

UCLA

Working Papers

Title

Pakistan's Beveridge Curve- an Exploration of Structural Unemployment

Permalink

<https://escholarship.org/uc/item/4p63p7ts>

Authors

Waqas, Muhammad
Hyder, Asma

Publication Date

2012-07-12



WORKING PAPER

2012 - 4

The Pakistan's Beveridge Curve: an Exploration of Structural Unemployment in Pakistan

Muhammad Waqas

National University of Sciences and Technology, Islamabad

Asma Hyder

National University of Sciences and Technology, Islamabad

June 2012

The views expressed in this paper are not the views of The Regents of the University of California or any of its facilities, including UCLA, the UCLA College of Letters and Science, and the IRLE, and represent the views of the authors only. University affiliations of the authors are for identification purposes only, and should not be construed as University approval.



INSTITUTE FOR RESEARCH
ON LABOR AND EMPLOYMENT
UNIVERSITY OF CALIFORNIA, LOS ANGELES

The Pakistan's Beveridge Curve: an Exploration of Structural Unemployment in Pakistan

Muhammad Waqas and Asma Hyder¹

Abstract

Unemployment is one of the most important problems of Pakistan's economy. The Study investigates whether the Beveridge Curve- the empirical relationship between vacancy and unemployment rate offers a potential instrument to characterize the unemployment in the considered economy. The present topic become popular among academicians particularly after the seminal work of Nobel laureate Christopher Pissarides "On Vacancies (2010)" and recently it has been realized that such analysis can be helpful for understanding of characteristics of unemployment, however it is debatable whether macroeconomic fluctuations helps to explain the nature of this relationship. The study is the first in its nature that explain the relationship between vacancies and unemployment for a developing country like Pakistan, further the paper introduced two shock variable, unemployment composition pool and cyclical variables to examine if they have any significant impact on long run unemployment rate.

Key Words: Unemployment, Vacancies, Demographics, Cyclical Variables

JEL Classification: J63, J11

Introduction

Over the past few decades, dynamics of unemployment in aggregate labor market has gained much attention from macroeconomists; for instance, the Phillips curve and the Beveridge curve are the outcomes of this attention. The Essence of Phillips curve is the relationship between unemployment and inflation rate; on the other hand the Beveridge curve analyze the relationship between unemployment and vacancies which is also considered as an important approach to studying labor market efficiency. It has been described as the 'neglected stepsister' of the Phillips Curve (Yellen, 1989) although many economists emphasis this is not to be the true case. It has been argued that Phillips curve is the second fiddle and the Beveridge relation comes conceptually first as it contains essential information about the functioning of the labor market and the shocks that affect it (Blanchard et al, 1989).

¹ Muhammad Waqas is Post Graduate student and Asma Hyder is Assistant Professor at National University of Sciences and Technology, Islamabad. Authors are thankful for comments on the paper during seminar at NUST Business School, Islamabad.

Unemployment is one of the obstacles in the way of persistent and sustainable economic growth. In Pakistan, it has been considered as a major economic problem along with its many social adverse consequences. According to official statistics labor force participation rate for Pakistan is 45.7 percent. According to this 3.05 million persons of labor force are estimated as unemployed in 2011 (Government of Pakistan, 2011-12). Agriculture remains the most important sector absorbing about 45 percent of total labor force, manufacturing sector contributes almost 13.7 percent share in employment while construction and wholesale & retail trade sector contributes 7 and 16.2 percent respectively (Government of Pakistan, 2011-12).

Main objective of the study is to investigate whether and to what extent the Beveridge curve offers a potential instrument to characterize the unemployment in the Pakistan's economy. To achieve this objective, demographic and macroeconomic variables; including inflation rate (CPI), real interest rate (RIR), GDP/Capita, share of female unemployment, long term unemployment, and share of young unemployment are included in empirical estimation. The study exploits the micro data drawn from Labor Force Survey of 8 different years. Different econometric models have been constructed to identify effect of these variables on unemployment pattern.

Theoretical Background

Unemployment and vacancies can coexist because of imperfections in functioning of labor market. Employer's search for new employees and unemployed job-seekers need time to find each other thus they invest their time in job search. Over last two decades, the matching models and frictions in job search became popular among labor economists. A tremendous amount of literature is available to explore this dynamic relationship; however in case of developing countries the topic is still unexplored due to unavailability of data on vacancies. This section of the paper will provide theoretical background of the topic under consideration.

