoid employee exploitation. If the relationship is left untested, the country will be further pushed into the cycle of poverty and unemployment.

This study will therefore be an attempt to understand the correlation and causative linkage between minimum wage and its impact upon youth unemployment in the context of Pakistan. Models for understanding this impact have been drawn from studies in the same area especially from the developing countries (Vázquez et al. 2017). It will also attempt to calculate living wages required for a decent living standard on a provincial basis.

Total youth population 2021	38.4 million
Youth unemployment (15-24 yrs) 2018-19	13.3% (15-19 yrs); 11.8% (20-24 yrs)
Monthly Minimum Wage 2018-19 (Rs.) ICT, Sindh, Punjab, Balochistan, KPK	 17500; 16200; 16500; 15000; 15000
Youth unemployment (15-24 yrs) 2020-21	27 million
Monthly Minimum Wage 2020-21 (Rs.) ICT, Sindh, Punjab, Balochistan, KPK	 20000; 25000; 20000; 17500; 21000

III. Literature review

Definitions of Main Variables

The term 'minimum wage' has a globally recognized standard definition. The International Labor Organization defines it as "the minimum amount of remuneration that an employer is required to pay wage earners for the work performed during a given period, which cannot be reduced by collective agreement or an individual contract" (ILO 2015). The roots of the formation of the minimum wage policy lie in Latin America and the Caribbean (LAC), which define it as a policy to ensure a 'fair wage' to each occupation that provides an acceptable income to sustain a minimum standard of living for all citizens (Cunningham 2007).

In Pakistan, the definition of minimum wage is primarily adopted from the Minimum Wages Ordinance 1961. Here it is stated as the "minimum remuneration, expressible in monetary terms,

and payable to a person on fulfillment of the express or implied terms of employment contract," and is applicable to "any person employed in industrial establishment or commercial establishment and includes an apprentice to do any skilled or unskilled, intellectual, technical, clerical, manual or other work for hire or reward," but excludes employees of the (federal) government (Minimum Wage Notification 2021). We will base our study on the following definitions:

	Main Variables	**Definitions**
Independent	Minimum Wage	"The minimum amount of remuneration that an employer is required to pay wage earners for the work performed during a given period, which cannot be reduced by collective agreement or an individual contract; applicable to employees in industrial or commercial establishment, including apprentices to do any skilled or unskilled, intellectual, technical, clerical, manual or other work for hire or reward."
	Living Wage	"living wage can be described as the amount of money earned for a normal working week by an employee in a particular location enough to allow an adequate standard of living for the worker as well as her or her family."
Dependent	Unemployment Rate	"The number of unemployed people as a percentage of the total labor force, where 'unemployed' are people of working age who are without work, are available for work, and have taken specific steps to find work in the

		last four weeks, and 'labor force' is defined as the total number of unemployed people, plus those in employment." (OECD)
	Youth Unemployment Rate	"The number of unemployed 15-24 year-olds expressed as a percentage of the youth labor force." (OECD)

Economic Theory

Shifts in the supply and demand curves of labor in the labor market present the theoretical basis of the impact of minimum wage upon employment. When no restrictions are implemented, the labor demand and supply reach an equilibrium naturally, providing the market with an equilibrium wage and an equilibrium quantity of labor employed. Upon the implementation of a binding statutory minimum wage set above the equilibrium wage, labor demand is reduced on two accounts. First, the labor is now more expensive so employers prefer to substitute some of them for alternative forms of input, like capital. Employees with the highest probability of being laid off are low-skilled workers who are already working at the bottom of the wage distribution, corresponding to new entrants of the labor force, i.e. young adults and teenagers – the youth. Second, due to increased input costs, the price of products rise, leading to a further reduction in the demand for labor and an increase in unemployment (Neumark 2018).

There is considerable evidence that implementing a living wage directly increases the actual wages of targeted workers. Generally, only between 1% and 3% of workers in a city are covered by the living wage, and in some cities, coverage rate can be much lower. There are numerous reasons why these higher wages have even relatively smaller impacts on employer costs. Paying a living

wage can increase productivity, reduce worker turnover and absenteeism, and improve the quality of future job applicants. The net result is that the cost increases among living wage employers can be as low as 1% to 2% of total production costs. Furthermore, some evidence suggests that even these small cost increases can be absorbed through higher employer profits and higher product prices passed on to customers (Neumark et al. 2012).

Results from Previous Literature

Empirical studies testing the conventional theory of the impact of minimum wage upon youth unemployment have been wide-ranging. Literature has been dominated by studies based in the US but no consensus has been reached upon the relationship. To illustrate, Dube, Lester, and Reich (2010) tested the correlation between teenagers and restaurant and low-wage sector workers for the period 1990-2006 using contiguous county pairs and fixed effects model. They found employment elasticities to be near zero. Addison et al. (2013) estimated the impact of an increase in minimum wage during recessions or economic downturn using three data sets to focus on federal increases in the 2007–2009 period. They reported results similar to the prior study; however, when accounted for a recessionary environment, a stronger negative correlation was concluded at the height of the Great Recession. Furthermore, for markets with short non-employment duration, large negative elasticities (-0.1 to -0.98) were reported, whereas large positive elasticities (0.2 to 0.46) were concluded for markets with long non-employment duration (Gittings and Schmutte 2016).

Cengiz et al. (2019) estimated the effect of the minimum wage using 138 US state-level minimum wage changes between 1979 and 2016. A bunching estimator method was employed where a comparison was done between the amounts of surplus jobs paying at or slightly above the new

minimum wage to the missing jobs paying below it. No evidence of disemployment effects was found, except in tradable sectors. Labor-labor substitution, i.e. lower-skill labor substituted for higher-skill labor upon minimum wage increase, was ruled out as a reason for this lack of job loss.

Laporšek (2013) conducted an analysis for the European Union (EU) over the period 1996 to 2011. A panel regression method with fixed effects was applied on the data of teenagers aged 15 to 19 years and young adults aged 20 to 24 years for 18 EU member states with a national statutory minimum wage. The results concluded a negative correlation between minimum wage and youth unemployment, with a stronger negative relation for teenage workers, which could be explained by the negative macroeconomic trends.

Literature testing the relationship between minimum wage and youth unemployment for transitioning and developing economies is scarce. Ghellab (1998) analyzed this relationship for 4 developing countries, namely Indonesia, Brazil, Botswana and Kenya, and the Czech Republic was chosen as the transitioning economy. For developing countries, an increase in the minimum wage negatively affected employment, but Brazil's and Indonesia's results were statistically insignificant at 0.5%. The results were also dependent on the sector, as low-pay sectors were highly impacted in Botswana, but the modern private sector was impacted in Kenya. A panel data analysis of Mexico using quarterly data from 2012 to 2013 reveals no impact upon youth employment following a minimum wage increase; however, the probability of being a formal worker is increased (Vázquez et al. 2017).

