Quantile Heteronormal of Minimum Wage Pricing in Nigeria

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***Abstract*: - It has been clearly observed that very few countries vividly perceive increasing Gross Domestic Product (GDP) of their economy has very positive relationship with development of human capital. While increase in wage can act as boost to development of human capital, the return on such investment by government is done with suspicion. Irreversible increase in minimum wage can take economy in either direction. The recursivity of contributing factors to increase in minimum wage are computed and over all outcomes is given as a probability distribution using quantile and**

This paper used the concept of metric space and linear quantile regression of GDP on increase in minimum wage growth and inflation. Economic growth in Euclidean space is a continuous function of real value function of a real variable whose mapping can take any form.

I. INTRODUCTION

Let (X,μ) be a compact metric space X endowed with a probability measure μ and let f be a continuous self map of X. The measure μ is f-invariant. There exist infinitely many invariant open sets with same constant empirical function.

For every continuous self map f of a compact metric space X, there exist invariant probability measures such that

$$\lim_{ò\to 0}\frac{\log\log\varepsilon_{\mu}(f)(ò)}{-\log ò}=\frac{\log\log\varepsilon_{\mu}\ (f)(ò)}{-\log ò} \quad (1)$$

Let X be a totally bounded space and let

A subset $F\subset X$ is called

1. ò-dense if X is covered by the closed balls of radius ò and centres F
2. ò - separated if the distance between any two points of F is greater than ò.

$$\left|F-ò\right|>0, F+ò>F>F-ò$$

A quasi-metric set on set X we mean a non-negative real value function d defined on X x X such that all $x,y,z\in X$

(i) $d(x,y)=d(y,x)=0\Leftrightarrow x=y$

(ii) $d(x,y)\le d(x,z)+d(x,y)$

Each quasi-metric *d* on X generates a topology on X which has a base.

We assume for the GDP growth, there is a real function which generates the sequence M for any positive sequence $M_n\to\infty$ and $ò_n=\frac{M_n}{\sqrt{n}}$ there exist some constant J> 0 such that $\pi(d_n(Q,Q_0)>Jò_n\,|\,Y_{1:n})\to 0$ in probability [P]........... (2)

We compute the quartile of GDP growth as given below
Lower Quartile = -0.057836
Median = 4.2792773
Upper quartile = 6.88140 and the process was repeated for both inflation and minimum wage in dollars.

Suppose for a given $0<\tau<1$, the J^{th} quantile function for Y_{in} is modelled as

$$Q_{n\tau}(X_n)=X_n{}^{T}\beta_n. \quad \text{...................... .... (3)}$$

Suppose the quantile function for any covariate value of X_n is obtained at $\beta_n=\beta_{0n}$. Let π_n be a prior on β_n and P_n = dimensionality of β_n and let $P_n\le n^{\frac{1}{2}-\eta}$ for some $0<\eta<\frac{1}{2}$ we compute the maximum likelihood of $Q_\tau(X_n)$ in finite dimensional linear quantile, for a given $0<\tau<1$, we take

$$G=\{Q_\tau : Q_{\tau(x)}=X^T\beta, \beta\ni\square^{\,d}\}$$

Suppose that the true J^{th} quantile function is given by $Q^{(1)}(x)=X^T\beta_0$ .... (4)

$$Q_\tau{}^{(1)},Q_\tau{}^{(2)}=(\beta_1-\beta_2)^T\left[\frac{1}{n}\sum_{i=1}^{n}X_iX^T{}_i\right](\beta_1-\beta_2)$$

.... (5)

II. METHODOLOGY

We are comparing the normal distribution effect on both G.D.P growth and the increments in minimum wage in Nigeria to be specific. The effect of minimum wage on G.D.P follows the path of normal distribution and it can never be ascertained from the *ex ante* constrains.

It is possible to map economic growth to positive change in G.D.P and its relationship with other important variables when we assume minimum wage is normally distributed. The method of Difference in Differences (DID) was used to investigate the hidden normal distribution effect in pricing of minimum wage. Considering several endogenous variables, clearly show that GDP follows GARCH model without computing any innovation for distributed lag. Minimum wage is not randomly price but the effect follows similar pattern since the endogenous variables which create room for wage pricing arises from same conditions. A quantile effect proposes a linear regression between GDP and minimum wage.

III. COVARIATE ANALYSES

Labour market imperfection warrants sequences of intervention, it is not self regulating market in generic sense as perceived. There is a subset of labour market which is quite self regulating but it can not apply to holistic sense. Market intervention and regulation results in the irregular transition pattern which cannot be easily detected in minimum wage pricing. The following variables are not included in the computation of the matrix relationship.

