WAGE DETERMINATION IN THE UNIONIZED PRIVATE SECTOR IN KENYA, 1980-1997

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A RESEARCH PAPER SUBMITTED TO THE DEPARTMENT OF ECONOMICS, KENYATTA UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN ECONOMICS.

JULY 1999

DECLARATION

This Research Paper is my original work and has not been presented for award of any degree in any other University.

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DEDICATION

This Research Paper is dedicated to my father, the late Alex Omolo Odhon'g, who instead of giving us land inspired us to Read and acquire knowledge. It is also dedicated to my wife, Emily, for her patience and understanding and to my son, Cyprian, for allowing me to use the same books and pens which he always wanted to 'use'.

ACKNOWLEDGEMENT

I acknowledge the assistance accorded to me by my two supervisors namely, Mr. H.O Kerre and Mr. F.M Masya. Their invaluable guidance, advice, criticisms, suggestions and encouragements were a great source of inspiration. Special thanks goes to Mr. Kerre for exposing me to the bits and pieces of Labour Economics. The numerous readings he suggested and helped to source were instrumental in shaping the Paper.

I am equally indebted to Mr. Almadi Obere of Economics Department, Kenyatta University for his encouragement, guidance, articulate comments and patience in reading through several drafts of this Paper. I cannot forget the invaluable assistance given to me by Mr. Kenneth Oloo of the same department, whose thought provoking questions greately facilitated the refinement of this Paper. I am also grateful for the pieces of advice and assistance received from all the Lecturers and staff of Economics Department, Kenyatta University and from my classmates: Hellen, Maingi, Muhanji and Oketch. I also enjoyed great co-operation from the entire staff of the Central Planning Unit, Ministry of Labour.

My heartfelt appreciation also goes to my brother Dr. Joseph Akeyo Omolo for his encouragement and assistance in soliciting funds for the study, to my mother, Mrs. Juliana Omolo and to the rest of the family members for their generous contributions. Lastly, I cannot forget Dr. Emmanuel Meister and his entire family for their assistance throughout the programme.

Finally, I wish to reiterate that I remain wholly responsible for any mistake in the Paper.

ABSTRACT

This paper analyses the determinants of real wages in the unionized private sector in Kenya from 1980 to 1997. Despite the existing wage policies being enforced by the Kenya government through its various machineries such as the Industrial Court and continued union representation of workers in collective bargaining, real wages of unionized private sector workers have continued to fall overtime. In the period 1980-97, real wages of unionized private sector workers fell by 36.84 percent despite an overall improvement in the private sector real wages of 11.34 percent during the same period. Unionized workers were therefore 48.18 percent worse off than their non-unionized counter-parts in the same sector.

The main objective of this study was to find out factors that determine unionized private sector real wages in Kenya. Empirical analysis was carried out using time series secondary data to determine how various factors affect negotiated real wages. These factors included one year lagged negotiated real wage, statutory minimum real wage, union strength, real GDP growth, labour productivity, tax rate, rate of interest on capital and its one year lagged effect, and a dummy variable to capture the effect of wage guidelines.

Using Two Stage Least Squares (2SLS) regression technique, the parameter estimates of one year lagged negotiated real wage, statutory minimum real wage, rate of interest and its one year lagged effect were found to be statistically different from zero at the 10 percent significance level. However, when the results were analysed at 95 percent confidence level, coefficients of all the variables above remained to be statistically significant except that of current rate of interest. The rest of coefficients of the variables in the model namely, union strength, real GDP growth, labour productivity, tax rate and the dummy for wage guidelines were found to be insignificant both at 90 and 95 percent levels of confidence. The regression results further showed that lagged real wage, statutory minimum real wage, union strength, tax rate and the dummy for wage

guidelines were positively related to the negotiated real wage. However, real GDP growth, labour productivity growth, rate of interest and its one year lagged effect had a negative relationship with negotiated real wages.

The major policy implication of the study results is that statutory minimum wage regulation is one of the effective ways of improving negotiated real wages in Kenya. The study recommends therefore that this practice should continue and be effectively implemented. Furthermore, since labour and capital have been found to be coprant factors, efforts should be made to reduce interest rates in order to attract more investments. This will lead to high demand for labour which in turn bids up wages. Also, the existing wage policies should be reviewed to incorporate interest rate movements as an additional factor for wage compensation.

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CHAPTER ONE

1.0 INTRODUCTION

Wages are among the major factors in the economic and social life of any community. Workers and their families depend almost entirely on wages to provide themselves with food, clothing, housing and all other basic requirements of life. Within any industry, wages form a big part of employers' cost of production. The scenario in the government is not different. All governments have a vital concern with wage standards. Wages have a direct effect on the social climate of a country. Equally important is the fact that wages act as important performace indicator on employment, prices and inflation, national productivity and the ability of a country to export enough goods to pay for its imports (ILO,1968). Wages therefore enter largely into policies and on the relationships between workers, employers and governments.

The impact of wages policy in a country can have far reaching results on economic growth, employment generation, income distribution, rural-urban migration and inflation. In Kenya, the impact of wages policy on the national economic growth has been increasing over the years because of the growing importance of the modern sector in the country's economy (Republic of Kenya: Sessional Paper No.10 of 1973 and Vandemoortele, 1984).

Wages policy in Kenya have been subject to periodic reviews since independence. The reviews have been in line with changing circumstances in national development priorities (Republic of Kenya: Sessional Paper No.10 of 1973). At independence, the country pursued a growth oriented development strategy (Vandemoortele, 1984). The general belief then was that aggregate economic growth could spread and trickle down to remove disparities in earnings. Wage rates were thus set at high levels. It was assumed

that doing so, stood not only to stabilize labour force but that this would lead to rapid growth in productivity.

Kenya experienced rapid economic growth during her first decade of independence. By mid 1970s however, many Kenyans still remained in abject poverty. A consensus emerged thereafter that it was not enough for a development policy to only pursue high rates of growth of overall or per capita incomes. Policy needed to aim more directly at other social objectives namely, employment promotion, improved income distribution and poverty alleviation (Republic of Kenya: Sessional Paper No.10 of 1973). Henceforth, the Government chose among other alternatives to intervene in the labour market by regulating public and private sector wages as a matter of policy priority (Republic of Kenya: National Development Plan, 1970-74).