Beveridge curve is the graphical representation of the relationship between rate of unemployment and rate of vacancies available; the Beveridge curve also depicts about the state of labor market (Barnichon and Figura (2010)). Theoretically the Beveridge and Phillip curve seems very similar to each other but many economists, for example Blanchard and Diamond (1989) emphasize that the Beveridge relation comes conceptually first and contains essential information about the functioning of the labor market and the shocks that affect it. The plot showing relationship between number of unemployed and number of vacancies is called 'Beveridge Curve'. Figures 1 and 2 present such a graph in which y-axis shows the vacancies and x-axis represent number of unemployed. The 45 line represents the labor market equilibrium.

Figure 1. Labor Demand-Supply and Employment

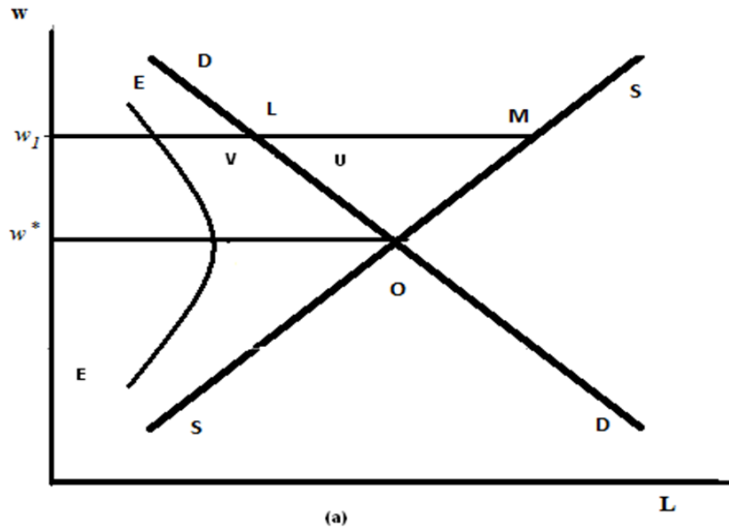
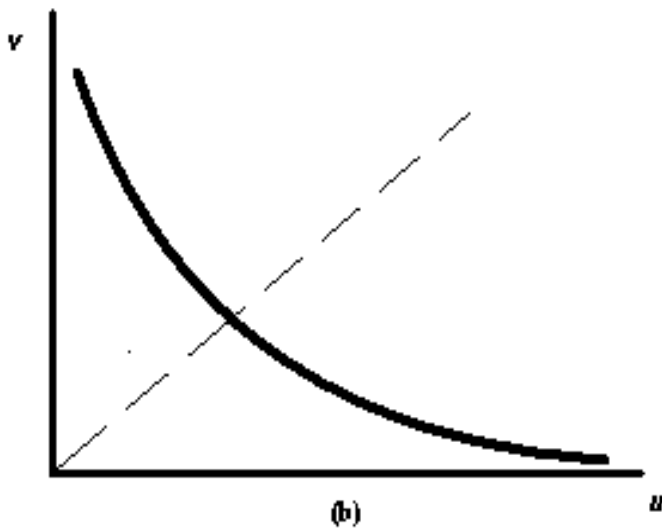


Figure 2. The Beveridge Curve



In figure 1, we plot the quantity of labor along the horizontal axis and money wage ‘W’ on vertical axis which determines equilibrium in classical theory. Suppose that W does not immediately adjust to equilibrium. According to classical economists market should be at equilibrium at wage w^* , that means there should not be any excess demand or supply of labor at w^* wage rate. But according to neo-classical economists there is always some friction into market; demand and supply for labor may be equal but it does not mean they have met with each other. The EE curve shows actual employment prevailing into economy. The EE curve is result of failure of matching between vacancies and unemployed. The distance between employment

curve and demand curve shows vacancies (V), while the distance between employment and supply curve shows level of unemployment (U). At wage w^* distance between employment curve to demand curve and employment curve to supply curve is equal that confirms the argument of classical economist's as demand for labor is just equal to supply of labor. At wage w_1 distance between point E and L shows available vacancies while distance between point E and M shows unemployment level. If wage rate drops below w^* , number of vacancies will increase while unemployment level will decline because at lower wage producer is willing to hire more laborers as cost of hiring extra labor has declined, hence this situation would lead to greater job creation. With the movement of W, up or down on the vertical axis, a negative relationship will exist between U and V. The figure 2, shows the graphical picture of Beveridge Curve-relationship between unemployment and vacancy rate and shows hyperbolic shape. Dow and Dicks-Mireavx (1958) noted that the point where the vacancy rate just equals to unemployment rate can be regarded as zero excess demand for labor. They called the distance from the origin to this point "Maladjustment", Maladjustment causes parallel shifts in U-V curve.