The papers analyzing youth unemployment in Pakistan only assessed the determinants of this unemployment. Qayyum (2007) employed a probit model on the data of 15 to 29 year-olds, taken from the Pakistan Labour Force Survey, to test the correlation between youth unemployment and various personal, demographic and educational variables. These included, but were not limited to,

the province and region (rural and urban) of residence, household size, household income, marital status, gender, and educational level. The results were in accordance with economic theory: unemployment rates were higher in less developed regions, i.e. Khyber Pakhtunkhwa and Balochistan, and were lower for males and married individuals. Similarly, it was higher for people living in urban areas due to Pakistan being an agricultural country with 70% of the population living in rural areas. Unemployment was also found to be higher for those with a higher education level as they are less likely to accept low-paying jobs.

An analysis of living wage for Pakistan has been carried out for the Sialkot District, the northeast region of the Punjab province renowned for its production of sporting goods for the international market. Anker Methodology, December 2015 - March 2016, was implemented and several surveys were carried out for the estimation of food, housing, and other costs, in accordance to dietary needs and living conditions. The net living wage for Rural Sialkot was estimated to PKR 21,890 per month in 2019 and the cost for a decent standard of living for a family amounted to PKR 36,053 per month. This amount was higher for Urban Sialkot, where the monthly net living wage was estimated as PKR 25,806 and monthly living expenses for a family was PKR 39,749. This is after accounting for any benefits in-kind that decrease the requirement to earn cash. The people in these regions don't have any deductions from their wages or income tax to pay and they don’t pay any of the common benefits that are offered in kind, therefore there is no way to account to that in the calculations (Sayeed and Dawani 2019).

No study explores the impact living wage and minimum wage laws have upon youth unemployment in Pakistan. As highlighted above, South Asia experiences the largest youth unemployment among all developing countries. This is incredibly problematic and a waste of valuable human resources for Pakistan that hosts the 9th largest labor force in the world. The

country, instead of making efficient use of its youth bulge, is pushing those already working at the bottom of the wage distribution further into working poverty. Hence, there is a strong need for an empirical study to assess the impact an increase in minimum wage has upon the unemployment rates and working poverty of the youth in Pakistan. This would result in structured wage laws that provide an adequate living wage and maintain a minimum standard of living for its workers. This study is an attempt to explore this relationship in order to present an evidence-based analysis so labor laws can be based upon informed policy decisions in Pakistan.

IV. Data and Descriptive Statistics

Fig 1: Population by Age Group (Percentage)

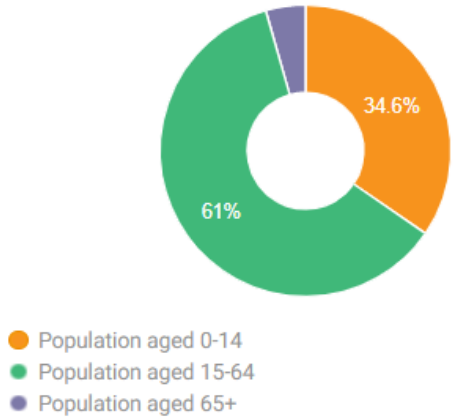
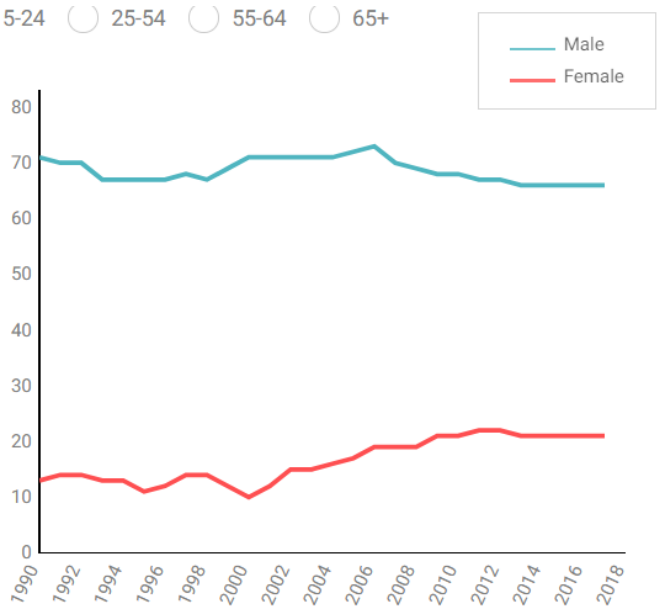
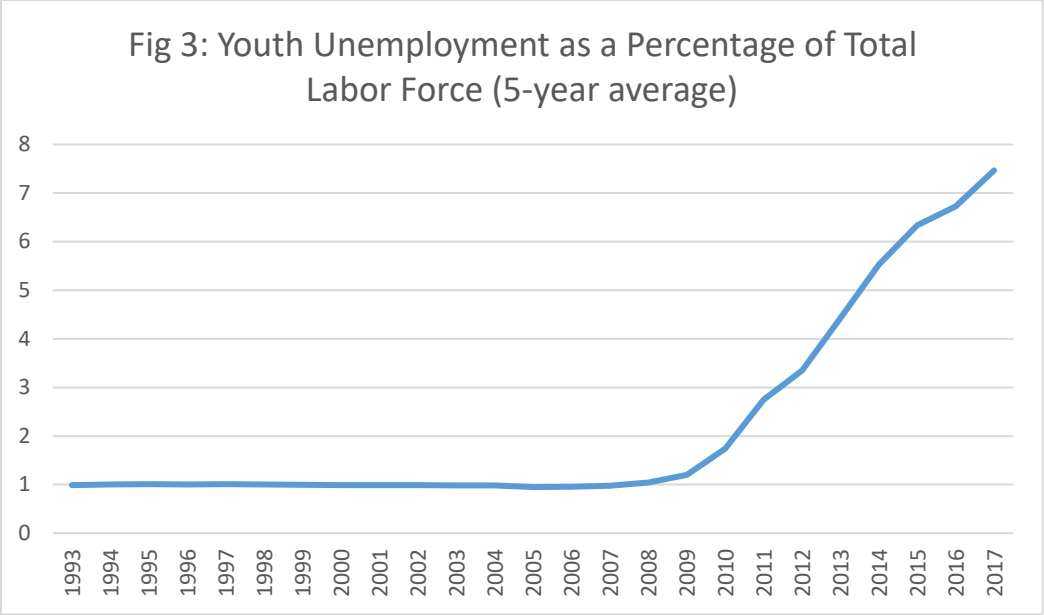


Fig 2: Labor Force Participation Rate (%) for 15-24 year olds by Gender



SOURCE (Figs 1&2): United Nations Population Fund (UNFPA)



SOURCE: World Development Indicators

The time series trend of the unemployment rate has been adjusted for seasonality and randomness using 5-year averages. The unemployment rate for youth in Pakistan has experienced an exponential rise since 2008, reaching an all-time high of 7.98% in 2018.

