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ANALYZING THE VALIDITY OF THE ABRAMS CURVE FOR PAKISTAN

1 Introduction

Unemployment and government size are two persistent economic challenges faced by countries like Pakistan. The Abrams Curve usually examines the relationship between inflation and unemployment, extends traditional macroeconomic theories by incorporating structural and supply-side factors. It has significantly influenced economic policy discussions globally (Abrams, 1980). However, most of the studies on the Abrams Curve have focused on developed countries, where the connection between unemployment and Government size is more superficial. Its application and relevance to developing economies like Pakistan, considered by unique economic structures and complexities, remain underexplored.

The relation between inflation and unemployment is significantly more complicated and requires a special investigation. Due to higher inflation rate and volatile unemployment situation in particular, this issue is more problematic in case of Pakistan than in other countries.

According to State Bank of Pakistan, (2023) Pakistan has witnessed inflationary rates of between 6% — 9.6% and unemployment rates of between 6% —8% of the past decade. These numbers illustrate the difficult time that is facing the government where measures to curb inflation may shift with those for reducing unemployment. This challenge is made worse by how there is influence from external economic forces and internal structural issues. So, it is required to know the working mechanism of the Abrams Curve in the context of Pakistan's economic structure so that good polices can be formulated.

According to Yasmin and Qayyum (2018), there exists a relationship between these economic crises till today are still a concern for Pakistan policymakers; further, aimed efforts should be adopted to solve unemployment and inflation issues simultaneously.

1.1 Background

In the case of Pakistan, there are factors that allow paying special attention to this relationship because economic characteristics vary differently from those of developed countries. The large number of people working in the informal economy mainly affects employment and the level of inflation; the informal economy in the country contributes approximately 35% of the GDP (Pakistan Bureau of Statistics, 2022). Furthermore, continued policy changes, external sector

instabilities and structural economic characteristics have posited a unique economic model (Mansur & Basher, 2016).

The relationship between inflation and unemployment rate has been the subject of study by economists since Phillips (1958) established the existence of this trade-off in the UK. However, subsequent research by Friedman (1968) and Phelps (1967) challenged the stability of this relationship, leading to the development of the expectations-augmented Phillips curve and later, the Abrams curve. The Abrams curve specifically considers the role of supply-side factors and structural characteristics of developing economies, making it particularly relevant for Pakistan's context (Gordon, 2013).

Khan and Hassan (2021), examined the different aspects of inflation in Pakistan. While (Ahmed et al. 2020) have focused on unemployment trends. Though, there remains a noticeable gap in understanding how these variables correlate within Pakistan's specific economic situation. This gap becomes particularly significant given the country's recurring macroeconomic challenges and its ongoing engagement with international financial institutions (IMF, 2023).

1.2 Research Gaps:

While the Abrams Curve has been widely studied in developed economies, but there is a noticeable lack of research on its relevance in developing countries like Pakistan. The few studies that looked at Pakistan's Phillips curve but no one has tested the Abram’s curve in Pakistan. This gap highlights the need to investigate whether the Abrams Curve applies to Pakistan.

1.3 Significance of the study:

This study will be significant as it examines the applications of the Abrams Curve in Pakistan, and it will provide a deep insight into the relationship between unemployment and independent variables (Inflation, GDP, literacy rate, Female labour force and Female Labour Force). By understanding this dynamic, the research can guide policymakers in designing targeted strategies to reduce unemployment while addressing inequality

1.4 Research Questions

- How does the inflation rate affect the unemployment rate in Pakistan?
- What is the impact of GDP growth on unemployment in Pakistan?

- How does the literacy rate influence unemployment in Pakistan?
- Is the Abrams Curve valid in explaining the relationship between these economic factors and unemployment in Pakistan?

1.5 Research Objectives

The objectives of the study are to:

- Analyze the impact of economic indicators on the unemployment rate
- Find the impact of inflation on the unemployment rate
- Determine the impact of female labor force participation on the Abrams Curve for Pakistan
- Evaluate the validity of the Abram's curve in explaining the relation between economic indicators and unemployment in Pakistan.