Among many others, Hansen (1970) and Bowden (1980) provide the discussion of demographic composition pool on this U-V relationship. Harper (1980) estimates Beveridge Curve for Australia for period of 1952-1978 and Fahrre and Pease(1993) for period of 1996-1992, authors conclude that this relationship is more stable in Australia as compared to other countries. Sestito (1988) and Bragato (1990) utilize the ISFOL-CSA data on vacancies and shows significant relationship between unemployment and vacancies later supported by Mocavini and Poliotta (2000).

The analysis of behavior of unemployment & vacancies in Spain by Garcia (1998) from 1977 to 1994 shows unemployment rate took a sharp upturn after 1977 and has persisted even during period of economic growth and after 1981 the curve shifted upward, the study further argued that this shift is due to labor market structural mismatch. Nickell et al, (2001) undertake empirical analysis of labor market of OECD countries from 1960s to 1990s. Study shows the shifts in Beveridge Curve, real wage and unemployment during given time frame. Study concludes three results, first, the Beveridge Curve of all countries shifted to the right from early 1960s to mid-1980s except Norway and Sweden. Second, these movements were associated with changes in labor market institutions especially for those which were important for matching efficiency. Third, labor market institution impact on real labor cost as it effect on unemployment. Finally the study adds that major movements in unemployment across OECD countries are because of shifts in labor market institutions, more precisely, 55% rise in unemployment is because of labor market institutions.

Teo *at al.* (2005) empirically estimates Beveridge Curve at two levels; first it report estimates of Beveridge Curve for selected East Asian countries, second a more detailed study on Singapore economy is undertaken to show structural changes in labor market. During 1980's Japan, Taiwan

& Hong Kong show that these countries were at lower-right end of Beveridge Curve, i.e greater unemployment & low vacancies. These Results verify existence of negative Beveridge Curve for all East Asian Countries, it also shows states have improved their matching efficiency over time but this efficiency has declined since 1997 Asian Crisis. Most of the studies on empirical estimation of the Beveridge Curve are on industrialized countries, to fill the gap in literature this study an first attempt to estimate this relationship in Pakistan.

Methodology

The Basic Model

We have employed panel estimation procedure with ‘year’ as time variable and ‘provinces’ as panel variable. This specification allows us to capture unemployment changes over time, across provinces and stochastic factors that may vary by time and region. The independent variables that included in all specification are vacancies created in that time period, considering vacancies as non linear variable we have also included the square of vacancies. We have included different specifications to check the robustness of our results. First specification includes vacancies, square of vacancies and shock variables as dummy variables. Later to check the demographic transition we have included few demographic variables, the details are given below in this section. The exact specifications of equations are as follows:

$$UN_{it} = \alpha + \beta VR_{it} + \gamma (VR)_{it}^2 + \xi D06 + \pi D09 + \mu_{it} \quad (1)$$

$$UN_{it} = \alpha + \beta INV_VR_{it} + \xi D06 + \pi D09 + \mu_{it} \quad (2)$$

Where

UN_{it} is unemployment rate over time period t and across provinces ‘i’, VR is vacancy rate and D06 and D09 are shock variables. Two periods can be distinguished from data under consideration, during first period 2006 economy experienced negative shock with substantially increased unemployment rate and decline in vacancy rate, in second period 2009 economy faces significant decline in unemployment rate along with increasing vacancy rate². To analyze impact of these shocks on stability of Beveridge Curve we have incorporated these shocks as Dummy variables in our analysis. β , γ , ξ , π are the estimated coefficients. α and μ are constant and error terms.

Demographic Variables and Unemployment- Vacancies Relationship

² Next section will provide more detailed discussion on these two shock variables.

Later we have estimated the impact of demographic variables on the unemployment rate.

$$UN_{it} = \alpha + \beta VR_{it} + \gamma (VR)_{it}^2 + \xi UN_{20it} + \pi UN_{fem_{it}} + \lambda UN_{enroll_{it}} + \mu_{it} \quad (3)$$

$$UN_{it} = \alpha + INV_VR_{it} + \xi UN_{20it} + \pi UN_{fem_{it}} + \lambda UN_{enroll_{it}} + \mu_{it} \quad (4)$$

Where:

UN₂₀: is share of unemployed under age 20 years

UN_{fem}: female share of unemployment

UN_{enroll}: share of unemployed with enrollment

We use Hausman test for choice between random and fixed effects.