Fig 4: Unemployment by age and sex: 2017

Percentage of persons who are available for work, and looking for a job, but are not working

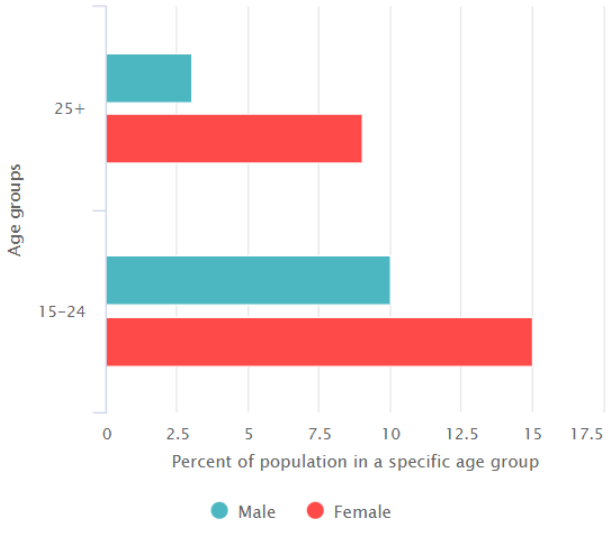
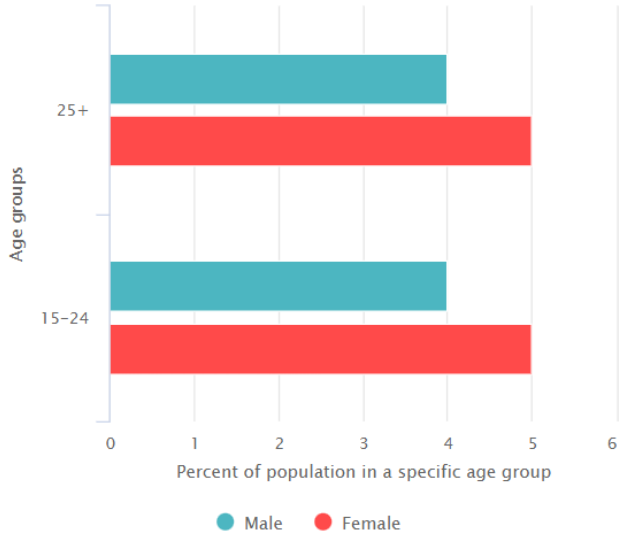
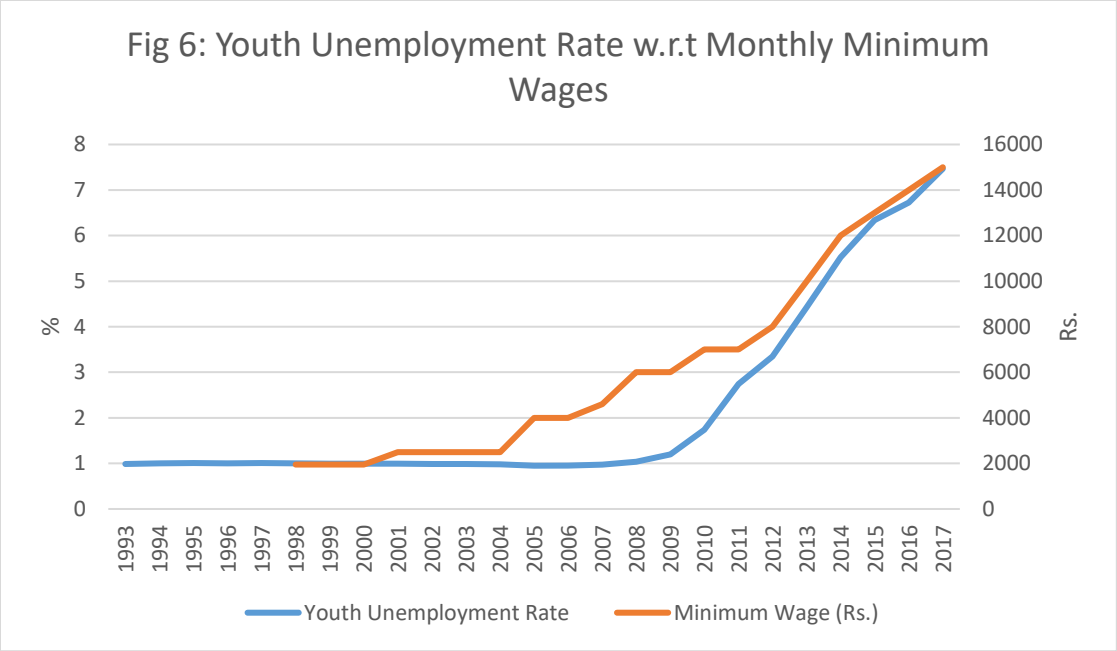


Fig 5: Working poverty by age and sex: 2017

Percentage of employed living below US$1.90 purchasing power parity



SOURCE (Figs 4&5): United Nations Population Fund (UNFPA)



SOURCE: World Development Indicators; Federal and Provincial Minimum Wage Notifications

The monthly minimum wage has been rising steadily since the year 2000. Both trend lines show a positive correlation, i.e. with increases in minimum wage overtime, youth unemployment has been rising. This depicts that minimum wages have a negative impact on the employment opportunities of teenagers and young adults, going against the primary purpose of minimum wage laws.

Fig 7: Wage ladder for urban Sialkot (in PKR)

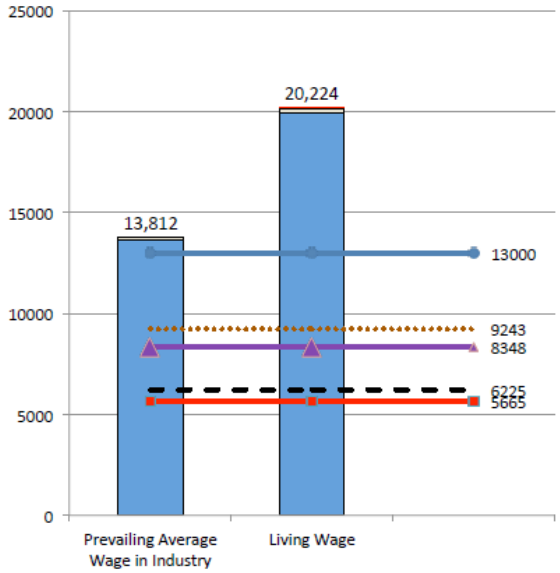
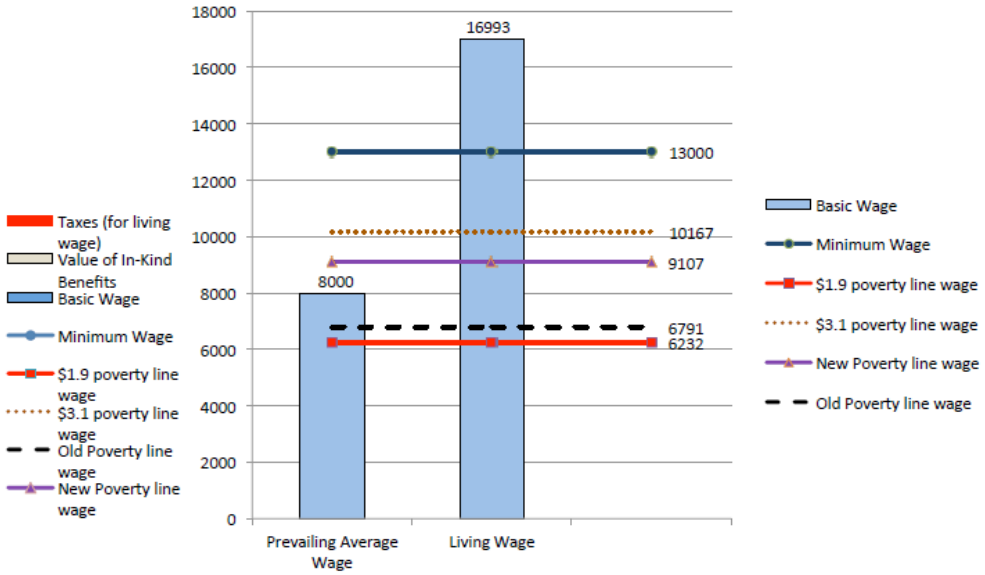