Unemployment insurance

Basic income or negative income

Principle of Lagged income

Income usually falls behind cost of living as indicated. In Nigeria the cost of living stands at N43,000.00 while minimum wage is N18,000. We assume savings and consumption as the response to increase in income. Lagged income determination model can help in the determination of minimum wage if all variables are complete. Minimum wage is a counter measure, real economic effect that influences labour pricing can hardly be interfered with. A free market economy has self regulating framework which highlight the efficiency of pricing mechanism. A skewed pricing might represent subset of an economy which does not exhibit attribute of free market economy as thus, we can assume a mix market for a finer model to describe such condition.

Market structure on its own does not guarantee efficient pricing but, the smallest unit of price that will change the consumption function of households will likely alter the prices to correspond with lagged income model.

Labour always pay for future value regardless of present conditions. Such future price cannot be determined with quantile effect. They are conditions which determine the price structure and are largely probabilistic with wide margin of error. The entries below represent quartiles of minimum wage, G.D.P growth and inflation, normalized from 1961-2016.

$$\begin{pmatrix} \mathbf{48.7875} & 0.64437 & 7.275 \\ \mathbf{137.04} & 4.76483 & 11.55 \\ \mathbf{170.3325} & 7.23847 & 17.825 \end{pmatrix} = X$$

$$\begin{pmatrix} 501733.42 & 1917.356 & 4973.92 \\ 1917.35 & 75.514 & 188.75 \\ 4973.91 & 188.747 & 504.06 \end{pmatrix} = XX^T$$

$$\begin{pmatrix} -0.354 \\ 6.666 \\ 1 \end{pmatrix} = v_{1,} \begin{pmatrix} -0.093 \\ -0.155 \\ 1 \end{pmatrix} = v_2, \begin{pmatrix} 10.085 \\ 0.385 \\ 1 \end{pmatrix} = v_3$$

These are the eigenvectors of matrix X

$\lambda_1 = 2.040, \lambda_2 = 11.075, \lambda_3 = 50739.01$ are the eigenvalues of matrix X

The matrix normal distribution is also called the matrix Gaussian, matrix-variates normal, or matrix-variate Gaussian distribution. It is a generalization of the multivariate normal distribution to matrix-valued random variables.

A multivariate Gaussian copula can be approximated by numerical integration as follows

$$c_R^{Ga}(u) = \frac{1}{\sqrt{\det X}} \exp\left(-\frac{1}{2} \begin{pmatrix} \Phi^{-1}(u_1) \\ . \\ . \\ \Phi^{-1}(u_d) \end{pmatrix}^T .(X^{-1} - I) \begin{pmatrix} \Phi^{-1}(u_1) \\ . \\ . \\ \Phi^{-1}(u_d) \end{pmatrix} \right)$$

Where I is the identity matrix. Tracey-Widom distribution can be used to obtain the distribution of the covariate matrix which describes the microscopic effect of each variable in detail than a normal distribution.

$$F_2(s) = \lim_{n\to\infty} prob\left(\left(\lambda_{\max} - \sqrt{2n}\right)\left(\sqrt{2}\right) n^{\frac{1}{6}} \le s \right)$$

Where $\lambda_{\max}$ is the largest Eigenvalues of the covariate matrix, the shift $\sqrt{2n}$ is used to keep the mean at 0.

$$0.03e^{2.5275} = P(A), \quad P(A) = 0.3757$$

IV. CONCLUSION

Mutilcollinearity in econometric analyses is not sufficient to explain how minimum wage, G.D.P and inflation are related in the long run. They are other parameters which are needed to compute for non-linear regression for the system X as indicated. It is obvious that combination of quartiles gives the sum of regression logistic model for the three variables. The area under curve given as 0.3757 indicates, the variables are more likely to correlate 37.57 percent of the time. Hence, minimum wage should be negotiated every 3.757 years or about 4 years. Concept of basic income (or negative income) does not apply in Nigeria; hence improving welfares will develop human capital and improve labour pricing in Nigeria. Minimum wage seems to have linear relationship with time but it does follows normal distribution in effect and it is random.

- $\lambda1 \approx -2.319$
- $\lambda2 \approx 0.196$
- $\lambda3 \approx 24.655$

Lower quartile (xL): 0.64437

Median (xm): 4.76483

Upper quartile (xU): 7.23847 GDP

Assumption 1 (Control Function) (ϙ, η) ⊥⊥ Z, η is a continuously distributed random variable with strictly increasing CDF on the support of η, and t 7→ h(Z, t) is strictly increasing a.s. This assumption allows for endogeneity between X and ϙ in the selected population with C > 0, since in general ϙ and η are dependent, i.e., ϙ⊥⊥X | C > 0. The monotonicity assumption allows a non-monotonic relationship between ϙ and C because ϙ and η are allowed to be non-monotonically dependent.

Lower quartile (x_L): 48.7875

Median (x_m): 137.04

Upper quartile (x_U): 170.3325

1. $\lambda1 \approx 2.040$
2. $\lambda2 \approx 11.075$
3. $\lambda3 \approx 50739.801$

where denotes the largest eigenvalue of the random matrix. The shift by is used to keep the distributions centered at 0. The multiplication by is used because the standard deviation of the distributions scales as

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