In opting to intervene in the labour market, the Government chose to restrict public sector wage determination to schemes of service and periodic salary reviews (Ibid. 1970-74). Within the private sector labour market however, the government opted for a two-tier wage policy. That is, wages for management (non-unionizable) staff were to be set partly through market forces and at times at the prerogative of the Board of company Directors while wages for unionionizable staff were to be set through collective bargaining and sometimes via arbitration by the Industrial Court.

Against this premise, the focus of this study was wage determination in the unionized private sector. Within the unionized private sector in Kenya, wage rates and conditions of employment are determined through voluntary collective bargaining process. This process involves tripartite arrangement between workers (unions), employers and the Government. While labour unions are mainly affiliated to the Central Organisation of Trade Unions (COTU), majority of employers are represented by the Federation of

Kenya Employers (FKE). The ensuing Collective Bargaining Agreements (CBAs) usually involve staggered long-term contracts, conditions of employment, fringe benefits and union membership drives.

1.1 Historical Background

1.1.1 Wage Policies

The issue of Wages and Incomes Policy in Kenya can be traced back to 1932 when the need for wage fixing was first given legal recognition by the Minimum Wage Ordinance of 1932. The Ordinance empowered the Governor-in-Council to make orders fixing minimum wages in any occupation or area, which in his opinion, wages were unreasonably low. The opinion of the Governor was not however guided by any scientific or empirical reasoning. The 1932 Ordinance was followed by the Minimum Wage Ordinance of 1946 which provided for a central Minimum Wage Advisory Board to recommend wage levels to the Governor-in-Council. In 1951, the Regulation of Wages and Conditions of Employment Ordinance was introduced. This Ordinance provided for a wider range of advisory and negotiating bodies to fix wages and conditions of employment (Husband, 1955). The International Labour Organization (ILO) also issued the Philadelphia Charter in 1944 which declared that, improvement in the standards of living of workers was to be regarded as a principal objective in the planning of national economic development policies.

The Kenya Government, since independence in 1963, has endeavoured to improve the standards of living of her people (Republic of Kenya: National Development Plan 1964-1970). This aspiration is consistently reflected in various Government policy documents such as Sessional Papers and Development Plans. The aspiration is specifically echoed in the Sessional Paper No.10 of 1965 as well as in the 1966-70 Development

Plan. These policy documents underscore the objective of achieving rapid economic growth, raising the standards of living of the society and establishing an environment of social justice and human dignity.

The first wages policy was announced by the Kenya Government in the 1964-70 Development Plan. According to the Plan, this wage policy was designed to protect employees against restrictive and unfair labour practices. The policy aimed also at stimulating growth of modern sector wage employment so as to absorb the growing labour force. The wage policy was to focus on productivity and the interplay of forces of demand and supply in the determination of wages. The 1966-70 Development Plan reiterated further that labour regulations, inclusive of establishment of minimum wages and working conditions in general, were to be maintained and strengthened to ensure improved working conditions and protection of workers against unfair labour practices.

The decision by the Government to regulate public and private sector wages was issued in the 1970-74 Development Plan[1]. Thereafter, the Government undertook to determine public sector wages as a matter of policy. As a result, public sector wage determination have been done through schemes of service and periodic salary reviews. The unionized private sector wage policies on the other hand, were implemented via direct Government intervention through minimum wage legislation, establishment of minimum working conditions and wage guidelines. In drawing up the wage guidelines, the Government was to take into account changes in the incomes of both wage earners and non-wage earners, the employment situation, changes in the cost of living and the rate of real output growth in the economy (Ibid. 1970-74). Overall, the Government

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[1] Republic of Kenya (1970): Development Plan 1970-74, p.135-140.

affirmed its commitment in ensuring that gains in workers' money wages were not eroded by increases in prices of goods and services. It also upheld the view that workers had a right to expect regular gains in their real income (Republic of Kenya: Sessional Paper No. 10 of 1973).

1.1.2 Wage Guidelines

Wage Guidelines were first introduced for use by the Industrial Court in 1973. The basic premise of the guidelines is that workers should be entitled to and enjoy a basic minimum standard of living. The guidelines leaves it to the Court to determine what the minimum standard of living should be. It also stipulates that workers have a right to expect some regular improvement in their standards of living.

Between the time of its inception in 1973 and 1999, wage guidelines have been reviewed nine times[2]. These reviews have tended to provide for varying compensation criteria based on changes in consumer price indices (CPI) and productivity growth. The latest revised wage guidelines was issued in 1994. It provides for full compensation for the rise in CPI to the lower income group. The latter's monthly earning is Kshs. 2000 and below. Compensation is awarded as a decreasing percentage of the rise in the CPI for the higher wage earners. That is, those earning Kshs.2000 and above per month[3]. The revised wage guidelines allow for a review of salary or wage contracts together with other negotiable terms and conditions of service to be undertaken whenever explicit

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[2] The reviews were done in 1974, 1975, 1976, 1977, 1979, 1982, 1987, 1993 and 1994.

[3] Central Bureau of Statistics (CBS) classifications based on 1982 Urban Household Budget Survey (UHBS). A review of this classification has been proposed as shown in the UHBS of 1993/94. The survey recommended that the new lower income group should comprise those earning Kshs. 12000 and below per month; middle income group to comprise those earning between Kshs. 12001 and Kshs. 39032 per month; and upper income group to comprise those earning above Kshs.39032 per month.

claims which arise from major compensable factors or other socio-economic occurrences warrant.

1.1.3 Enforcement of Wages Policy

The enforcement of the unionized private sector wages policy in Kenya is delegated to both the Ministry of Labour and the Industrial Court. The role of the Ministry is to ensure that minimum working conditions are adhered to. Similarly, the Industrial Court is mandated to approve and register all collective agreements and to arbitrate on all trade disputes (Republic of Kenya: National Development Plan,1970-74 and Republic of Kenya: Sessional Paper No. 10 of 1973). The Industrial Court's main task is to safeguard the workers' purchasing powers against deterioration from price increases. This is to be achieved through restoration of workers' purchasing power by compensating them for the rise in the cost of living suffered during the previous collective bargaining agreement. In its deliberations, the court also considers it imperative that workers' real incomes should increase so that their standards of living may improve. This is ensured by granting them some percentage of wage increase over and above the compensation for increase in the cost of living (Cockar,1981).

The unionised private sector wage policy guidelines therefore recognize workers' rights to a fair share of the national income, by entitling them to seek compensation for price increases and to benefit from any rise in the general standard of living in the country as a whole (Ibid.1981).

