The impact of augmentation wages public based on the purchasing power of households in Algeria

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Abstract
Wage policies are at the heart of the problem of economic development. While they undoubtedly led contribute to the development of productivity (a prerequisite for economic growth) to ensure fairness (prerequisite for stable and strengthen social cohesion). In Algeria, during the period of central planning of the economy the situation that prevailed was that of a low level of wages, of course, but with a high thanks to the support prices for commodities purchasing power. situation has totally changed against the reforms that were initiated from the early 1990s and who, remember again, gradually liberalized prices without wages kept pace as it has already been demonstrated, these reforms have led to wage "moderation" has disconnected the evolution of price .

The Algeria experienced practically throughout the 1990s, the collapse of real wages, which fell to an annual rate of 10% during the years 1990/1993. While prices increased, workers' incomes stagnated in nominal terms and declined in real terms. The disposable income of households, meanwhile, declined in real terms by -20%. Final consumption of households' course also decreased from 59.4% of national income in 1995 to 41.3% in Algeria 2004. the purchasing power of Algerian dinar in 1980 was higher than the same dinar today, it is difficult to say a priori whether an individual of that era had a higher standard of living to that of another who earns more today. The public sector is a non-profit sector, by excellence, the services are provided free to the community, so there is more. Algeria is one of the countries trying to improve the standard of living of the family, and the economic situation which is based once again the use of public input treasure end to improve the power purchase of employers .The movement of strikes and unions provides a significant increase in wages, increase the reach of the public where the largest increase, knowing that doctors, police officers, municipal guard who the largest increases, this increase in wages cause a significant increase in inflation, especially if the gross domestic product is also increasing. In our work we want to know what is the effect of changes in wages on the purchasing power of households, which we sum interested in salaries

Introduction

In our study we want to know what is the effect of wage increases on the purchasing power of households: which we sum interested in salaries. This can lead us to ask the following question: What is the impact of wage increases on the public's purchasing power in Algeria? Which leads us to meet us on the issues under saving: the evolution of purchasing and wages Algerian officials' power, the relationship between wage increases and changes in the purchasing power of households, to address this issue, we begin by explaining the concept of purchasing power, wages for example we are interested in the comparison between changes in income and independent of changes in compensation of employees.

Modeling that will help us explain the relationship between the two variable purchasing power (PA), and the salary mass (MS)(as an estimator of salary) is the method of use (VAR) (Vector Auto - Regressive), based on the hypothesis says that the evolution of the economy is well approximated by the description of the dynamic behavior of a vector of variables N, linearly dependent on the past, without other restrictions specified a priori as the choice of variables and order delays to remember in the autoregressive formulation.

Identify, Research And Collect Idea

Presentation of variables:

The first variable is the purchasing power *(PV)* that can be defined as the ability to purchase goods and services for a fixed income. But it is also a given amount of money taken from an income, giving the ability to buy has a given amount of goods and services, which is often reduced to a basket of goods in order to ' verify ' purchasing power [9]. The evolution of purchasing power is linked to prices and wages. If prices are rising and wages are constant purchasing power decreases.

Conversely, purchasing power increases when wage growth is higher than the price. Computing its evolution over a given period is based on the relationship between changes in income and changes in value of the price index in economic aggregates, its evolution over a given period (eg one year) calculated using the formula [2]:

VPA = V (RV / IP) - V (IPV)
VPA: Variation of Power Purchasing
V (RV / IP): Change (In Income Value / Price Index)
V (IPV): Change in Price Index in value.

On the second variable payroll staff *(MS)* is based on total wages. The employee may be a permanant or a non-permanent employee, the employee is a permanant person employed on a permanent basis who works for a public or private employer and receives remuneration in return in the form of wages, salaries, fees, gratuities, piecework or payment in kind, members of the armed forces do not perform compulsory military service are also included [9]. But for a non- permanent employee provided with a temporary job; A job may be considered temporary if it is agreed between the employer and employee that the termination of employment is determined by a specific date objective conditions such as the completion of a task or the return of another employee who has been temporarily replaced [3] [9].