Macroeconomic Variables and Unemployment- Vacancies

Later part of our estimation we attempt to explore the affect of cyclical variables on unemployment rates. Thus in later part we estimate the following equations:

$$UN_{it} = \alpha + \beta VR_{it} + \gamma (VR)_{it}^2 + \psi RIR_{it} + \Omega CPI_{it} + \delta (GDP/capita)_{it} + \mu_{it} \quad (5)$$

$$UN_{it} = \alpha + \beta INV_VR_{it} + \psi RIR_{it} + \Omega CPI_{it} + \delta (GDP/capita)_{it} + \mu_{it} \quad (6)$$

We develop a model that generates effects of cyclical variables on the locus of Beveridge curve. Main purpose of inclusion of these cyclical variables is to test how much these factors have tendency to explain outward shift of Beveridge curve. An expected effect of inflation on unemployment is that it effects negatively as suggested by Phillip's curve, similarly 'Trickle-Down effect' and 'discouraged worker's effect' proposed a positive relationship between GDP/Capita and unemployment. To check the effectiveness of monetary policy that how much it could be helpful in combating unemployment we have also included real interest rate as an explanatory variable.

Data and Variable Description

Data Description

The data source for this study is the micro household level data of eight Labor Force Surveys (LFS) carried out in 1996-97, 2001-02, 2004-05, 2006-07, 2007-08, 2008-09, 2009-10 and 2010-11. LFS is conducted by Pakistan Bureau of Statistics (PBS) since 1963. The data provides total information about personal characteristics, regional and sectoral composition of workers in public and private sectors whether they are employed or not. The information on labor market

activities is provided on the individuals of 10 years of age and above up to 65 years of age. The questionnaire of the LFS is periodically revised to improve the labor force statistics LFS is based on micro data i.e. collected by direct interviews by PBS from total employed labor force. To adjust for seasonal variations, the data collection is spread overall the year. The universe of the labor force survey consists of all urban and rural areas of four provinces of Pakistan and AJK. LFS excludes the federally administered tribal areas (FATA), military restricted areas and protected areas of KPK. This exclusion is not seen as significant since the relevant areas constitute about 3 percent of total population of Pakistan.

Data for vacancy created and filled vacancies are collected from Annual statistical bulletin of employees of autonomous/semi-autonomous body's corporation under the Federal Government, similarly for cyclical variables we have used Economic Survey of Pakistan for respected years. Similarly data for cyclical variables including CPI, real interest rate and GDP/capita are taken from World Bank data source and handbook of statistics published by State Bank of Pakistan.

Variable Description

a. Unemployment

There are two different standard definitions for unemployment. One is given by International Labor Organization (ILO) and other is given by Population Census department. According to ILO definition a person is said to be unemployed if he were unable to do any work for at least 1hour during last week but according to definition followed by Population census department a person is said to be unemployed if he remain unwilling to perform any work most of time during last year. We have followed the later definition because it gives more accurate picture of worker's activities during last year.

b. Employment

Employment comprises all persons of 14 years of age and above but below 65 who worked most of time during last 12 months during the reference period and were either "paid employed" or "self-employed". Persons employed on permanent/regular footings have not worked for any reason during the reference period are also treated as employed, regardless of the duration of the absence or whether workers continued to receive a salary during the absence.

c. Young Unemployment

Young unemployment includes all those persons who are 14 years of age or above but below 20 and are available for work but didn't get job during reference period. The purpose to include this variable is to examine the share of new young entrants into labor force and if they have a significant impact on unemployment rates.

d. Old Unemployment

Old unemployment comprises of all those persons who are 60 years of age or above but below 65 and are included in labor force but are unable to get employed during reference period. It has been argued that over a period of time life expectancy increased and it also lead toward increased labor force participation rates. However this argument in case of Pakistan is subject of empirical investigation. The reason is environmental factors and decreasing standard of health in the country may nullify their impact.

e. Female Unemployment

This variable is defined as share of female unemployment in total unemployed labor force. In Pakistan almost fifty percent of total population comprises of females. Having such a major portion in total population one can't ignore its importance in labor market, although the labor market trends do not show a significant increase over time.

f. Enrolled Unemployed

Enrolled unemployed is define as share of unemployed who have not completed their education and are currently enrolled.