1.1.4 Trend of Real Wages[4] in Kenya

Despite the above policy pronouncements, the purchasing powers of Kenyan workers have continued to be eroded by price increases over the years. Since 1980, there has been virtually no positive change in the living standards of Kenyans. Furthermore, the welfare of a majority of Kenyans has declined as evidenced by the increase in the number of people living below the poverty line[5] (Republic of Kenya: National Development Plan,1997-2001). For example, in 1980 the average real wage was about 10 percent below its 1972 level (World Bank, 1983). Though nominal wages have increased over the years, they have however not been consistent with changes in real wages (Republic of Kenya: Economic Survey, 1998). Table 1 shows the trend of real wages for the period 1980-97.

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[4] In this study, real wage is defined as the actual purchasing power of a nominal wage. Nominal wage will be taken to mean the average money wage of a regular employee. Empirically, the study adopts the definition that real wage is the nominal wage deflated by the annual average CPI for the three income groups viz- Lower, Middle and Upper.

[5] Using the 1994 Food and Agricultural Organization(FAO)/World Health Organization (WHO) minimum recommended daily energy allowance of 2250 calories per equivalent adult, monthly absolute poverty lines per adult equivalent in rural and urban areas of Kenya are estimated at Kshs.978 and Kshs.1,490 respectively. On this basis, about 46 percent of Kenyans are classified as being absolute poor (Republic of Kenya, 1998: First Report on Poverty in Kenya: Vol.1, Incidence and Depth of Poverty, Ministry of Planning and National Development, pp.10-11).

Table 1: Annual percentage changes in Real Wage Rates, 1980-97 (1980 = 100)

PERIOD	PUBLIC AND PRIVATE SECTOR	PRIVATE SECTOR	UNIONIZED PRIVATE SECTOR
1980-82	-2.67	-5.46	-18.58
1983-85	-2.57	1.47	-20.74
1986-88	1.73	4.72	1.11
1989-91	-5.93	-0.66	-5.36
1992-94	-13.77	-9.13	-7.26
1995-97	-13.33	20.40	13.99
OVERALL	-36.54	11.34	-36.84

Source: Computed from Statistical Abstract and Economic Survey, various issues.

Real wages in public and private sectors combined (column two) saw persistent fluctuations during the period 1980-97 with substantial deterioration during most of the years. As reflected in the table, aggregate real wage for the two sectors fell in all the periods except in 1986-88 period when it improved by 1.73 percent. Overall, over the period 1980-97, the aggregate real wage fell by 36.54 percent.

Real wages in the private sector fluctuated over the period 1980-97 with marked improvements within the years. In comparison with other sectors (whose trends are given in the table), the private sector experienced the least rate of decline of real wages. In fact, real wages in the sector recorded an overall improvement of 11.34 percent.

The unionized private sector real wages saw significant declines for most of the periods under review despite overall improvement in private sector real wages. The highest rate of decline was 20.74 percent experienced in 1983-85 period. This was also the highest rate of decline of real wages recorded over the period under review. Overall, between 1980-97, the unionised private sector real wages fell by 36.84. This means that

unionized workers were at least 48.18 percent worse off than their non-unionized counterparts within the sector. In the period 1991-1998 alone, unionized workers lost an accumulated figure of at least 66.7 percent in terms of uncompensated increases in the CPI. During the period, unionized workers were entitled to a total compensation of 176.7 percent for price increases. However, they were only awarded 110 percent (Republic of Kenya, 1998).

As reflected in the table, the decline in unionized private sector real wages was also higher than the overall fall in real wages recorded in the public and private sectors combined. What this means is that the purchasing power of unionized workers deteriorated more than that of other groups of workers.

The impact of this deterioration in earnings and on the welfare of workers manifests itself in persistent industrial unrest in the country as characterised by strikes, lock-outs and deadlocks during collective bargaining (ILO,1998). The strikes have involved an increasing number of people and man-days. For instance, the number of man-days lost due to strikes increased from 33,132 man-days in 1980-82 period to 106,662 man-days in 1995-97 period, representing an increase of 221.93 percent over the period. Majority of the strikes have been recorded in the private sector. There were limited strikes in the public sector. This is because industrial strikes remain banned within the public sector since 1970s (Ibid. 1998). The number of disputes reported to the Industrial Court also increased by some 31.82 percent from 88 in 1980-82 period to 116 in 1992-94 period. In 1998, the number of disputes handled by the Court was 128. This represents an increase of 80.28 percent over and above the 1997 figures.

The main objective of the existing wage policies in Kenya continue to be stimulation of economic growth within the modern sector wage employment and

safeguarding of workers' purchasing powers. However, as already been alluded to, workers' real wages have continued to fall over the years. Wage employment growth in the modern sector has also declined significantly since the early 1980s, despite a substantial drop in labour costs (Vandemoortele, 1990). Indeed, the demand for labour in public and private sectors remains weak even at reduced wage levels (ILO, 1996). Thus, the reduction in real wage levels failed to translate into an increased demand for labour. This is partially evidenced by the increased unemployment levels. For instance, the unemployment rate increased from 18.5 percent in 1994 to about 25 percent in 1997.

1.2 Statement of the Research Problem

Real wage has an important implication on the standard of living of workers and their labour supply. Real wage is also critical in efforts for poverty reduction, improved quality of life and economic growth. The persistent decline in unionized private sector real wages means that unionized private sector workers' purchasing powers and welfare position has deteriorated over the years. The unionized private sector workers' real wages saw significant declines for most of the years during the period under review. However, there was an overall improvement in the private sector real wages over the same period. The implication of this is that unionized workers' income position worsened relative to that of non-unionized counter-parts within the sector.

The committment of Kenya Government to poverty alleviation is echoed in various policy documents. A step towards this goal since independence has been the regulation of labour market operations. For unionized private sector workers, the regulation has been effected through minimum wage legislation, setting of minimum working conditions and establishment of a system of Industrial Court. In enacting wage policies, the Government affirmed its commitment to ensure that gains in money wages were not to

be eroded by increases in prices of goods and services. The policies further recognized workers' rights to a fair share of the national income. They entitle workers to seek compensation for price increases and to benefit from any rise in the general standard of living while allowing for the growth of wage employment.

Despite these policy efforts, continued collective bargaining between workers' representatives and employers, and the general improvement in the overall private sector real wages, unionized private sector real wages have continued to fall over time. For instance, between 1980-85, real wages for unionized private sector workers fell by 20.74 percent. This happened inspite of an improvement in the overall private sector real wages of 1.47 percent over the same period. The number of collective bargaining agreements negotiated by the unions and registered by the Industrial Court also increased from 203 agreements in 1980-82 to 268 agreements in 1983-85.

