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A Preliminary Analysis of the Relationship between Self-employment and Unemployment in Pakistan

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Abstract
This paper highlights an important area of public policy that over the years has generated considerable debate. A body of literature suggests that policy support can reduce unemployment by way of stimulating entrepreneurship, driving the unemployed towards self-employment through promotional and support measures. This paper, with the help of an econometric model, attempts to establish whether a significant relationship exists between self-employment and unemployment in the context of Pakistan's economy.

I - Introduction

Entrepreneurship is a major catalyst for economic growth and prosperity. Activities that translate ideas into economic opportunities lie at the very heart of entrepreneurship. It is a source and engine of innovation and change, and as such spurs improvements in productivity and economic competitiveness.

Pakistan is largely a society of job seekers. Social attitudes somehow favour jobs over self employment predominantly for the educated lot. Largely it has been observed that entrepreneurship in Pakistan is more of "necessity entrepreneurship" than "opportunity entrepreneurship". Moreover, fear of failure and lack of institutional support structures, transparency and finance are predominant factors discouraging new venture creation. The dream of an educated youth traditionally has been to acquire a good job with government or large national and or multi-national company for a secure future. With a population growth rate of 2.05%[1] and with a same state of mind, significant pressure is exerted on the job market. In fact 68% of Pakistan's population is comprised of youth, whereas 32% of them are uneducated[2]. On the other hand, the increase in workforce is estimated at 3% annually[3].

According to the Economic Census (2005), 205,204 economic establishments were created in 2002-03. Furthermore, the Economic Census shows that 2.96 million Households and Establishments employed 6.58 million persons. The employment pattern of Pakistani Establishments is such that out of a total of 2.96 million units, 2.85 million units (96.6%) employ 1-5 persons, 0.079 million (2.67%) 6-10 persons, 26,000 (0.87%) 11-50 persons, and 1617 (0.054%) over 50 persons[4].

While taking a look at firm employment size of 1-5, it has been observed that 1.7 million firms have annual sales up to 0.1 million and 1.34 million establishments have sales between 0.1 and 0.5 million[5]. This reveals that 81.7 percent of firms have annual sales up to only 0.5 million per annum, which in turn shows that

[1] Pakistan Economic Survey, 2010-11 (Islamabad: Printing Corporation of Pakistan Press, 2011), 151.
[2] Framework for Economic Growth Pakistan, 2011 (Islamabad: Printing Corporation of Pakistan Press, 2011), 121.
[3] Ibid.
[4] Economic Census, 2005 (Islamabad: Printing Corporation of Pakistan Press, 2005).
[5] Ibid.

these are low growth, subsistence businesses, a result of "necessity entrepreneurship".

Informal sector (self-employment) data also deserves close attention. In 2003-04, informal sector accounted for 70% of the employment in main jobs outside agriculture. The informal sector employment in the rural areas (72.90%) is even higher than that of the urban areas (67.2%). As the trend goes, formal activities are concentrated in urban areas (32.8%) compared to rural areas (27.1%) and may continue to remain so. Since the informal activities are predominantly non-agrarian, male workers are more concentrated in informal sector, both urban and rural. Further, informal employment is concentrated mostly in the Wholesale and Retail Trade (34.4%), Community and Social Services (18.7%), Construction (13.4%) and Transport sectors (11.70%). Informal sector employment shows that a majority (43.7%) are self-employed, followed by employees (43.1%), unpaid family helpers (11.7%) and finally the employers (1.5%)[6].

II - Literature Review

Literature on the subject suggests that individuals have to make a decision about how to allocate their time and abilities among three different types of activity i.e. Unemployment, Entrepreneurship (self-employment) and Wage-employment[7]. The relative price of these activities ultimately determines an individual's occupational decision. In fact, the link between unemployment and 'defensive' type of entrepreneurship was refined by Oxenfeldt, where he stated that individuals with higher probability of becoming unemployed or with low prospects for wage-employment tend to become self-employed[8].

Evidence exists that unemployed individuals are more likely to start their own business as the opportunity costs of self-employment are low. This is termed as the "Unemployment push" effect on self-employment; that reduces unemployment[9]. Similarly, "Unemployment negative" effect on self-employment is witnessed when unemployed people who may be less well-endowed in terms of human or entrepreneurial capital than employed people, have lesser prospects of starting a business, hence unemployment rises/increases.