2 Methodology:

2.1 Data collection:

This study will use a secondary time series data from 1991 – 2023 on inflation, unemployment, GDP, literacy rate, and Female Labour Force. The data will be extracted from a reliable source such as the State Bank of Pakistan, the Pakistan Bureau of Statistics, and international organizations like the World Bank and IMF.

2.2 Econometric Models:

The analysis will apply different statistical and econometric techniques like, Descriptive Analysis, Exploratory data analysis (EDA) will be performed for the detection of autocorrelation, hertoscedasticity and multicollinearity after that Correlation and Regression analysis will be applied. In econometric model is:

$$UE_t = \beta_0 + \beta_1 Inf_t + \beta_2 GDP_t + \beta_3 LR_t + \beta_4 FL_t + \varepsilon_t \quad \dots \quad (1)$$

Where

UE = Unemployment

Inf = Inflation rate

GDP = Gross Domestic product

LR = Literacy rate

FL= Female labour

$\beta_i \forall i = 0\ to\ 4$ are the coefficients of the regression model (1)

ε_t= error term

While evaluating weather the Abrams curve is valid in Pakistan or not. Firstly, some test will be performed such as, to test the stationarity of the data, Augmented Dicky-Fuller (ADF) and Philips-peron (PP) unit root test will be employed. After examining the unit root test, Autoregressive Distributed Lag model will be used and Granger-causality test will also be applied. The details of each econometric model are given below:

2.3 Unit Root test:

Time series data usually not stationary, so before analysis assumption of stationarity must be fulfilled. It can be stationary at first or second ordered difference. In this study, the stationarity of the data will be tested by using ADF and PP unit root test. The unit root test is estimated under different conditions (Gujrati, 2002):

The model for first ordered difference without intercept is

$$\Delta Y_t = \delta Y_{t-1} + \varepsilon_t$$

The model for first ordered difference with intercept is

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \varepsilon_t$$

If the error terms having a problem of autocorrelation, then the following models will be used (Gujrati, 2002)

The model for first ordered difference without intercept is

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i Y_{i-1} + \varepsilon_t$$

The model for first ordered difference with intercept is

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i Y_{i-1} + \varepsilon_t$$

Where the error term is ε_t, and $Y_{t-1} = (Y_{t-1} - Y_{t-2}), Y_{t-3} = (Y_{t-3} - Y_{t-4}), \ldots$ and so on. After applying the above tests, Philps and Peron (1988) test will also be conducted for the conformity of the data regarding stationarity.

The models for PP tests are as follows:

Intercept-less model:

$$Y_t = \delta Y_{t-1} + \varepsilon_t$$

With intercept model:

$$Y_t = \beta_1 + \delta Y_{t-1} + \varepsilon_t$$

2.4 Autoregressive Distributed Lag (ARDL) model:

After checking the problem of stationarity by performing the above-mentioned test, then ARDL model will be utilized for the cointegration test The Autoregressive Distributed Lag (ARDL) model is suitable for analyzing relationships between variables that may be integrated of different orders $\big(I(0)\ or\ I(1)\big)$ and helps assess both short-term and long-term. By considering the unemployment rate as dependent variable (Y_t) and inflation rate, GDP, literacy rate, and Female Labour Force as predictors (X_1, X_2, X_3, X_4), the ARDL model can be written as:

$$Y_t = \beta_0 + \sum_{i=1}^{p} \alpha_i Y_{t-i} + \sum_{j=0}^{q_1} \beta_1^j X_{1,t-j} + \sum_{k=0}^{q_2} \beta_2^k X_{2,t-k} + \sum_{l=0}^{q_3} \beta_3^l X_{3,t-l} + \sum_{m=0}^{q_4} \beta_4^m X_{4,t-m} + \epsilon_t$$

Where

$Y_t = Unecomployment\ rate, Y_{t-i} = Lagged\ Dependent\ Variable,$

$X_{1,t-j}, X_{2,t-k}, X_{3,t-l}, X_{4,t-m},$ are the lagged values of the independent variables (inflation, GDP, literacy rate, Female labour force), $\alpha_i, \beta_1^j, \beta_2^k, \beta_3^l, \beta_4^m$ are the coefficient of the model, and $\epsilon_t$shows the error term. The ARDL model will utilize to calculates the error correction term (ECT) after ensuring cointegration exists for estimating the relationship between unemployment and the predictors.