Against this premise, the purpose of this study was to find out the determinants of real wages in the unionized private sector in Kenya.

1.3 Objectives of the study

The broad objective of the study was to find out the factors that determine real wages in the unionized private sector in Kenya. Specific objectives were-:

(i) to specify a model of real wages and to estimate the same.

(ii) to use derived results in (i) above in suggesting appropriate policy recommendations.

1.4 Significance of the study

A study on unionized private sector real wage determination is important for various reasons. First, the study will give empirical and theoretical insights into the factors which determine real wages in the sector. It is evisaged that the results of the

study will be useful to both employers and employees, trade unions, employers' organizations and related stakeholders involved in collective bargaining process. The more the workers, their leaders, employers and governments understand wage setting problems, the greater will be the chances of maintaining harmonious industrial relations. The state of industrial relation has a positive impact on productivity, levels of investment, wage compensation and job creation in a country. Second, the results of the study can be replicated in the public sector and thus help in the formulation of appropriate public sector wage determination policies. Third, information on the factors determining real wages is useful to policy makers in assessing the appropriateness of the existing wage policies and in the formulation of new policies. Fourth, the study will add to the existing knowledge on wage determination.

1.5 Scope of the study

The study focuses on wage determination in the unionized private sector in Kenya. Wages within this sector are determined through the process of collective bargaining. The parties involved in the process of wage determination within this sector are deemed to be well organized, experienced and continuously involve themselves in this process. The analysis covers the period 1980-1997. The choice of the study period was influenced by the fact that since 1980, real wages had fallen more rapidly than the per-capita incomes (ILO,1989).

CHAPTER TWO

2.0 LITERATURE REVIEW

There exist a voluminous literature on wage determination world wide. However, very little has been written about the mechanism for fixing wages in Kenya. What follows is a review of some literature on wage determination both from within and outside Kenya.

Eckstein and Wilson (1962), used an empirical model to explain the behaviour of wages in American Manufacturing industry. They explained wages as a function of profits, unemployment, labour productivity, consumer price indices and union density. Time series analyses for both the key group and individual industries were done for the period 1948-60. Their results showed that profits and unemployment were significant in determining wages while productivity, consumer price indices and union density were insignificant. Their study also found that consumer prices had no important influence on wages except under conditions of very rapid price changes.

In Kenya however, the wage policy guidelines single out changes in consumer price indices as a major compensable factor. In so doing, it gives the impression that changes in the cost of living is an important variable in wage determination no matter the magnitude. Moreover, productivity levels realized during any period under review for collective bargaining is recognized as an additional factor for wage compensation. So, while the findings of Eckstein and Wilson downplayed the role of productivity and consumer price indices, these variables are considered very important in the Kenyan case.

Hamermesh (1970), studied the determinants of negotiated wages in America over the period 1948-67. He used a pooled (cross-sectional and time series) data and considered a sample of 180 observations from 16 bargaining situations. He expressed negotiated wages as a function of unemployment, profits and changes in the cost of

living. He assumed that there existed a threshold rate of inflation of 2 percent that awakens workers to the erosion in their living standards thus affecting the workers' wage demand. He estimated the following four basic equations using least squares regression method.

$W_{it}^{*} = a_0 + a_1 U^{-1}_t + a_2 C_t^{*} + e_{it}$.....1

$W_{it}^{*} = b_0 + b_1 U^{-1}_t + b_2 C_t^{*} + b_3 \pi_{it} + b_4 \Delta\pi_{it} + e_{it}'$.....2

$W_{it}^{*} = ß_0'D_1 + ß_0"D_2 + ß_1 U^{-1}_t + ß'_2 CL2_t + ß"_2 CG_{2t} + e_{it}"$.....3

$W_{it}^{*} = \mu_0'D_1 + \mu_0"D_2 + \mu_1 U^{-1}_t + \mu'_2 CL2_t + \mu"_2 CG_{2t} + \mu_3 \pi_{it} + \mu_4 \Delta\pi_{it} + e_{it}"'$.....4,

where W_{it}^{*}= negotiated wage change at annual rate; i= firm number; t= month when contract settlement is reached; U^{-1} = inverse of the unemployment rate; C^{*}_t = changes in the cost of living; π= profit rate at time t; D_1, D_2, $CL2_t$ and $CG2_t$ are dummies representing the threshold inflation rate; and e_{it} is a random error term.

Hamermesh found all the variables to be insignificant except the unemployment rate. His findings on the effect of consumer price indices on negotiated wages supported that of Eckstein and Wilson (1962), whose study found that it is only in periods of relatively high rates of inflation that workers seek compensation for price increases.

Results obtained by Eckstein and Wilson (1962), together with that of Hamermesh (1970), on the effect of changes in the cost of living on negotiated wages imply a state of money illusion on the part of workers. A state of money illusion mostly occur during long periods of stability in prices. This situation over along time has not been observed in Kenya. Also, Kenya's wage guidelines single out changes in consumer price indices as a major factor for wage compensation. Hence, Kenyan workers always seek compensation for price increases irrespective of its magnitude.

Perry (1964), developed a model to examine the behaviour of wage rate changes and tested it with quarterly manufacturing data for post war period in the United States. The model explained wage changes (W) as a function of one quarter lagged cost of living (C_{-1}), unemployment rate (U^{-1}), one quarter lagged profit levels (R_{-1}) and changes in profit rates (ΔR). The model was specified as:

$$W = \alpha_0 + \alpha_1 C_{-1} + \alpha_2 U^{-1} + \alpha_3 R_{-1} + \alpha_4 \Delta R + e,$$

where e is the error term. The regression was conducted using data for the period 1947-60 and all the variables were found to be significant at 99 percent confidence level.

Benham (1969), tested the theory that changes in money wages are composed of two parts namely, those deriving from labour market forces and those deriving from market power forces. She tested the theory using the model below;

$$W'_t = a + b_1 H_t + b_2 CPI'_t + b_3 (W/R)_{t-3} + e_t,$$

where, W' is the annual rate of change in the straight-time hourly earnings, t is a time subscript, H and (W/R) are dummies representing new hire rates and relative factor price ratios respectively and e_t is the error term in period t. Using data from 18 American manufacturing industries over the periods 1951-63 and 1963-66, Benham found the theory to be consistent. The conclusions she arrived at were that autonomous wage changes are largest when relative factor price coefficients are largest and that productivity gains are more likely to go to the workers the more unionized and concentrated the industry is.