Fig 8: Wage ladder for rural Sialkot (in PKR)



SOURCE: Global Living Wage Coalition, (Sayeed and Dawani 2019)

V. Methodology

A. Minimum Wage Impact on Youth Unemployment

We used the linear regression model and took the data from 2010 to 2020 from the LFS. Our independent variable is unemployment across different provinces in Pakistan in million. The dependent variables are minimum wage across Pakistan in millions, literacy rate across provinces in Pakistan and migration rate across provinces in Pakistan.

During the research, the data gathered showed that the majority of the people are employed in the informal sector especially in the rural areas which is not accounted for. This is the reason that the rate of unemployment does not see a substantial change. People are still working but their jobs are not reported.

$$\ln\left(UE_{millions}\right) = \ln\left(MinWage_{millions}\right) + \ln\left(Lit_{Rate}\right) + \ln\left(Migr_{Rate}\right) + e$$

Here $UE_{millions}$ is the dependent variable for the youth unemployment rate at time *t* in province *i*, which reflects the number of youth which is unemployed as a percentage of the youth labor force; $MinWage_{millions}$ is our main independent variable, i.e. the variable for the monthly minimum wage at time *t* in province *i*; Lit_{Rate} is the literacy rate at time *t* in province *i*; and $Migr_{Rate}$ corresponds to the migration rate at time *t* in province *i*.

The output of the computation using the formula above is as follows:

```
Residuals:
      Min        1Q    Median        3Q       Max
-0.150837 -0.021573  0.008502  0.020867  0.087325

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)          -1.84082    0.14917 -12.340 6.99e-12 ***
DataF$MinWage_millions  0.33881    1.96767   0.172    0.865
DataF$Lit_Rate          2.83478    0.22442  12.632 4.29e-12 ***
DataF$Migr_Rate         0.91995    0.04393  20.943  < 2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.04511 on 24 degrees of freedom
Multiple R-squared:  0.986,     Adjusted R-squared:  0.9843
F-statistic:   565 on 3 and 24 DF,  p-value: < 2.2e-16
```

As it is seen in the regression model, the coefficient of minimum wage is positive, which means as minimum wage increases, the unemployment also rises especially amongst the youth.We can also the see the rise in the youth unemplyment in the graphs below.The value of the adjusted r square is 0.98, which means that the efficacy of independent variables in explaining the unemployment.

Results

*** Table-1: EX RATIO - PAKISTAN AND PROVINCES**

RURAL

is male or female	Freq.	Percent	Cum.
Male	64,739,775	50.47	50.47
Female	63,527,291	49.53	100.00
Total	128,267,066	100.00	

URBAN

is male or female	Freq.	Percent	Cum.
Male	38,408,774	51.25	51.25
Female	36,528,012	48.75	100.00
Total	74,936,786	100.00	

KPK

is male or female	Freq.	Percent	Cum.
Male	15,336,381	49.61	49.61
Female	15,578,845	50.39	100.00

```
      Total | 30,915,226      100.00
```

PUNJAB

```
 is male or |
     female |      Freq.     Percent        Cum.
------------+-----------------------------------
       Male | 54,844,800       49.86       49.86
     Female | 55,145,897       50.14      100.00
------------+-----------------------------------
      Total |109,990,697      100.00
```

SINDH

```
 is male or |
     female |      Freq.     Percent        Cum.
------------+-----------------------------------
       Male | 25,153,281       52.53       52.53
     Female | 22,733,213       47.47      100.00
------------+-----------------------------------
      Total | 47,886,494      100.00
```

BALOCHISTAN

```
 is male or |
     female |      Freq.     Percent        Cum.
------------+-----------------------------------
       Male |  6,753,969       54.86       54.86
     Female |  5,556,368       45.14      100.00
------------+-----------------------------------
      Total | 12,310,337      100.00
```

For Report

Table-1 SEX RATIO - PAKISTAN AND PROVINCES

Province/Area	LFS2018-19
Pakistan	104
Rural	104
Urban	105
Khyber Pakhtunkhwa	101
Punjab	101
Sindh	110
Balochistan	116

The data gathered for this research is of LFS 2018-2019. The variables used for this data are regional classification, gender and provinces. The purpose of this data was to have a clear understanding about the general regional classification of Pakistan's total population. The other objective was to know about the gender classifications on a provincial level.

The results show that the total population of Pakistan is first bifurcated into two broad segments; Rural and Urban. At first, Table 1 shows that the rural male population is 64,739,775 which is 50.47% of the entire rural population. Whereas, rural female population is 63,527,291 which is 49.53% of the total rural population. Secondly, Table 1 also shows that the urban male population is 38,408,774 which is 51.25% of the entire urban population. Whereas, urban female population is 36,528,012 which is 48.75% of the total rural population.

Furthermore, the data is divided on the provincial level as well. The data depicts that the percentage of Male is 49.61 and female is 50.39 of the total population of the province KPK. According to the table the percentage of the male population in Punjab is 49.86% and the percentage of female

population is 50.14%. In addition to that, the table also provides data for the population of Sindh. The male percentage is 52.53% and the female percentage is 47.47% of the total population of Sindh. Lastly, the figures for Balochistan depicts that the total percentage of males in the province is 54.86% and the percentage for females is 45.14% of the total population of this province.

Table-2 LITERACY RATES (10 YEARS AND ABOVE) - PAKISTAN AND PROVINCES (%)

Province/Area	LFS2018-19		
	Total	Male	Female
Pakistan	60.7	71.6	49.5
Rural	61.0	71.5	50.3
Urban	60.2	71.1	70.3
Khyber Pakhtunkhwa	55.4	73.3	49.0
Rural	54.2	72.1	36.8
Urban	56.1	73.3	39.5
Punjab	53.5	71.3	36.1
Rural	61.5	70.0	53.1
Urban	62.1	70.3	54.1
Sindh	60.1	68.8	51.6
Rural	63.0	73.9	50.7
Urban	62.2	72.7	50.2
Balochistan	64.0	74.8	51.9
Rural	54.3	72.0	33.0
Urban	49.8	67.9	28.6

This table shows the facts and figures of the literacy rate in Pakistan. The data was gathered using the three variables which are regional classification, gender and provinces. First the table gives an insight of the national literacy rate for each regional classification and gender. The result shows that a total of 60.7% of the total population of Pakistan falls under the literacy rate. Out of the total

rural population of Pakistan 61.0% are literate and out of the total urban population, 60.2% are literate.