g. Vacancy Rate

It shows how the total number of jobs vacancies varies over time depending on economics condition of a country. Vacancy rate can be described as vacancies available as percentage of labor force. We have used sanctioned vacancies only by federal government for Punjab, Sindh, KPK and Baluchistan. Data is taken from Annual statistical bulletin of employees of autonomous/semi-autonomous bodies/corporation under the Federal Government. Pakistan Public administration Research Centre (PPARC) is responsible in the collection, compilation, tabulation and formulation of statistical data of employees for the effective formulation of vacancies created under federal government. Further, sanctioned post are distributed among provinces on basis Civil Establishment Code, it is extracted from Constitution of Islamic Republic of Pakistan, 1973. According to this code Punjab and Federal has 50% share in total sanctioned posts, similarly Sindh, Baluchistan, and KPK have 19%, 6% and 11.5% share respectively.

h. Consumer Price Index (CPI)

The rising inflation is one of the obstacles in way of sustainable economic growth. In Pakistan it has affected major part of population in terms of consumption. During fiscal year 2009-10 inflation rose up to very high level, CPI rose up to 30% creating alarming situation for both consumers and producers. To verify this relationship we have incorporated this variable in our study. Data has been taken from Inflation monitor report published by State Bank of Pakistan.

CPI at provincial level is used in this study to examine the impact of inflation on unemployment. However it is important to mention here that CPI is not available at provincial level, hence for this variable we have used the average value of all district in every province.

i. GDP Per Capita

GDP per Capita is defined as measure of output of a country that takes the gross domestic product and divides it by total population. This is useful for comparison between two regions. According to Trickle-down effect there exists positive relation between GDP/Capita and unemployment, i.e. when economy expands there is significant positive impact on unemployment growth. Thus in later part of the study we also explore the relationship of GDP/capita with unemployment. Data for GDP is also taken from World Bank.

j. Real Interest Rate (RIR)

Another cyclical variable real interest rate is also incorporated in this study to analyze its impact on unemployment. Empirically it has been observed that in the long run real interest rate have negative effect on unemployment rate (Carruth, et al, 1998 for US; Dogrul & Soytas, 2010 for Turkey). To analyze its impact in Pakistan we have also used this cyclical variable in our study.

Table 1: Summary Statistics

Variables	Mean	Standard deviation
Unemp_rate	10.69	11.45
Vac_rate	7.06	3.16
Share_20	30.31	7.52
Share_60	3.59	3.14
Share_female	46.32	23.44
Share_long	8.78	7.31
Share_enrolled	12.05	10.17
GDP (Annual)	31036.86	3305.887
RIR	-0.365	3.11
CPI	8.87	2.23

Empirical Results and Discussion

In first section we have highlighted policies to generate vacancies. Later part of the section contains the empirical results of variables which have been discussed. Agriculture was considered to be largest source of employment, for this reason larger proportion of employed labor force was in rural areas which indicate that non-wage employment mainly comprising the self-employed and un-paid family helpers dominates the employment in the country. On the contrary, the relative share of employed labor force in trade sector, finance, community and

social sectors has been increased over time. Realizing that a sound base of economic development and its faster growth has a direct bearing on growth of employment; agriculture package, fiscal and monetary measures were taken and investor's particularly foreign investors were being attracted to make investment. With view of reducing educated unemployment, self employment was encouraged through schemes of youth investment promotion society and national self employment scheme.

In the end of 1990's Pakistan became seventh most populous country in world. Its population growth rate has slowed in recent years; population welfare programs launched in 1997 had reduced the size of the population growth rate. Population was 145.96million while total labor force comes to 41.54 million. Inter comparison of rural and urban participation rates revealed that labor force participation rates were higher in rural areas as compared to urban areas because Pakistan's economy is mainly agrarian in nature and agriculture is treated as family occupation in rural areas.

There is clear and perceptible evidence that the growth performance of Pakistan's economy has deteriorated in the 1990's. Slower economic growth restrained the economy's capacity to generate employment. In order to deal with given state of unemployment government identified few major drivers of growth, namely, agriculture, oil and gas, small and medium enterprises (SMEs) and information technology.