Parkin (1970), examined the determinants of the rate of change of money wages in the United Kingdom and the effects on wages, of wage and price restraint policies applied at various times. He expressed the proportionate rates of change of weekly wage rates (W) as a function of its own one (W_{-1}) and two year (W_{-2}) lagged values; unemployment rate (U), its one (U_{-1}) and two year (U_{-2}) lagged values; proportionate rate

of change of retail prices (P) and its one year lagged value (P_{-1}).

Thus: $W = b_0 + b_1U + b_2U_{-1} + b_3U_{-2} + b_4P + b_5P_{-1} + b_6W_{-1} + b_7W_{-2} + v_t$, where, v_t is the error term. Using a non-linear constrained least squares method and quarterly data for the period 1948-67, he found the wage estimates for the policy-on period to have no significant relation with the explanatory variables. It was concluded therefore that the wage-inflation unemployment trade-off is effectively broken during periods of incomes policies. For policy-off periods, all the explanatory variables were found to be significant in explaining the changes in the wage rates. It is noted that the study under review was mainly concerned with the wage-unemployment trade-off. Thus, it left out some important variables considered in wage determination especially in Kenya. These are profit levels (performance of the economy), productivity growth and minimum wage regulation. All these variables have been considered in the current study.

Sparks and Wilton (1971), analyzed the determinants of negotiated wage changes using a pooled sample of 133 time series observations for 14 Canadian Manufacturing industries. They expressed negotiated wage changes as a function of profit level, unemployment rate, changes in the unemployment rate, rate of change of prices, price-unemployment interaction, growth rate in employment, relative wage rate, relative productivity, productivity-relative wage interaction, productivity-unemployment interaction and a dichotomous strike dummy to test the effect of the variable. Using a nonlinear formulation, profit levels, unemployment, price coefficients, productivity and productivity interacted variables were found to be significant. Strikes, growth rate in employment and relative wage rate were found to be insignificant at 5 percent level of significance.

Comay, Melnik and Subotonik (1974), used the model below to examine eight cases of collective bargaining relating to union strikes in the city of New York, USA, over the period 1966-67;

$$A = \frac{[\alpha M(S^*-1)]M(0)}{\alpha M(S^*-1)+ß/U(S^*-1)} + \frac{[ß/U(S^*-1)]U(0)}{\alpha M(S^*-1)+ß/U(S^*-1)}$$

where, A is the level of agreement, U(S) is a particular union's demand at the S^{th} bargaining session, with all elements of the demand translated into monetary terms, U(0) is the starting demand of the given union, α is the rate of concession for the union per unit of time, and M(S), M(0), and ß are equivalent measures for the management. The authors argued that the choice of which specific offer to make by a party will be affected not only by the passage of time and its associated costs (loss of wages, operating profits, market position, management status, public image, and damage to equipment through idleness[6]) but also by the counter offer made by the other party. They found that the yield behaviour of the union was different in nature from that of the management, and consisted of a lengthy period of little or no concession followed by rapid yielding in the last few days of the strike. By contrast, they found Management's concession curve to be rising rather steadily during the entire length of the strike.

Farber (1978), using micro-economic data tested a model of trade union wage determination in the USA. He gave a wage settlement model (Y_s) as a function of the rate of concession of the union (a), the minimum acceptable wage increase after an infinitely long strike (Y_*), the rate of discount (r) and labour's share of total sales (S_L).

Thus $$Y_s = \frac{[a]}{a+r} Y_* + \frac{r}{a+r}(1/S_L - 1),$$

with the rate of concession of the union being specified as,

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[6] ibid (1974, p.305)

$a_{it} = \alpha_0 + \alpha_1 FB_{it} + \alpha_2 U_t + \alpha_3 \pi_{it-1} + \alpha_4 PC_t + \alpha_5 S_{Lit} + \alpha_6 DRW_{it}$, where,

a_{it} = rate of concession of union i in year t

FB_{it} = fund balances per month of union i in year t

U_t = unemployment rate in year t

π_{it-1} = employer's past profits

PC_t = dummy variable representing the presence or absence of wage guidelines

SL_{it} = labour's share of total sales in firm i in year t

DRW_{it} = average annual rate of change of real wages over the life of previous contract in firm i

Farber found all estimates of coefficients in the concession equation to be insignificant except the dummy variable for wage guidelines and labour's share of total sales.

In Kenya, Wage guidelines have influenced the determination of wage rates since their inception in 1973. The guidelines have been amended several times to provide for varying wage compensation factors. Such amendments have been necessitated by the state of the economy's performance. It is presumed therefore that wage guidelines have had a significant impact on wage determination in the country. The current study uses a dichotomous wage guideline dummy to capture the effect on wages, of a restrictive (for the period 1980-93) and flexible (for 1994-97) wage guideline policy periods. Second, in Kenya, unions do not keep strike funds to compensate employees during a strike period. The variable is therefore irrelevant in the current study.

Grubb (1986), examined the relationship between wages and the level of unemployment for 19 member countries of the Organization for Economic Co-operation and Development (OECD). The wage equation was given as;

$w'' = \alpha + ß(p'-w')_{-1} + aU + b(w-p-x)_{-1} + e_t$, where $w''=w'-w'_{-1}$, $w'=\log(W/W_{-1})$ and

W is the index of hourly earnings, $p' = \log(P/P_{-1})$ and P is the consumer expenditure deflator, U is unemployment rate, (w-p) is logarithm for the real wage, x is logarithm of trend GDP labour productivity, subscript-1 variables are lagged one year and e_t is the error term. This wage equation was estimated using 1952-83 aggregate data for the individual countries. The regression results showed that the proxy for price expectations $(p'-w')_{-1}$ and unemployment rate were significant in explaining changes in wage rates.

Card (1990), conducted an empirical analysis of the determinants of contractual wage rates using a sample of union contracts negotiated in Canada between 1964-85. He expressed contractual wage as a function of expected profitability of the industry, labour market opportunities of striking workers, level of real wages at the expiration of the previous contract and a measure of incidence and duration of strikes. The first derivative of the following model was estimated.

$$w_{ij} = a_i + X_{ij}b + v_{ij},$$

where w_{ij} is the measured expected average real wage, X_{ij} is a vector of measured covariates, b is a vector of coefficients and v_{ij} includes both measurement errors and the contract specific disturbance term. He found that negotiated wages positively depended on the profitability of the industry, strike levels and the wage rate at the end of the previous contract but negatively related with unemployment. The wage outcomes were however not affected by strike duration.