This table also shows the stats on a provincial level. The result shows that the total literacy rate of Khyber Pakhtunkhwa is 55.4%. Out of the total rural population of KPK 54.2% are literate and out of the total urban population, 56.1% are literate. Furthermore, the result shows that the total literacy rate of Punjab is 53.5%. Out of the total rural population of Punjab, 61.5% are literate and out of the total urban population,62.1% are literate. Similarly, the total literacy rate for Sindh is 60.1%. Out of the total rural population, literacy rate of this province is 63% and out of the total urban population, 62.2% are literate. Lastly, the result shows that the total literacy rate of Balochistan is 64%. Out of the total rural population of Balochistan, 54.3% are literate and out of the total urban population, 49.8% are literate.

Table-3 LEVEL OF EDUCATION - DISTRIBUTION OF POPULATION 10 + YEARS OF AGE BY SEX

Province/Area	LFS 2018-19		
	Total	Male	Female
A.Literate	60.7	71.6	49.5
No formal education	0.4	0.3	0.5
Below matric	37.5	44.5	30.4
Matric but less than Intermediate	11.6	13.8	9.4
Intermediate but less than Degree	5.7	6.6	4.7
Degree and above	5.5	6.4	4.6
B.Illiterate	39.3	28.4	50.4
Total(A+B)	100.0	100.0	100.0

This data further bifurcates that data presented in table 2 by classifying the population of literate people according to the level of education. The variable used for this data are the total literate population and gender. The table shows the percentages of people with no formal education, people below matric, people with matric but less than intermediate, people with intermediate but less than degree, people with degree and above, and total number of illiterate people. The values are 0.4%, 37.5%, 11.6%, 5.7% 5.5% and 39.3% respectively.

Table 4 EMPLOYED - DISTRIBUTION BY MAJOR INDUSTRY DIVISONS

```
tab table_13 if work_last12months==1 & age>=10 & Gender==1 MALE [fw=weights]
```

1 digit industry classification	Freq.	Percent	Cum.
Agriculture/forestry/hunting & fishing	13,759,106	29.69	29.69
Manufacturing	7,205,854	15.55	45.23
Construction	4,810,589	10.38	55.61
Wholesale & retail trade	8,590,666	18.54	74.15
Transport/storage & communication	3,781,792	8.16	82.31
Community/social & personal services	6,718,664	14.50	96.80
Others	1,481,008	3.20	100.00
Total	46,347,679	100.00	

```
tab table_13 if work_last12months==1 & age>=10 & Gender==2 FEMALE
[fw=weights]
```

1 digit industry classification	Freq.	Percent	Cum.
Agriculture/forestry/hunting & fishing	9,304,143	69.03	69.03
Manufacturing	1,844,737	13.69	82.71
Construction	35,224	0.26	82.98
Wholesale & retail trade	161,692	1.20	84.18
Transport/storage & communication	17,309	0.13	84.30
Community/social & personal services	2,068,919	15.35	99.65

Others	46,777	0.35	100.00
Total	13,478,801	100.00	

This table took two variables into consideration which are the major industries of Pakistan and gender. The results of this table were extracted ensuring the age of the people employed is greater than 10. The first part of the table shows the values of the male employees working in major industries of Pakistan. The number of males working for agriculture/forestry/hunting and fishing is 13,759,106 i.e. 29.69% of the total males employed. Furthermore, the number of males working in the manufacturing sector is 7,205,854 i.e. 15.55% of the total males employed. The males employed in the construction industry are 4,810,589 which is 10.38% of the total males employed. In addition, the Wholesale & retail trade industry employs 18.54% of the total males employed which accumulated to 8,590,666 males. As far as the Transport/storage & communication industry is concerned, 3,781,792 males are working here which constitutes of 8.16% of the entire working male population. Lastly, Community/social & personal services sector employs 6,718,664 males which is 14.5% of the working population. The rest of the males are employed in various other industries that sums up to be 3.20% of the entire male working class.

The second part of the table is exactly similar to the first part but this shows the values of the female employees working in major industries of Pakistan. The number of females working for agriculture/forestry/hunting and fishing is 9,304,143 i.e. 69.03% of the total females employed. Furthermore, the number of females working in the manufacturing sector is 1,844,737 i.e. 13.69% of the total females employed. The females employed in the construction industry are 35,224 which is 0.26% of the total females employed. In addition, the Wholesale & retail trade industry employs 1.20% of the total females employed which accumulated to 161,692 females. As far as

the Transport/storage & communication industry is concerned, 17,309 females are working here which constitutes 0.13% of the entire working female population. Lastly, the Community/social & personal services sector employs 2,068,919 females which is 15.35% of the working population. The rest of the females are employed in various other industries that sums up to be 0.35% of the entire male working class.

Table 5

EMPLOYED - DISTRIBUTION BY MAJOR OCCUPATIONAL GROUPS (%)

Major Occupational Groups	LFS2018-19		
	Total	Male	Female
Total	100.0	100.0	100.0
Managers	2.2	2.8	0.3
Professionals	4.8	4.2	6.7
Technicians & associate professionals	3.2	3.8	1.0
Clerical support workers	1.5	1.9	0.2
Service and sales workers	15.8	19.8	2.2
Skilled agricultural, forestry & fishery workers	36.2	29.3	60.0
Craft & related trades workers	13.7	13.9	13.0
Plant/ machine operators & assemblers	6.3	8.0	0.3
Elementary occupations	16.3	16.3	16.3

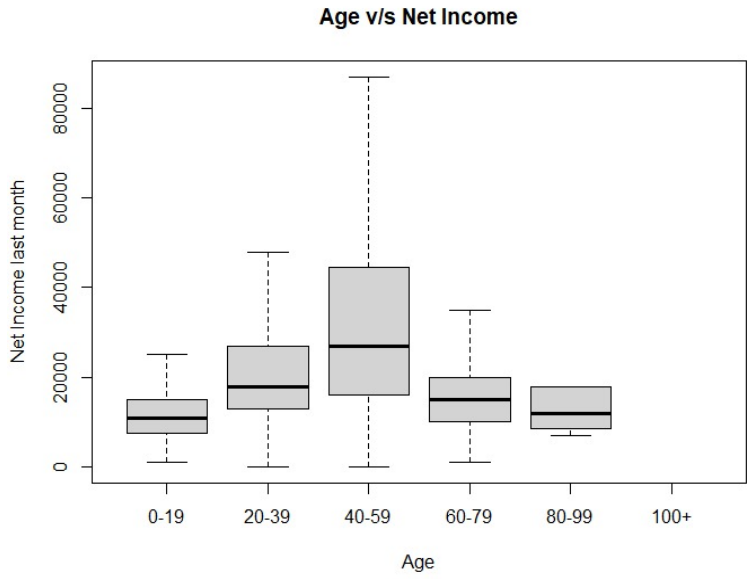
Table 5 is a continuation of table 4, where the date is further divided into major occupational groups. The data mentions 9 occupational groups that are Managers, Professionals, Technicians & associate professionals, Clerical support worker, Service and sales workers, Skilled agricultural, forestry & fishery workers, Craft & related trades workers, Plant/ machine operators & assemblers & Elementary occupations. The values for these are 2.2%, 4.8%. 3.2%, 1.5%, 15.8%, 36.2%, 13.7%, 6.3%, & 16.3% respectively.