In the case of a work contract of limited duration, the terms of termination are generally mentioned therein. Belong to these categories : people with seasonal employment, the persons engaged by an agency or employment exchange and hired to a third party for the performance of a "mission work» (unless there is a contract written work for an indefinite period with the agency or employment agency) , people with specific training contracts . If there is no objective criteria terminating employment or contract work it should be considered permanent [4].

The objective of study is to determine the impact of wage increases of public *(MS)* on Purchasing Power *(PA)* in Algeria following the method of vector autoregressif *(VAR)*. The choice of variables has been compared with the same purpose of the study; however, we took the payroll staff, so obviously the chosen variables (in terms of billions of dinars) are: payroll staff *(MS)* and purchasing power *(PA)*. The study period is 1980-2010 and the data derived from the basis of statistical data of the Ministry of Finance of Algeria, extracted from the General Directorate of Forecasting and Some Policy *(PPB)* [10].

A. Definition of VAR models

A group of temporal random variables is generated by a *(VAR)* model where each variable is a linear function of its own past values and past other variables in the group, to which is added random shock white noise typical values. A stochastic process X multi varied with n components is generated by a *VAR (P)* if there exists a vector, matrix ϕ_i type *(nXn)* and a stochastic process multi varied μ, where each component is a $X_t = \mu + \sum_{i=1}^{p} \phi_i X_{t-i} + U_t$ white noise [10]:

B. General representation

VAR process variables N and p lags noted VAR (p) can be written in matrix form [8]:

$$X_t = \phi_0 + \phi_1 X_{t-1} + \cdots + \phi_p X_{t-p} + \varepsilon_t$$

$$X_t = \begin{pmatrix} x_{1_t} \\ \cdot \\ \cdot \\ \cdot \\ x_{N_t} \end{pmatrix} \quad \varepsilon_t = \begin{pmatrix} \varepsilon_{1_t} \\ \cdot \\ \cdot \\ \cdot \\ \varepsilon_{N_t} \end{pmatrix} \quad \phi_0 = \begin{pmatrix} a_1^0 \\ \cdot \\ \cdot \\ \cdot \\ a_N^0 \end{pmatrix} \quad \phi_p = \begin{pmatrix} a_{1p}^1 & a_{1p}^2 & \cdot & \cdot & \cdot & a_{1p}^N \\ \cdot & \cdot & & & & \cdot \\ \cdot & \cdot & & & & \cdot \\ \cdot & \cdot & & & & \cdot \\ a_{Np}^1 & a_{Np}^2 & \cdot & \cdot & \cdot & a_{Np}^N \end{pmatrix}$$

Where ε_t is a white noise with Σ_ε variance-covariance matrix, Can also be written [1]:

$$\left(I - \phi_1 L - \phi_2 L^2 - \cdots - \phi_P L^P\right) X_t = \phi_0 + \varepsilon_t \qquad \text{With:} \quad \phi(L) = I - \sum_{i=1}^{p} \phi_i L^i$$

$$\text{soit :} \quad \phi(L) X_t = \phi_0 + \varepsilon_t$$

C. Co intégration test

Co integration is a concept of long-term relationship between several non-stationary variables, it allows you to define one or more common stochastic trends i.e. it is to find a static long-term relationship between the variables studied. It is possible that two different series are short-term, but evolve in an identical manner proportional or long-term [12].Conditions for the existence of cointegration relationship variables that are non-stationary and the same order of integration (d). Stationarity is an important step in the whole of a dynamic model analysis.*(VAR)* models used to analyze the effects of economic policy, that through the analysis of random shocks (innovations) and the variance decomposition of the error. However, this analysis is performed, assuming the immutability of the economic environment [11].