Pissarides (1991), studied the role of incomes policies in restraining real wage growth in Australia. He postulated real wages to be a function of labour productivity, investment, unemployment (using participation rate as a proxy), average weekly hours of work, tax wedge (as proxied by payroll, income and expenditure taxes), ratio of unemployment benefits to consumption wages, inflation expectations and incomes

policies. Using an aggregate data for the period 1966-1986, he found all the variables except incomes policies to be significant in explaining changes in real wages.

In the current study, we have excluded the ratio of unemployment benefits to the consumption wage as a variable determining real wages. This is because, in Kenya, there are no unemployment benefits administered either by the Government or by respective unions in terms of strike fund. Second, wage determination in Kenya's unionized sector is also influenced by minimum wage regulations. Thus, minimum wages is a variable which is relevant when considering wage determination in Kenya. Although price increases due to increased taxation are not compensated in Kenya[7], our study presumes that employers and employees negotiate for wage changes which should compensate them even for the incidence of taxes. It is for this reason that, the tax variable is included in this study.

Owoye (1994), analyzed wage determination in Nigeria where bi-partite collective bargaining co-exists with government appointed wage commissions. He developed a wage model given below and used aggregate data for Nigeria for the period 1950-1989;

$$w_t = \pi_0 + \pi_1 w_{t-1} + \pi_2 p_t + \pi_3 u_t + \pi_4 s_t + \pi_5 um_t + \pi_6 WPOL_t + e_t,$$

where the lower case letters are natural logarithms of the current wage (W_t), previous contract wage (W_{t-1}), consumer price index (P_t), unemployment rate (U_t), aggregate strike frequency (S_t) and union density[8] (UM_t). $WPOL_t$ represented a dummy variable indicating the presence or absence of the government's wage commissions and e_t, the error term. He found the parameter estimates of the previous contract wage, consumer price index, union density and the wage commissions to be positive and significantly

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7 Republic of Kenya (1994): Wage Guidelines 2(i).

8 The proportion of the employed labour force which is unionised.

different from zero at 5 percent significance level. However, the coefficients of the unemployment rate and aggregate strike frequency were found to be statistically insignificant.

Unlike in Nigeria where government appointed wage commissions are used to review wages for public sector employees and private sector employers, in Kenya, wage commissions and committees are appointed to review salaries and or terms and conditions of service of public sector employees only. The outcomes of these reviews therefore, may not directly impact on wage determination in the private sector. This is particularly true in the unionized private sector where wage determination is through collective bargaining with staggered long term contracts. Owoye's (1994) dummy variable ($WPOL_t$), is therefore, irrelevant in the current study. Second, the study under review did not consider productivity as a factor that influences wage determination. In Kenya, productivity levels realised during any period under review (for collective bargaining) is recognized as an additional factor for wage compensation (Republic of Kenya, 1994: Wage Guidelines 2(ii)). The variable has therefore been treated as an exogenous variable in our model. Wage determination within unionized sector in Kenya is also influenced by minimum wage regulations. The set of statutory minimum wages are released annually in Legal Notices under the Regulation of Wages and Conditions of Employment Act, Cap.229 Laws of Kenya. Under this arrangement, employers are prohibited by law from paying rates which are below the statutory ones. Thus, minimum wages is a variable which is relevant when considering wage determination in Kenya but was omitted in the study under review. This variable has also been included in the current study.

Harris and Todaro (1969), conducted a study to establish the empirical relationship between wages, productivity and employment in Kenya. The relationship was examined

for African workers in Private Commerce and Industry using aggregate annual data for the period 1955-60. They expressed change in average productivity as a function of average wages and output. Using the OLS technique of estimation, it was found that wages had a significant influence in explaining changes in productivity.

House (1973), conducted a similar study to that of Harris and Todaro (1969) using data from 26 Kenyan manufacturing industries for the period 1963-70. Using the OLS method, his findings supported those of Harris and Todaro (1969).

Oyugi et al (1980), did a descriptive analysis of factors which affect public sector salary policy in Kenya. The objective of their study was to investigate the lingering influence of colonial legacies in the determination of public sector salary policies. They isolated sex, race, education and experience as factors which bore direct impact on salaries and wages policy during the colonial period. Political and social factors were also found to have had some influence in the process of salary determination before and after independence.

Cockar (1981), observes that a part from the traditional concepts, there are strong social and political forces at play which have to be considered when determining wage and salary levels and other fringe benefits for a workforce. He notes that, the principal economic criteria of wage determination that have emerged historically are:- basic needs of a worker, movements in the cost of living, wage differentials, financial position of the employer, productivity increase if any, and the effect of wage award on the employment situation in the country and on the price of the products of the undertaking. We wish to note however, that the factors identified by Cockar as affecting wage determination were not borne out of any empirical research and can therefore be treated as observational hence idealistic.

Ikiara and Njuguna (1996), assessed the influence overtime of Structural Adjustment Programmes (SAPs) on the Kenyan labour market. They explained movements in nominal wage earnings in terms of growth in income, inflation, per capita income, recurrent government expenditure and exchange rate. Separate analysis was done for private and public sectors. For the private sector, they found nominal wage growth to be positively influenced by public expenditure growth, growth in private sector wages and exchange rate movements. On the other hand, nominal wage growth was found to be negatively related to the rate of inflation and its one year lagged effects.

CHAPTER THREE

3.0 METHODOLOGY

The discussion in this chapter is focused on model specification, double causality between wage and employment and the related problem of correction in double causality. Issues such as study hypotheses, definition and measurement of variables together with data, its source and quality in addition to problems of stationarity in time series are also dealt with here.

3.1 Model Specification

Workers are assumed in this study to have organized themselves into a trade union body. It is presumed also that union leadership takes into account the welfare of all its members. The typical union is thought to have homogenous membership such that, there are no conflicts of interest between union leadership and its members. The union is considered therefore to be an individual with a utility function which represents preference of all the members. A basic feature of such a union is that, it has a well behaved utility function (U) which is twice continuosly differentiable and strictly concave. The objective function of such a union is given as;

$$U = g(W/P, L, T) = g(w, L, T) \quad \ldots\ldots 1,$$

where W measures the money wage rate, P is the price level of commodities consumed or the cost of living, $W/P = w$, is the real wage rate, L is union members in employment and T is a government tax on wage incomes that negatively affect union preferences. It is further assumed that the union supplies only a small portion of the economy's total labour force such that its decision has no effect on the overall level of total employment. What this implies, is that, the union's decision has no effect on the level of output, hence, P, is taken to be exogenous to the union. W and L are however

endogenously determined. In equation 1, the partial derivative of utility (U) with respect to real wage rate (w), is positive (that is $U_w > 0$). The partial derivative of utility (U) with respect to the level of employment (L) is also positive (that is $U_L > 0$). However, the partial derivative of utility (U) with respect to the tax rate (T) is negative and hence regressive (implying that $U_T < 0$) since taxes reduce disposable wage incomes.