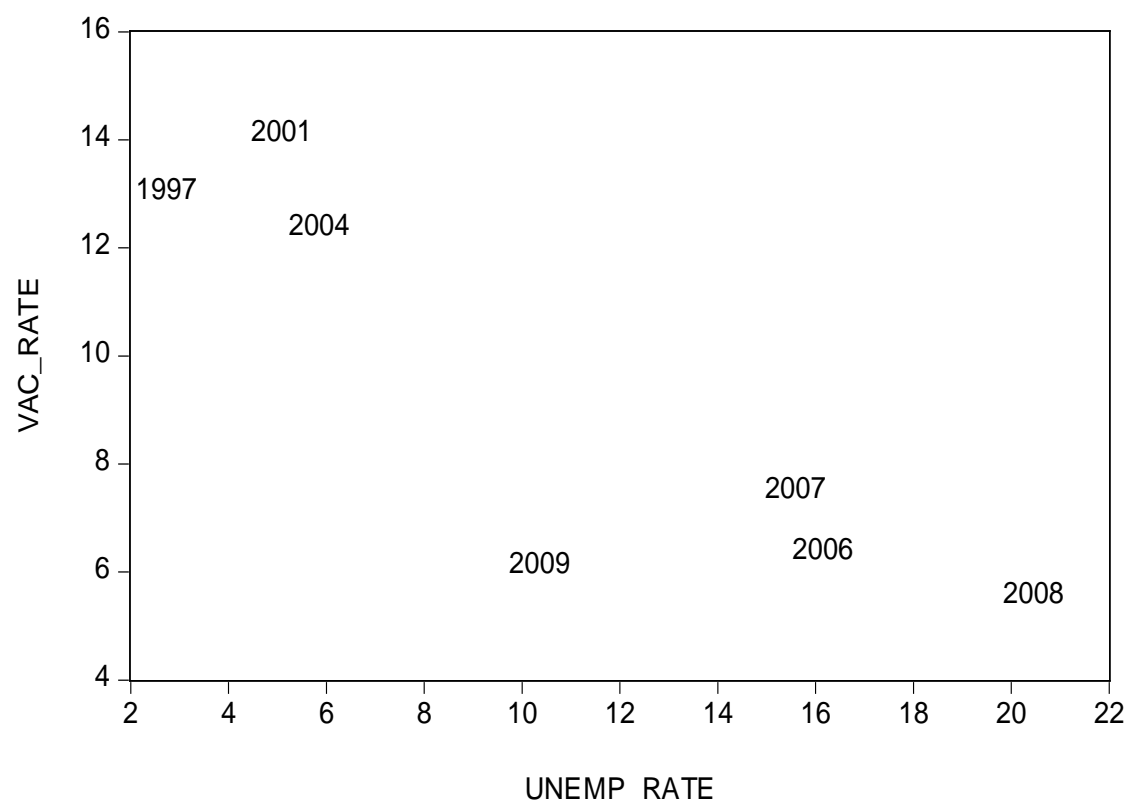
Small public works program, namely the Khushal Pakistan program was launched by government which has created about one million temporary jobs in the rural areas and adjacent small towns. Observing the changing trend of the economy and the demand for industry-wise and sector-wise skilled labor, the existing technical training curricula was revised. Ministry of labor, man power and overseas Pakistanis was established to develop skilled labor force. Efforts were being made to explore more overseas employment opportunities for Pakistani work force, economic empowerment of women is primary objective of the growth, special efforts were made to enhance their employability through education and vocational training responsive to job market.

Graph shows almost same trend from 2001-2006 but in 2007 there is little jump in vacancies while unemployment is almost at same rate. The policy of deregulation, privatization and liberalization helped in increasing the participation of private sector in the economy, As a result, significant number of work opportunities were being generated(as shown in graph) in urban areas.

There are certain inherent problems associated with unemployment in Pakistan such as low literacy rate, poor level of skills and mismatch between demand and supply of educated and manpower. To control the problem of mismatch, the Ministry of Labor, Manpower and Overseas Pakistan, in collaboration with the International Labor Organization and the United Nation

Development Program initiated the development of a Labor Market Information and Analysis system in 2006³, it aim to provide up-to-date and timely Labor Market Information that serves as an input into the formulation and monitoring of labor and employment policies. Certain other steps like National Vocational and Technical Education Commission was established at federal level, The SME Bank was established to provide financial assistance and business support to small and medium enterprises.

Figure 3. Graphical Presentation of Beveridge Curve



Empirical Results and Analysis

The results of first set of estimates are presented in Table 2. Coefficient of vacancy rate⁴ and its square have expected signs i.e. vacancy has negative and significant while vacancy square has positive and significant effect, however it is important to mention here that we do not have complete data on vacancies due to large informal sector and weak labor market information system in the country. This attempt is only to examine the theoretical relationship between two variables for a developing country's scenario. We have also included inverse of vacancy rate

³ Detailed information is available at [<http://www.accountancy.com.pk/docs/economic-survey-of-pakistan-2006-07.pdf>]

⁴ Before estimating this model, unemployment rate is regressed over vacancy rate only and similar results with different coefficient magnitude were found.

because of its hyperbolic nature and also for robustness check which again have expected signs in all the estimated equations

As shown in table 2, D06 and D09 shocks has insignificant impact on unemployment. No doubt vacancies were generated during period of D0809 to overcome problem of unemployment or probably due to some other political reasons like to get popularity among masses, but these generated vacancies had no significant impact on the shift of Beveridge curve. During 2006 flow of government's expenditure was towards handling law and order situation of country, it was time when terrorist activities were at its peak. Less intension by government was devoted for development purposes, hence we introduced as shock in our model but again it remain insignificant in empirical estimation.