From estimate Model (VAR) According to the analysis results of the two series *(DDMS)* and *(TDPA)* developed by statistical software *(Eviews.7) (Tab.1)* was extracted with the following model *(VAR)* [2]:

$$\begin{pmatrix} \text{TDPA} \\ \text{DDMS} \end{pmatrix} = \begin{pmatrix} -0{,}05 & 0{,}23 & -0{,}02 & -0{,}02 \\ 13{,}03 & -5{,}41 & -0{,}57 & -0{,}41 \end{pmatrix} \times \begin{pmatrix} \text{TDPA}(-1) \\ \text{TDPA}(-2) \\ \text{DDMS}(-1) \\ \text{DDMS}(-2) \end{pmatrix}$$

First, we must test the significance of each coefficient (n> 30), which is based on the normal distribution. In our model t -stat is displayed between brackets. If | t -stat | < 1.96 we accept H_0: the coefficient is not significantly different from 0. If | t -stat | > 1.96 we accept H_1: the coefficient is significantly different from 0.

For the stationary errors, it means that the peaks *(Fig. 1)* are within the confidence interval, so it confirms the stationary errors.

Test for normality of residuals:

H_0: the residuals follow a normal distribution,
H_1: residues do not follow the normal distribution

After *(Tab.2)* we found the probability corresponds to *Jarque -Bera* equal to *0.0805*, it is greater than *0.05* so it accepts (H_0: residues are normally distributed)

The variance of the prediction error to a horizon (1 to 15) as a function of the variance of the error attributed to variable is written. The variance decomposition of the series *(TDPA)* indicates that the error variance of the forecast purchasing power is due to its own *83.60 %* and *16.93 %* innovations to the payroll , it is concluded so that the purchasing power has been largely determining the variance of the forecast error itself *(Tab.3)*, decomposition of the variance of the series *(DDMS)* indicates that the variance forecast errors of the payroll is due to its own *67.91 %* and *32.09 %* innovations that purchasing power , so it is concluded that the payroll had a good part of the determination of the variance error itself *(Tab.4)* .The objective of the analysis pulse is to appear the impact of a shock on the global variable model since it ' there is a dynamic structure in the composition of *(VAR)* model , is represent the effect of an impact of an innovation on other variables such as the shock of a variable is transmitted to other variables [5] [6] .

We note from the second year *(Fig. 3)* the appearance of a shock on the wage mass purchasing power a decrease in the volume of payroll generates a decrease in the level of power purchase.

for Algeria , when we talk about increasing nominal wage leads to an increase in the purchasing power it makes sense but if we talk about the real wage that is linked to price indices consumption *(IPC)* is not logical that the increase in wages is the presence of increased *CPI* results in a decrease of nival purchasing power) [7].

Conclusions

The purpose of our study is how to determine the effect of the wage increase the public on the nival purchasing power of Algerian households. The results obtained from statistical analysis of the *VAR model (2)* to develop evidence that Algeria wage increases do not cause an increase in the nival purchasing power because wage variation month variation Indices of consumer Price *(CPI)* [3].

If we take the example of the period (2008 - 2010), this time to record a significant increase in the salaries of civil servants but parallel Index The consumer price record an increase *(4.85%)*, which implies a decrease *(-1.30%)* on purchasing power.

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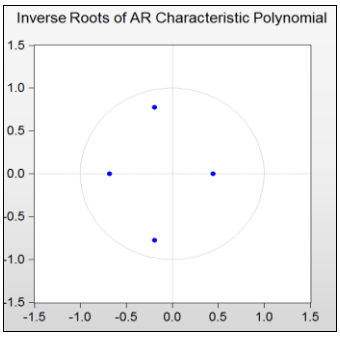
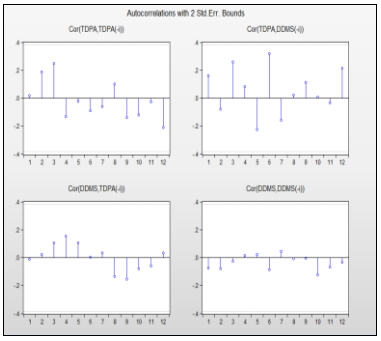
APPENDICES

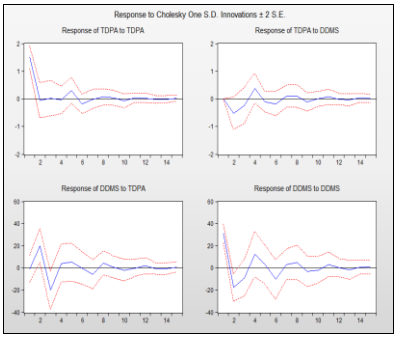
(Fig.1): inverse roots of AR



(Fig.2): residual correlogramme



(Fig.3): Impulse response (TDPA/DDMS)