The study assumes also a firm that hires labour and ***n*** other factor inputs at given prices to produce an output at minimum cost. The cost function summarizing this behaviour is;

$$C = C(w, R, X, T) \quad \ldots\ldots 2,$$

where, R is a vector of other input prices, X is the level of output while w and T remain as defined in equation 1. This cost function is assumed to be concave, non-decreasing in input prices, twice continuously differentiable and homogenous of degree one in input prices. The derivatives of a cost function gives input demand functions such that cost minimizing level of employment, L, is obtained by differentiating equation 2, with respect to the real wage rate, w to get,

$$C_w = \frac{\partial C(w,R,X,T)}{\partial w} = L(w,R,X,T) \quad \ldots\ldots 3$$

Equation 3 therefore represents the firm's labour demand function.

The union leader is thought therefore to select level of real wage (w) and level of employment (L) that maximizes its objective function (equation 1), subject to the constraint imposed by the employer's labour demand function (equation 3). The union's utility maximization problem can then be stated as:

$$\text{Max } U = g(w, L, T)$$

$$\text{S.T } C_w = L(w, R, X, T)$$

To solve the optimization problem, we form the lagrangian function and solve its first order conditions (F.O.C) thus,

$$Z = g(w, L, T) + ß\{ C_w - L(w, R, X, T) \} \quad \ldots\ldots 4,$$

where ß is the lagrangian multiplier that gives the marginal utility of the constraint (labour demand function) when the union's utility is maximized. The solution of the F.O.C of the maximization problem, (equation 4), gives the optimal level of real wage, w* and employment, L*, which maximizes the union's utility function as:

$$w^* = h_1(L, R, X, T) \quad \ldots\ldots 5$$

$$L^* = h_2(w, R, X, T) \quad \ldots\ldots 6$$

By substituting equation 6 into equation 5, we get the optimal real wage rate as:

$$w^* = g(L^*, R, X, T) \quad \ldots\ldots 7$$

In specification 7, the partial derivative of w* with respect to L* is negative ($w^*_{L^*} < 0$), the partial derivative of w* with respect to X is positive ($w^*_X > 0$), the partial derivative of w* with respect to T is negative ($w^*_T < 0$). However, the sign for the partial derivative of w* with respect to R cannot be determined apriori since inputs may either be substitutes or complements.

This study postulates a relationship between real wage rate and its determinants. From economic theory and literature review, real wages are assumed to be determined by the level of employment, profits, productivity, union strength (that is, union's bargaining power), previous real wage rates and tax rates. A general model of real wages according to the theory is a modified version of equation 7. The modification is necessitated first by the transition from individual union/firm analysis to economy-wide analysis. In this regard, individual union/firm attributes are aggregated to represent attributes of the economy. The underlying assumptions being that all unions/firms are

homogenous and that decisions taken by participating unions/firms affect even non-participating ones. A time counter t is introduced also to signify the impact of time on the variables examined. In addition, new variables are introduced into the model.

Variable R (in equation 7), which is a vector of other input prices is proxied by taking both current (R_t) and lagged (R_{t-1}) rates of interest on capital. The rationale for taking the rate of interest on capital as a proxy for the prices of other inputs is that capital and labour are assumed to be coprant factors. Thus, the level of employment and real wage rate is expected to be affected by the price of capital. The level of firm output (X) in equation 7, when summed over all production units, gives total output realized in the economy. This is reflected as Gross Domestic Product (GDP). The study examines how unionized private sector real wages are affected by changes in real GDP over time (GDP_t). The modified form of the model is therefore given as;

$w_t = f_1(SMw_t , w_{t-1} , L_t , UM_t, GDP_t , PG_t, T_t, R_t, R_{t-1}, WG_t)$.....8

where, w_t, is real wage rate.

SMw_t, is statutory minimum real wage.

w_{t-1}, is lagged real wage.

L_t, is employment level.

UM_t, is union strength which is a measure of the bargaining power of a union.

GDP_t, is rate of growth of real GDP.

PG_t, is growth in labour productivity

T_t, is tax rate on wage incomes

R_t, is rate of interest on capital

R_{t-1}, is lagged rate of interest on capital and,

WG_t, is a dummy variable that captures the effect of wage guidelines on negotiated real wages and t is a time subscript that signifies the current time period (year) and t-1, previous time period (year).

3.1.1 Double causality

It is evident from equations 5 and 6 that there is double causation between w* and L*. This means that both real wage and employment equations need to be exhaustively defined in order to give a systems of equations. Application of Ordinary Least Squares (OLS) estimation technique to an equation belonging to a systems of simultaneous equations yields biased and inconsistent estimates (Koutsoyiannis, 1977). This anomaly calls for identification of the parameters of individual relationships and adoption of other estimation methods which give better estimates of the parameters.

Employment equation

It was shown in equation 6 that, $L^* = h_2(w,R,X,T)$. With the transition of the modification already made in the previous section, this equation expands to:

$L_t = f_2(w_t, R_t, R_{t-1}, GDP_t, T_t)$.....9

From economic theory, the level of employment is also determined by the level of investment, I_t, (Branson,1993). This relationship is true for both current and lagged investment levels. Thus,

$L_t = f_2(w_t, R_t, R_{t-1}, GDP_t, T_t, I_t, I_{t-1})$.....10.

The level of investment is inturn dependent on the rate of interest (R_t), level of output (GDP_t) and the obtaining product prices (P_t), (Ibid.1993). The investment equation therefore becomes: $I_t = f_3(R_t, GDP_t, P_t)$.....11.

3.1.2 Model

Equations 8, 10 and 11 form a systems of equations namely;

$w_t = f_1(SMw_t, w_{t-1}, L_t, UM_t, GDP_t, PG_t, T_t, R_t, R_{t-1}, WG_t)$.....8

$L_t = f_2(w_t, R_t, R_{t-1}, GDP_t, PG_t, T_t, I_t, I_{t-1})$.....10

$I_t = f_3(R_t, GDP_t, P_t)$.....11

3.1.3 Identification

For the real wage equation to be estimated, it must be identified. A model is said to be identified if it is in a unique statistical form, enabling unique estimates of its parameters to be subsequently derived from the sample data (Koutsoyiannis, 1977). For a model to be identified, it has to satisfy both Order (necessary) and Rank (sufficient) conditions of identification.