Another effect called "Self-employment push" effect on employment i.e. higher levels of self- employment leading to a decrease in unemployment also comes into play. Not only do new entrepreneurs provide themselves with a job, they also hire employees e.g., previously unemployed workers[10], given that in a situation of

[6] ibid.
[7] Frank H. Knight, Risk, Uncertainty and Profit, (New York: Houghton Mifflin, 1921).
[8] A. Oxenfeldt, New Firms and Free Enterprise, (Washington, D.C.: American Council on Public Affairs, 1943).
[9] D.B. Audretsch, M.A.Carree, A.R.Thurik, "Does Entrepreneurship Reduce Unemployment", Tinbergen Institute Discussion Paper, TI 2001- 074/3, (2001): 2-3.
[10] David J. Storey, "The Birth of New Firms – Does Unemployment Matter? A Review of the Evidence", Small Business Economics, 3(3), (September 1991): 167-178.

unemployment, employment creation is enhanced as it is cheaper to hire new workers. The net effect here is that unemployment decreases[11].

As opposed to these effects, "Schumpeter effect" takes place, i.e. in the short-term self-employment may result in higher unemployment because the behavior of entrepreneurs in the economic landscape is likely to lead to increased unemployment through innovation and accelerated growth (Aghion and Bolton, 1997) and therefore unemployment increases.

The Self-employment theory on the other hand tries to theorize Self-employment as occupational/income choice and also aims at explaining the relationship between unemployment and new firm creation, which perhaps can be best described as a typical chicken-egg situation.

It is interesting to note that literature exits on both strands of the relationship, i.e. unemployment stimulates entrepreneurship, 'the Refugee effect', while on the other hand high levels of entrepreneurship reduces unemployment, the 'Schumpeter effect'. Taking a holistic view, the two relationships do not come out clearly and leave a certain degree of ambiguity. Empirical evidence exists to support that while unemployment leads to increased entrepreneurial activity, entrepreneurship leads to reduced unemployment[12]. In this paper, we only study the existence of the 'Refugee effect' in the context of Pakistan. In order to investigate the 'Schumpeter effect' and subsequent overall effect on the economy of the two opposing forces, complex datasets are required which I leave to be investigated in subsequent papers.

III - Theoretical Framework

In this paper, an attempt has been made to study the relationship between unemployment and entrepreneurship as embodied in self-employment. The theoretical framework is therefore built on the premise of viewing self-employment as the dependent variable, measured through changes in the independent variables of unemployment, literacy rate and wage rate. The choice of variables is based on the availability of data from the Federal Bureau of Statistics for the past 19 years. A simple linear regression model is tested using OLS and other statistical tests.

IV - Methodology

To provide a complete picture of the effects of unemployment on self-employment the following simple linear equation has been developed:

[11] Enrico Santarelli, "Entrepreneurship: Economics and Policy" (Lecture, Department of Economics, Università di Bologna, Bologna, 2009).

[12] D.B. Audretsch, M.A.Carree, A.R.Thurik, "Does Entrepreneurship Reduce Unemployment", Tinbergen Institute Discussion Paper, TI 2001- 074/3, (2001): 2-3.

SE = UE + LIT + WAGE
Where;
SE = Self Employment
UE = Unemployment
LIT = Literacy Rate
WAGE = Wage Rate

The choice of the exogenous variables is based upon the existing body of literature that supports claims of a relationship between unemployment and self employment. The literacy rate has been added to the equation to understand if literacy has a significant relationship with self-employment, as it is a basic indicator of human capital in the economy. Furthermore, wage rate has also been added as an exogenous variable that signifies the labour market. Therefore, the hypothesis being tested is:

Ho: There is no positive/negative relationship between self-employment and unemployment (b1=0)
H1: There is a positive/negative relationship between self-employment and unemployment (b1≠0)

Our equation for testing the hypothesis is:

SE = b1(UE) + b2(WAGE) + b3(Lit)

V - Analysis and Findings
Applying OLS technique for running the regression analysis, our equation is:

SE = 0.274 (UE) - 0.019 (WAGE) - 0.995(Lit)

Goodness of fit for this regression equation has been determined by the value of multiple coefficient of determination (R^2) which is as significant as 0.895. This statistic indicates that 89.5 percent of total variation in self employment (SE) is explained by unemployment (UE), wage rate (WAGE) and literacy rate (Lit) jointly. Such a goodness of fit provides substance to the findings of any estimated model as it indicates the degree with which sample regression line fits the data. Autocorrelation is the degree of similarity between a given time series and its lagged version over successive time intervals. Its presence is detected by using Durbin-Watson *d* statistic. The calculated value of d statistic is 0.550. Null Hypothesis of no positive autocorrelation is rejected since the calculated d statistic is greater than 0 and less than the critical d_L at 5% level of significance. Hence, there appears to be a positive autocorrelation.