After the ARDL analysis, this study will also perform a Granger causality test. After establishing that there is a relationship between unemployment and factors like inflation, GDP, literacy rate, and government spending, study will use the Granger causality test to explore the directions of the variables. This method is reliable with previous econometric research that highlights the importance of analyzing cause-and-effect relationships in time-series data (Granger, 1969). This approach will give the deeper understandings and valuable for policy makers.

After conducting the Granger causality test, the CUSUM (Cumulative Sum) test will be applied to measure the stability of the model parameters at selected time period (Lee et al., 2003). The CUSUM test is particularly useful for examining whether the relationships between unemployment and its independent variables (inflation, GDP, literacy rate, and Female Labour Force) remain stable or suffer significant structural changes over time. By using the CUSUM test as part of the econometric methodology enhances the reliability of the findings and will provide deeper insights

2.5 Limitations

After outlining the methods, it is essential to recognize the limitations. This study has certain limitations along with its significance that need to be acknowledged. The Abrams Curve is influenced by various socio-economic and institutional factors, some of which may not be fully captured in the quantitative analysis. Factors like the informal economy, regional disparities, and non-economic influences such as political stability may also play a role in shaping the relationship between unemployment and income inequality but fall beyond the direct scope of this study. The econometric techniques like ARDL and Granger causality provide valuable insights, they are limited by assumptions about linearity and stationarity, which might not fully account for the complexities of real-world economic dynamics.

3 Outline of the Dissertation

The dissertation is structured into the following chapters, each aimed at systematically addressing the research objectives and questions:

1. **Introduction**

   This chapter will present a clear description of the study with particular focus on the research

problem, objectives and the relevance of the study. It will introduce the curve Abrams, its importance in the causes of unemployment and income disparity in Pakistan.

2. **Literature Review**

This section will make a brief analysis of prior literature on the Abrams Curve and topics connected to it. It will comprise both international studies and then look at the unique niches pertinent to developing economies including Pakistan, which will form the framework for the investigation.

3. **Theoretical Framework and Hypotheses Development**

This chapter will outline theoretical framework of the study, focusing on the Abrams curve and its expected shifts in Pakistan. It will also outline major variables to be used and formulate hypotheses that may be tested depending on the objectives of the study.

4. **Research Methodology**

The method of the study, sources of data, variables and analytical techniques that will be used will be described in this chapter. Specific econometric models like ARDL and Granger causality will also be explained, and why these methods were used will be explained.

5. **Data Analysis and Results**

This section argues that section will present the findings from the empirical analysis. It will contain, descriptive analysis, results of regression analysis and explanation of co relations between employment, inflation, GDP per capita, literacy rate and Female Labour Force.

6. **Discussion**

This chapter will compare my findings with other studies done across the globe on the Abrams Curve, the similarities and differences. This paper will also consider the policy implications of the analyses and findings for Pakistan economy.

7. **Conclusion and Recommendations**

The last chapter will therefore synthesis the major findings, respond to research questions and has policy implications. It will also bring out further research areas that can be exploited in relation to the unemployment and income inequality perspective.

4 Tentative Timetable:

Week 1	Conduct a thorough study of the literature and collect relevant data from reliable sources.
Week 2	Perform data analysis, including preprocessing, cleaning, and preliminary exploration.
Week 3	Apply econometric models such as ARDL, Granger causality tests, and CUSUM tests; start drafting the write-up of results.
Week 4	Complete data analysis and compare conclusions drawn to the goals formulated at the beginning of the study. Composing a preview of general method, outlines of the findings and discussions, and conclusions to be made.

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