Table 2. Random Effect Estimates for U-V Relationship

	Model 1	Model 2
Variables	Coefficients & Std. Error	Coefficients & Std. Error
Vac_rate	-9.39*** (2.13)	
Vac_square	0.467*** (0.141)	
V_inv		102.14*** (14.52)
D0406	3.09 (3.46)	2.29 (2.87)
D0809	-1.19 (3.89)	-2.61 (3.11)
Constant	49.93*** (9.40)	7.46*** (2.966)

Note: *** shows 1%, **5% and *10% level of significance
Standard errors are in parenthesis.

The estimated results of second set of estimates are presented in Table 3. The estimated parameter of female unemployment and enrolled unemployed has positive and negative signs respectively but both are insignificant. Estimated coefficient of Enrolled unemployed has negative impact on unemployment rate but the results are in-significant. The insignificance of the results is due to less number of students working as part time workers. People are more interested to invest in their education to get more knowledge and skills so they can compete in the market and can get better reward. Coefficient of share of young unemployment is negative and is significant. As we know that Pakistan has entered into phase of demographic dividend,

fertility and mortality rate has declined, dependency ratio has also declined, and working age population has increased with rise in average age of individuals. With rising trend of education and training share of young workers in labor force has already declined, while those who are still part of labor force can get job in informal sector as they are willing for underemployment, can do job at low wages, that's why their share in unemployment has also declined over time.

Table 3: Random Effect Estimates for Demographic Composition Pool and U-V Relationship

	Model 3	Model 4
Variables	Coefficients & Std. Error	Coefficients & Std. Error
Vac_rate	-10.56*** (3.38)	
Vac_square	0.504*** (0.137)	
V_inv		109.22*** (13.65)
Share_une_20	-0.513*** (0.252)	-.367** (.160)
Share_une_female	0.034 (0.197)	0.07 (0.57)
Share_une_enrolled	-0.132 (0.200)	-0.27 (.156)
Constant	70.78*** (30.52)	2.24 (5.34)

Note: *** shows 1%, **5% and *10% level of significance
Standard errors are in parenthesis.

The estimated results for third set of specification are presented in Table 4. The study has investigated the relation of GDP per Capita and U-V relationship. It found a positive and significant relation between these two variables. The estimates show that with increase in GDP per capita; unemployment also rises which can be supported by Theory of Discouraged workers and also by Trickle-down effect. During a recession, workers become discouraged and give up their search for work. Economists view this as the result of workers believing that their chances of finding a job are so low that the implied monetary and psychological costs of searching yield a utility of searching that is lower than the utility of being out of the labor force (as perceived by the worker). An additional source of business cycle variation in labor supply may be variations in individual wage rates, since wage rates may also vary over business cycles. The observation that labor supply seems to vary according to the business cycle has given rise to the "discouraged

worker" concept. Another possible reason for positive relation between GDP/capita and unemployment may be un-equal distribution of income. GDP/capita is hypothetical distribution, it does not depict true scenario. As in case of Pakistan we have seen income distribution is skewed towards upper class, they need to invest it so that employment opportunities should be created, but environment is not suitable for investment that's why this distributed income do not pass on to poor class, hence unemployment rises.

The relation between inflation and unemployment has been a subject of interest for the economists over a longer period of time. Reason being, that the policy makers could exploit the trade-off between the two for the matters of policy making. Results show that inflation has positive and significant impact on unemployment rate that shows Phillips Curve does not holds in case of Pakistan. According to theory govt. injects money in economy to generate economic activity and employment but in Pakistan inflation is not a monetary phenomenon there are several other reasons for inflation too e.g. support prices, oil price hikes etc. Hence inflation do not support the decrease in unemployment rate in Pakistan.

Estimated Coefficient of Real Interest Rate is positive and insignificant. Positive sign reveal the concept that real interest rate affects the cost of capital and capital accumulation; the capital stock affects the demand for labor and finally the demand for labor affects unemployment. In case of Pakistan investment is not mainly dependent on real interest rate but it depends on business environment. Interest elasticity of investment in case of Pakistan is very low. Thus insignificance of interest rate can be explained by multiple reasons.