Table 6

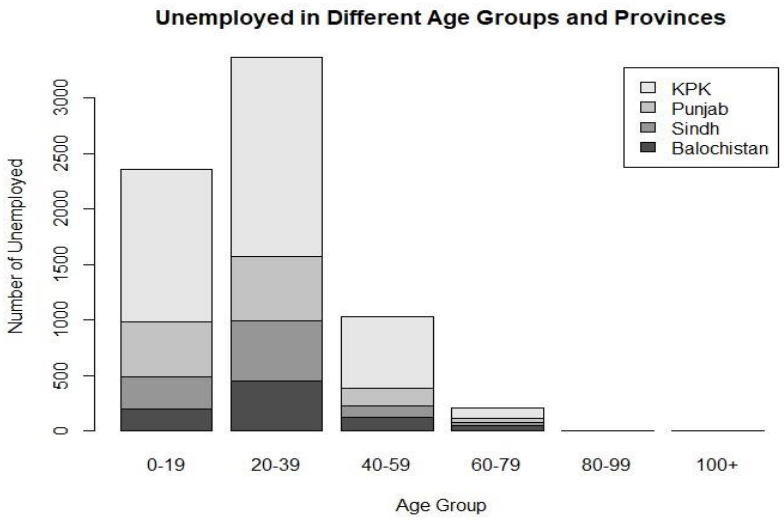
FORMAL AND INFORMAL SECTORS - DISTRIBUTION OF NON-AGRICULTURE WORKERS (%)

Sector	LFS 2018-19		
	Total	Male	Female
Total	100.0	100.0	100.0
Formal	25.8	26.3	22.3
Informal	74.2	73.7	77.7
Rural	100.0	100.0	100.0
Formal	25.8	26.0	24.4
Informal	74.2	74.0	75.6
Urban	100.0	100.0	100.0
Formal	26.1	26.7	21.5
Informal	73.9	73.3	78.5

Table 6 further defines the findings of table 4 and divides the non-agricultural industries into two broad categories; Formal and Informal. The data shows that out of the total population of people employed in Pakistan, 25.8% belong to the formal category and the remaining 74.2% population is from the informal category. The data further displays that out of the total population of people employed in rural Pakistan, 25.8% belong to the formal category and the remaining 74.2% rural population is from the informal category. Moreover, 26.1% of the urban population belongs to the formal category and the remaining 73.9% are from the informal category.

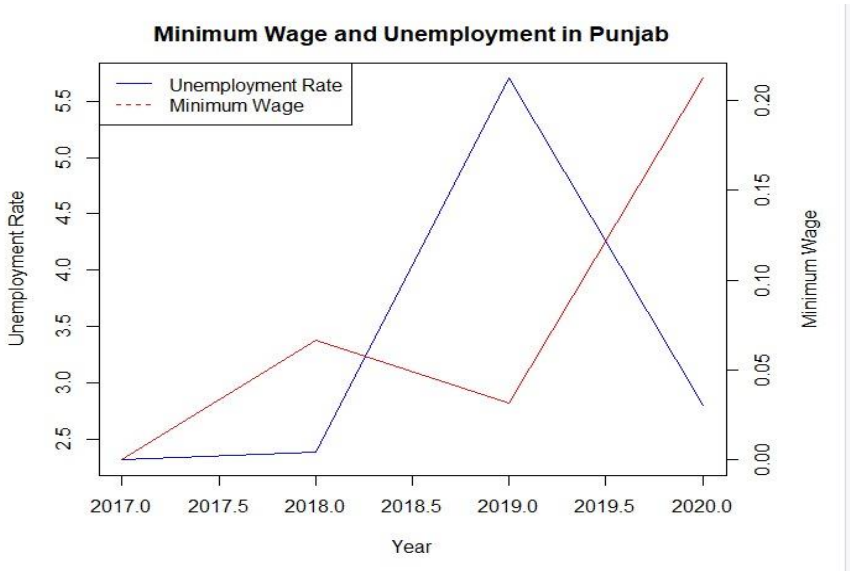


The above figure is made using Net income last month on the y-axis and age on the x-axis. The table shows the overall pattern of Net income with respect to age. It depicts the overall variation in income caused by the increasing age. As it can be seen that the spread of data is quite small for the age group 0-19 as they are mostly students working part time and don't earn much. To explain it further, the spread for the age group of 40-59, shows that this is the age where people's career growth is at its peak and their net income also higher. Also if we look at its range the minimum income is 0 and the maximum is above 80,000, which is an evidence this table also accounts for those people who are unemployed. We can also see that the spread for the age group 80-99 is very less as this is the age where people retire and do not work.



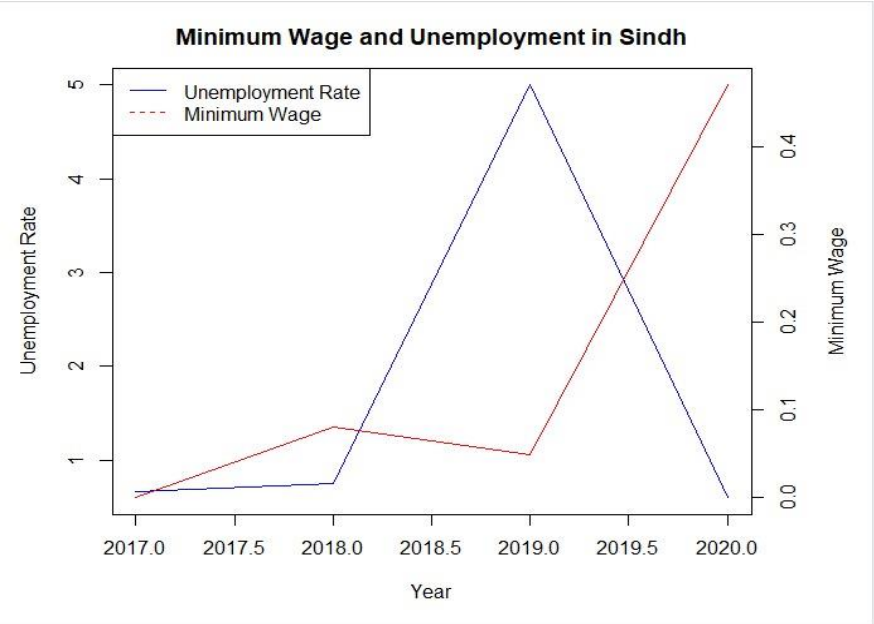
This bar chart shows the number of unemployed people with respect to different age groups.