(Tab.1) : VAR estimation

Vector Autoregression Estimates
Date: 05/30/13 Time: 15:28
Sample (adjusted): 1984 2010
Included observations: 27 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	TDPA	DDMS
TDPA(-1)	-0.047721	13.02969
	(0.20022)	(4.14491)
	[-0.23835]	[3.14354]
TDPA(-2)	0.229629	-5.413081
	(0.23315)	(4.82664)
	[0.98492]	[-1.12150]
DDMS(-1)	-0.016996	-0.574301
	(0.00900)	(0.18639)
	[-1.88781]	[-3.08123]
DDMS(-2)	-0.018360	-0.405802
	(0.01095)	(0.22661)
	[-1.67735]	[-1.79076]
R-squared	0.160848	0.563037
Adj. R-squared	0.051394	0.506042
Sum sq. resids	52.27498	22404.26
S.E. equation	1.507589	31.21054
F-statistic	1.469546	9.878682
Log likelihood	-47.23053	-129.0471
Akaike AIC	3.794854	9.855343
Schwarz SC	3.986830	10.04732
Mean dependent	-0.054841	4.289306
S.D. dependent	1.547890	44.40750
Determinant resid covariance (dof adj.)		2212.573
Determinant resid covariance		1605.557
Log likelihood		-176.2692
Akaike information criterion		13.64957
Schwarz criterion		14.03352

(Tab.2) : residual Normality test

VAR Residual Normality Tests
Orthogonalization: Residual Correlation (Doornik-Hansen)
Null Hypothesis: residuals are multivariate normal
Date: 05/30/13 Time: 17:17
Sample: 1980 2010
Included observations: 27

Component	Skewness	Chi-sq	df	Prob.
1	0.989835	5.083976	1	0.0241
2	0.711646	2.861904	1	0.0907
Joint		7.945881	2	0.0188

Component	Kurtosis	Chi-sq	df	Prob.
1	4.311661	0.155622	1	0.6932
2	3.548700	0.219356	1	0.6395
Joint		0.374978	2	0.8290

Component	Jarque-Bera	df	Prob.
1	1.239577	2	0.0728
2	2.238921	2	0.2142
Joint	3.478498	4	0.0805

(Tab.3) : variance decomposition of TDPA

Variance Decomposition of TDPA:

Period	S.E.	TDPA	DDMS
1	1.507589	100.0000	0.000000
2	1.599215	89.00410	10.99590
3	1.617718	86.99792	13.00208
4	1.661468	82.53733	17.46267
5	1.693620	82.75259	17.24741
6	1.713744	82.00582	17.99418
7	1.716818	81.71548	18.28452
8	1.720512	81.51472	18.48528
9	1.724607	81.15543	18.84457
10	1.726547	81.19662	18.80338
11	1.728278	81.07402	18.92598
12	1.728564	81.06816	18.93184
13	1.729156	81.02877	18.97123
14	1.729458	81.00695	18.99305
15	1.729668	81.00620	18.99380

(Tab.4) : variance decomposition of DDMS

Variance Decomposition of DDMS:

Period	S.E.	TDPA	DDMS
1	31.21054	0.062435	99.93757
2	41.21695	23.79678	76.20322
3	46.80681	36.97995	63.02005
4	48.56399	35.03738	64.96262
5	48.93048	35.65061	64.34939
6	49.97877	34.17668	65.82332
7	50.41924	34.99690	65.00310
8	50.84609	35.19040	64.80960
9	50.95865	35.05829	64.94171
10	51.04980	35.12839	64.87161
11	51.14220	35.00374	64.99626
12	51.17911	35.09745	64.90255
13	51.22080	35.06987	64.93013
14	51.22988	35.07635	64.92365
15	51.24393	35.07575	64.92425

Cholesky Ordering: TDPA DDMS