Table 4: Random Effect Estimates for Cyclical variables and U-V Relationship

	Model 5	Model 6
Variables	Coefficients & Std. Error	Coefficients & Std. Error
Vac_rate	-12.17*** (1.83)	
Vac_square	.525*** (.103)	
V_inv		131.73*** (13.78)
GDP/Capita	.002** (.001)	.002*** (.0006)
RIR	1.61 (1.09)	1.55 (.99)
Inflation	3.74*** (1.25)	3.60*** (0.903)
Constant	13.90*** (29.20)	21.78 (16.70)

Note: *** shows 1%, **5% and *10% level of significance
Standard errors are in parenthesis.

Conclusion

The study is first attempt to empirically estimate the Beveridge curve for Pakistan's labor market. Although such types of explorations are very rarely available due to unavailability of data; same is the case for Pakistan. For this study we have used the vacancies generated at federal government level, agreeing on the fact that gives a very limited picture of this phenomenon but empirical results strongly support the existence of Beveridge curve in Pakistan. Further the study attempts to examine the impact of demographic and cyclical variables on U-V relationship.

References:

- Barnichon, R. & Figura, A. (2010). What Drives Movements in the Unemployment Rate? A Decomposition of the Beveridge Curve. Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board, Washington D.C. Discussion Paper No. 2010-48.
- Blanchard, O.J. & Diamond, P. (1989).The Beveridge Curve. Brookings Papers on Economic Activity, 1:1-60.
- Borsch-Supan, A. H.(1991).Panel Data Analysis of the Beveridge Curve: Is There a Macroeconomic Relation between the Rate of Unemployment and the Vacancy Rate?. *Economica*, New Series, 58(231):279-297
- Bowden, R. J. (1980). On the Existence and Secular Stability of U-V Loci. *Economia*, 47: 35-50
- Bragato S. (1990). La Curve di Beveridge e le Component Della Discoccupazione in Italia (1980-88). *Economia & Lavoro*, 24(4), 111-122.
- Carruth, A.A., Hooker, M.A.& Oswald, A.J.(1998). Unemployment Equilibria and Input Prices: Theory and Evidence From the United States. *Review of Economics and Statistics*, 80:621-628
- Pissardies,C.A.(1990). *Equilibrium Unemployment Theory*. Blackwell, Oxford.
- Dogrul, H.G.& Soytas, U.(2010). Relationship between oil prices, interest rate, and unemployment: Evidence from an emerging market. *Energy Economics*, 32:1523-1528.

- Dow, J. C. R. and Dicks-Mireaux, L. A. (1958). The excess demand for labor: a study of conditions in Great Britain, 1946-56. *Oxford Economic Papers*, 10: 1-33.
- Fahrer, J. and Pease, A. (1993). The Unemployment-Vacancy Relationship in Australia. *Australian Economic Review*, 4:43-57.
- Government of Pakistan, Federal Bureau of Statistics. Labor Force Survey (1997-2010). Islamabad
- Government of Pakistan, Ministry of Finance. Pakistan Economic Survey (various issues). Islamabad
- Hansen, B. (1970). Excess Demand, Unemployment, Vacancies and Wages. *The Quarterly Journal of Economics*, 1(84): 1-23
- Harper, I.R. (1980). The Relationship Between Unemployment and Unfilled Vacancies in Australia: 1952-1978. *Economic Record*, 56: 231-243.
- Karanassov, M. & Snower, J., D. (2002). An anatomy of the Phillips Curve. Queen Mary, University of London, School of Economics and Finance, working paper 478.
- Mocavini A. & Patiotta, A. (2000). Job Vaccancies in Italia. Ll quaaro teorico, le indagini, le evidenze empiriche, ISFOL, Monografie Sul Mercato del lavoro e le politiche per l'impiego, n.
- Mortensen, D. T. & Pissarides, C.A. (1994). Job creation and job destruction in the theory of unemployment. *Review of Economic Studies*, 61(3):397-415.
- Prachowny, M. F. J. (1993). Okun's Law: Theoretical Foundations and Revised Estimate. *The Review of Economics and Statistics*, 75(2):331-336
- Qazi, S. & Raza, B. (1991). Duality of female employment in Pakistan. *The Pakistan Development Review*, 30(4): 733-743
- Sentitio P. (1988). Esista una curve di Beveridge per l'Italia? Banca d'Italia, *Teni di discussion*, n. 101.