The data is further explained according to the provincial divisions of Pakistan. It can be seen from the graph that the major part of unemployed people is of the age group 20-39, which means that the youth of Pakistan is largely unemployed throughout all the province, especially the situation is critical in the province of KPK.

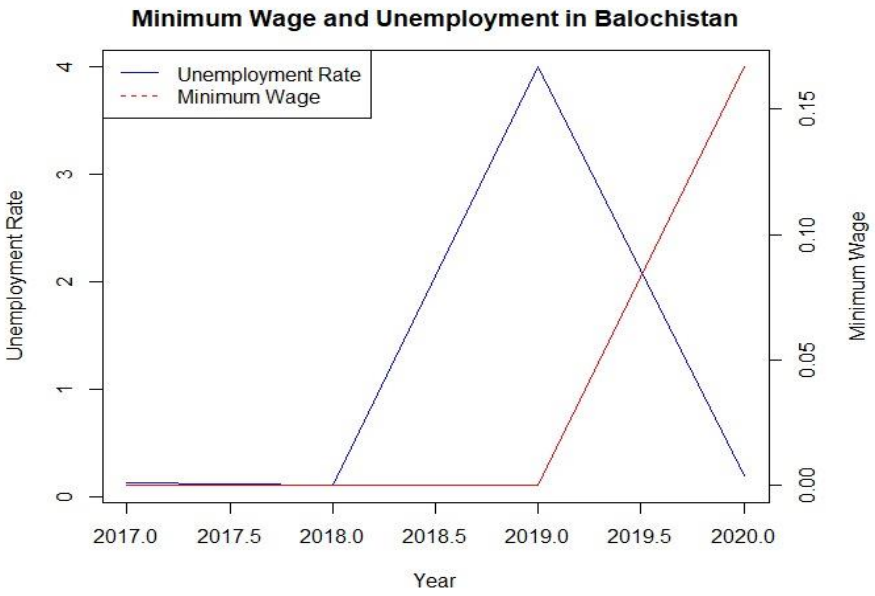


The above graph shows the year on year change in unemployment rate with respect to the minimum wage rate in Punjab. It can be seen that the unemployment rate is fairly constant from the years

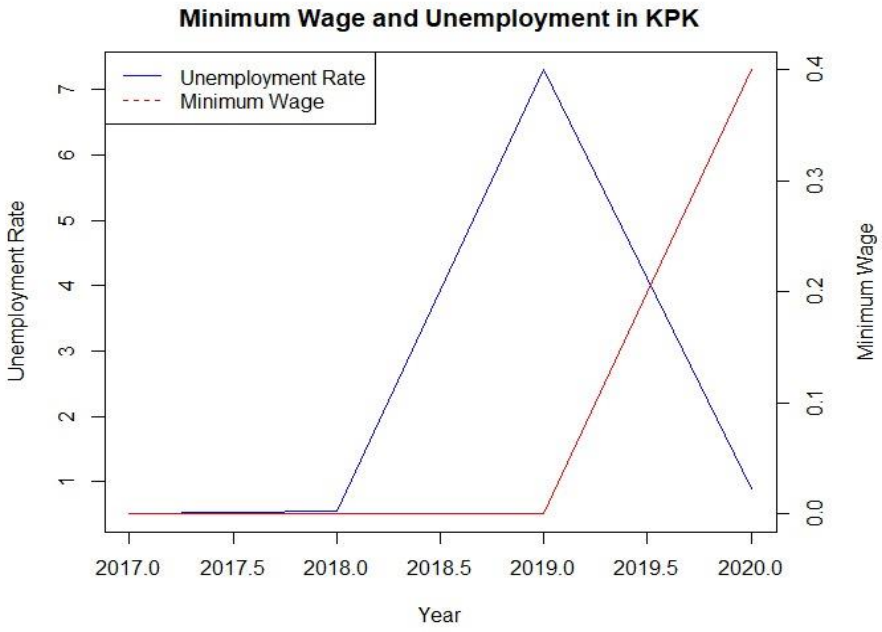
2017-2018, whereas a sharp increase can be seen from the duration of 2018-2019, after which there was a downward trend towards the year 2020.Similarly the minimum wage rate can be seen increasing from the year 2017-2018.There is a slight decline in the year 2018-2019 after which a sharp increase can be observed.



The above graph shows the year on year change in unemployment rate with respect to the minimum wage rate in Sindh. It can be seen that the unemployment rate is fairly constant from the years 2017-2018, whereas a sharp increase can be seen from the duration of 2018-2019, after which there was a downward trend towards the year 2020.Similarly the minimum wage rate can been seen increasing from the year 2017-2018.There is a slight decline in the year 2018-2019 after which a sharp increase can be observed.



The above graph shows the year on year change in unemployment rate with respect to the minimum wage rate in Balochistan. It can be seen that the unemployment rate is fairly constant from the years 2017-2018, whereas a sharp increase can be seen from the duration of 2018-2019, after which there was a downward trend towards the year 2020.Similarly the minimum wage rate was constant from the year 2017-2019.After that, there was a sharp increase in the year 2019-2020.



The above graph shows the year on year change in unemployment rate with respect to the minimum wage rate in KPK. It can be seen that the unemployment rate is fairly constant from the years 2017-2018, whereas a sharp increase can be seen from the duration of 2018-2019, after which there was a downward trend towards the year 2020.Similarly the minimum wage rate was constant from the year 2017-2019.After that, there was a sharp increase in the year 2019-2020.

B. Living Wage Estimation 2022

Our model for estimating the living wage was inspired by the Global Living Wage Series Urban Pakistan Sialkot Study (Sayeed and Dawani 2019) and was based upon the Anker Methodology (Anker and Anker):

1) Cost of basic but decent life for reference size family = Cost of food + Cost of housing + Cost of other essential needs + Small margin for unforeseen events
2) Net Living Wage = Cost of basic but decent life for a family ÷ Number of workers per family
3) Gross Living Wage = Payroll deductions and taxes + Net living wage

For estimating the living wages for each province, we used the data from Household Integrated Economic Survey (HIES) 2018-19 and several other sources (which are listed below). This model was estimated for urban regions for the provinces of Sindh, Punjab, Balochistan and Khyber-Pakhtunkhwa since wage laws are fairly implemented in such regions.

Several assumptions have been taken into account: Number of workers per household = 2; 1 month = 4.345 weeks; 26 work days per month; and 48-hour work week. The family size for each province is displayed below.