Independent Variable (X)	Calculated *t* value
Unemployment (UE)	3.001
Wage Rate (WAGE)	-.218
Literacy Rate (Lit)	-11.149

As far as the basic question of this study is concerned, the null hypothesis of no relationship between self employment and unemployment is rejected as the calculated t value (3.001) of the corresponding coefficient (0.274) is greater than $\mathbf{t_{\alpha/2,\ df}}$ **(2.101)** where α=0.05 and df = 18. Therefore, it can be stated that unemployment has a significant impact on self employment. Moreover positive value of b1 substantiates the notion that unemployment leads to self employment.

In addition to looking at our primary independent variable of interest i.e. unemployment, relationship between other independent variables and self employment also needs to be examined. The coefficient of wage rate (WAGE) is too small to indicate any reasonable significance. The coefficient of literacy rate (Lit) shows an almost perfectly negative relationship with self employment. Moreover, significance of this coefficient in the multiple linear regression model is also established as |t|, absolute value of calculated t statistic (-11.149) , $> t_{\alpha/2\ ,\ df}$ (2.101).

VI - Conclusion

Since the model used in this paper sheds light on one strand of the relationship only, the analysis of data shows that a positive relationship exists between self-employment and unemployment i.e. unemployment results in entrepreneurship and hence validates the presence of “the Refugee effect”.

Meanwhile, this paper highlights an important area of public policy that over the years has generated considerable debate. Policy makers have turned towards entrepreneurship as a preferred medium to stimulate growth in the economy that inadvertently reduces unemployment.

A body of literature suggests that policy support can reduce unemployment by way of stimulating entrepreneurship, driving the unemployed towards self-employment through promotional and support measures. However, this does not necessarily stimulate economic growth. As opposed to the aforesaid, literature also exists, stating that policies must focus on economic growth, inducing high-growth entrepreneurship, which will mitigate unemployment eventually. Nevertheless the ambiguity of the situation requires further investigation.

In the context of Pakistan, the relationship between the two, self-employment and unemployment is quite evident. However, the direction in terms of the affects of one upon the other and the affect on the economy on the whole is not clear. Over all the relationship between self-employment and unemployment is fraught with ambiguity and complexity, which makes it challenging for policy makers to design policies for entrepreneurship promotion and reducing unemployment.

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Annex 1

Variables Entered/Removed (b)

Model	Variables Entered	Variables Removed	Method					
1	Lit, WAGE, UE(a)	.	Enter					

a All requested variables entered.
b Dependent Variable: SE

Model Summary (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson			
1	.946(a)	.895	.874	1.15170	.550			

a Predictors: (Constant), Lit, WAGE, UE
b Dependent Variable: SE

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.		
1	Regression	169.882	3	56.627	42.692	.000(a)		
	Residual	19.896	15	1.326				
	Total	189.778	18					

a Predictors: (Constant), Lit, WAGE, UE
b Dependent Variable: SE

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF	B	Std. Error
1	(Constant)	55.961	2.025		27.640	.000		
	UE	.720	.240	.274	3.001	.009	.840	1.191
	WAGE	-.004	.019	-.019	-.218	.831	.931	1.074
	Lit	-.449	.040	-.995	-11.149	.000	.878	1.139

a Dependent Variable: SE

Collinearity Diagnostics(a)

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
		(Constant)	UE	WAGE	Lit	(Constant)	UE	
1	1	3.389	1.000	.00	.00	.03	.00	
	2	.581	2.416	.00	.00	.88	.00	
	3	.020	13.040	.11	.98	.09	.21	
	4	.010	17.972	.89	.01	.00	.79	

a Dependent Variable: SE

Residuals Statistics (a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	33.9683	43.9023	38.9353	3.07212	19
Residual	-1.53472	1.80314	.00000	1.05135	19
Std. Predicted Value	-1.617	1.617	.000	1.000	19
Std. Residual	-1.333	1.566	.000	.913	19

aDependent Variable: SE