Family Size	Sindh	Punjab	Balochistan	KPK
Avg Household Size	6.23	5.78	8.12	7.41
Number of workers	1.8	1.63	2.14	2.08
Number of adults	2	2	2	2
Number of children	4.23	3.78	6.12	5.41

Monthly food costs were estimated using the dietary and nutritional needs stated in the Urban Pakistan Sialkot study (Sayeed and Dawani 2019).

A sufficient daily diet for one individual consisted of 336g wheat; 25g rice (once a week); 30g lentils; 52g potato; 31g tomato; 41g onions; 1 banana on alternate days; 24g broiler chicken (twice a week); 3.6g packaged tea (3 cups per adult, 1 cup per child); 162g milk (1 cup per child); 36g sugar; 34g cooking oil; and 2 eggs per week. The prices for these commodities were taken from the yearly/monthly food prices passed by the provincial governments in the respective provinces. Based on these quantities, the estimated monthly food costs were calculated to be PKR 17,101 for Sindh, PKR 17,104 for Punjab, PKR 20,910 for Balochistan, and PKR 20,032 for Khyber-Pakhtunkhwa.

Next, housing costs (including rent, water, electricity, gas) were estimated for the smallest-sized houses sufficient for a fairly comfortable living for the respective household sizes. Costs for other essential (non-housing, non-food) needs like transport, childcare, medical and clothing were estimated. A special provision for unexpected events was also included. All these costs were estimated from the Urban Pakistan Sialkot study (Sayeed and Dawani 2019) and was adjusted for inflation in the country.

The only payroll deduction and taxes for urban regions is in the form of the mandatory payroll deduction for the Employees Old-Age Benefits Insurance (EOBI) of PKR 130 (Sayeed and Dawani 2019).

After the necessary estimations, the Anker Methodology was applied and the following calculations were made:

Monthly Costs/Wages (PKR)	**Sindh**	**Punjab**	**Balochistan**	**KPK**
Food	17101.29738	17104.03341	20910.35062	20032.07599
Housing	11519.1748	14571.1692	11057.389	11057.389
Other essential needs	11074	11074	11074	11074
Provision for Unexpected Events	3000	3000	3000	3000
Cost of Basic but decent life for reference family size	**42694.47218**	**45749.20261**	**46041.73962**	**45163.46499**
Cost of decent standard of living for a family ($)	**$230.55**	**$247.05**	**$248.63**	**$243.88**
Net Living Wage	23719.15121	28066.99547	21514.8316	21713.20432
Payroll Deduction and Taxes	130.00	130.00	130.00	130.00
Gross Living Wage	**23849.15**	**28197.00**	**21644.83**	**21843.20**
Gross Living Wage ($)	**$128.79**	**$152.26**	**$116.88**	**$117.95**

We find that the monthly living wages for 2022 are different for each province in Pakistan due to differences in the living costs in each province. The gross monthly living wages is found to be the highest for Punjab, i.e. PKR 28,197. This is followed by Sindh with a living wage of PKR 23,849, then Khyber-Pakhtunkhwa with PKR 21,843 and lastly, Balochistan with PKR 21,645. The

monthly living wage estimates in dollars for the provinces are $ 152.26, $ 128.79, $ 117.95 and $ 116.88 respectively.

*All data sources can be found in the Appendix Section.

VI. Conclusion

The aim of this study was to evaluate the impact of minimum wage rate policies on the unemployment rate in Pakistan. Various sources were cited for collecting the relevant information and developing a clear understanding of the subject matter. Various tests were conducted to acquire the results and after thorough evaluation of the data, it is concluded that there is an impact of minimum wage policies on the rate of unemployment. According to the data evaluated, the province with the highest number of unemployed youth was KPK. Furthermore, it is concluded that the change in unemployment rate throughout Pakistan was observed during the period of 2018-2019 whereas, the change in minimum wage was observed during 2019-2020. The regression analysis conducted across provinces concludes that an increase in minimum wage leads to an increase in the unemployment rate. The reason behind this may lie in the high production costs incurred to the employer as a result of this wage increase. Further, the living wage, a better alternative to minimum wage, was also estimated for Pakistan on a provincial level for the year 2022. This may serve as a more efficient measure for minimum wages required for a decent standard of living and may be used for an improved policy analysis.

This research is conducted on the stats and figures of Pakistan, there were quite a few limitations while compiling and analysing the results regarding the availability and accuracy of the data. The limitations include a lot of missing data of the informal sector which was never reported.

Furthermore, keeping in mind the society and culture of Pakistan, women are discouraged to work and therefore they are not recorded as unemployed citizens.

There are various other elements that can have an impact on the unemployment of a country. We have selected only a few of those variables. In order to have a proper understanding of the overall impact on national unemployment, the future researchers should also consider other variables that can have a direct or indirect impact. Furthermore, we have conducted this research on the basis of the living wage rate which is mostly higher than the minimum wage rate. Future researchers can also take this in account for future studies.

VII. Significance of the Study

Pakistan's labor force population is on the rise, but so is its youth unemployment rate. The youth of a country is considered to be its economy's driving force. Therefore, having a significant amount of them facing work exploitation, low wages, or joblessness would have long-term negative repercussions on economic growth and development, poverty, crime, and mental health of the citizens – factors leading to the breakdown of fragile nations. Due to limited financial resources in developing countries like Pakistan, minimum wage and living wage laws are an efficient mechanism to deliver a decent standard of living for its low-skilled workers. Before questioning the implementation of these laws, it is imperative that the relationship between youth unemployment, minimum wages and living wages be tested for them to deliver the most effective results. Spending even a few resources on the youth workforce will result in reduced crime, better self-esteem, and a higher likeliness of them securing high-wage jobs later in life – all positive contributions to the economy.

This study attempts to explore this important public policy area and will contribute to the policy implications for our future labor market laws related to minimum and living wages, in order to curb youth unemployment.

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Appendix

Section I & IV Data Sources:

https://data.worldbank.org/indicator/SL.UEM.1524.ZS
https://wageindicator.org/labour-laws/labour-law-around-the-world/minimum-wages-regulations/minimum-wages-regulations-pakistan#:~:text=Minimum%20Wage%20in%20Pakistan%20for%20Unskilled%20Workers%20in%202017%2D2018&text=Ishaq%20Dar)%20while%20announcing%20the,Dr.
https://www.pbs.gov.pk/labour-force-publications
https://www.unfpa.org/data/PK

Section V.A. Data Sources:

https://www.thenews.com.pk/print/457016-unemployment-rate-scales-up-to-5-7pc-from-5-1pc-in-decade
https://wageindicator.org/labour-laws/labour-law-around-the-world/minimum-wages-regulations/minimum-wages-regulations-pakistan#:~:text=Minimum%20Wage%20in%20Pakistan%20for%20Unskilled%20Workers%20in%202017%2D2018&text=Ishaq%20Dar)%20while%20announcing%20the,Dr.
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Section V.B. Data Sources:

https://www.pbs.gov.pk/content/pslm-hies-2018-19-provincial-level-survey
https://directorate_of_food.kp.gov.pk/page/price_list_detail_2019
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