Order condition

According to this condition, an equation is identified if the total number of variables excluded from it is equal to or greater than the number of endogenous variables in the model less one. Thus $(K-M) \geq (G-1)$, where K is the total number of variables in the model, M is the number of variables included in a particular equation and G is the total number of endogenous variables or the total number of equations in the model.

The task is to identify and estimate the real wage equation 8. In this model, K = 14, M =11 and G = 3. Thus, K-M = 14-11 = 3 and G-1 = 3-1 = 2. The order condition is therefore satisfied.

Rank condition

The rank condition states that in a system of G equations, any particular equation is identified if and only if it is possible to construct at least one non-zero determinant of order (G-1) from the coefficients of the variables excluded from that particular equation

but contained in the other equations of the model. Assuming that the structural parameters of equations 8, 10 and 11 are $\alpha_0 \ldots \alpha_{n1}$, $ß_0 \ldots ß_{n2}$ and $a_0 \ldots a_{n3}$ respectively, the table of structural parameters of the three equations is as shown in Table 2.

Table 2: Structural parameters

var.	w_t	SMw_t	w_{t-1}	L_t	UM_t	GDP_t	PG_t	T_t	R_t	R_{t-1}	WG_t	I_t	I_{t-1}	P_t
E8	1	$-\alpha_1$	$-\alpha_2$	$-\alpha_3$	$-\alpha_4$	$-\alpha_5$	$-\alpha_6$	$-\alpha_7$	$-\alpha_8$	$-\alpha_9$	$-\alpha_{10}$	0	0	0
E10	$-\beta_1$	0	0	1	0	$-\beta_2$	0	$-\beta_3$	$-\beta_4$	$-\beta_5$	0	$-\beta_6$	$-\beta_7$	0
E11	0	0	0	0	0	$-a_1$	0	0	$-a_2$	0	0	1	0	$-a_3$

Key: Var= variables, E8 = Equation 8, E10 = Equation 10, E11 = Equation 11.

To identify equation 8, the rank condition requires deleting the E8 row and all its columns with non-zero elements. This means deleting row E8 and columns 2 up to 12. When this is done, the parameters of excluded variables becomes:

$-\beta_6$ $-\beta_7$ 0
1 0 $-a_3$

From the parameters of excluded variables, the following matrices of order (G-1) = 2 can be formed.

$-\beta_6$ $-\beta_7$ $-\beta_6$ 0 $-\beta_7$ 0
1 0 1 $-a_3$ 0 $-a_3$

By inspection, the determinants of the above matrices are non-zero. This means that both the necessary (order) and sufficient (rank) conditions of identification are satisfied. The wage equation 8 is therefore over-identified since (K-M) > (G-1).

3.1.4 Estimable Form of the Model

Due to double causation between real wage and employment, Two Stage Least Squares (2SLS) estimation technique was adopted. This method aims at eliminating as far as possible the simultaneous equation bias arising from the problem of double causality. The technique was therefore adopted to permit the estimation of the effect of the level of employment on negotiated real wages, unbiassed by the possibility of reverse causation. The reduced form[9] of the Employment equation (10) was estimated to assist in estimating the real wage-equation 8. The reduced form of the employment equation 10 is:

$$L_t = \pi_0 + \pi_1 w_{t-1} + \pi_2 SMw_t + \pi_3 UM_t + \pi_4 GDP_t + \pi_5 PG_t + \pi_6 T_t + \pi_7 R_t + \pi_8 R_{t-1} + \pi_9 I_{t-1} + \pi_{10} P_t + \pi_{11} WG_t + e \quad \ldots\ldots 12$$

[9] The reduced form equation expresses the endogenous variable as a function of all the exogenous variables in the system of equations (Koutsoyiannis, 1977).

Both linear and log-linear form of equation 12 was fitted to data for the period 1980-97[10]. Due to better fit of the linear model, it was adopted and used to get $\hat{L}_t$ (by substituting entries for each of the variables into the estimated equation). Substituting $\hat{L}_t$ for L_t in equation 8, the estimable real wage equation becomes:

$$w_t = \alpha_0+\alpha_1 w_{t-1}+\alpha_2 SMw_t+\alpha_3 UM_t+\alpha_4 GDP_t+\alpha_5 PG_t+\alpha_6 T_t+\alpha_7 R_t+\alpha_8 R_{t-1}+\alpha_9 \hat{L}_t+\alpha_{10} WG_t+u \quad \ldots 13.$$

3.2 Hypotheses

The following hypotheses were tested.

i) Statutory minimum real wages affect negotiated real wages positively.

ii) There is a positive relationship between current and past negotiated real wages.

iii) There is a positive relationship between negotiated real wage and union strength.

iv) There is a positive relationship between negotiated real wage and the growth of real Gross Domestic Product.

v) Negotiated real wages have a negative relationship with the level of employment.

vi) Negotiated real wages have a positive relationship with the level of taxation on wage incomes.

vii) Negotiated real wages have a negative relationship with both the current and lagged rates of interest on capital.

viii) Negotiated real wages have a positive relationship with the level of labour productivity.

ix) Wage guidelines have a negative effect on negotiated real wages.

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10 See Appendix i for data and the estimation results of equation 12.

3.3 Definition and Measurement of variables

Negotiated real wage (w_t): Negotiated wages are voluntarily agreed rates of pay for various cadre of employees. In this study, negotiated real wage has been measured by deflating the yearly negotiated nominal wages reported in the Economic Surveys by the average consumer price indices for respective years.

Lagged negotiated real wage (w_{t-1}): This is one year-lagged negotiated real wage.

Statutory Minimum real wage (SMw_t): In Kenya, a statutory minimum wage is a wage floor fixed by the Government to regulate payment of wages especially in the private sector. It is meant to enable the workers concerned maintain a suitable standard of living. Employers are therefore not allowed to pay below this wage. These set of wages are released annually in Legal Notices under the Regulation of Wages and Conditions of Employment Act, Cap.229. The variable has been measured by taking an average of the minimum wages for all categories of employees covered by the General Wage Orders and deflating it by the average consumer price indices.

Consumer Price Indices (P_t): The price index of goods and services used for private and final consumption of households. The study has used data on average consumer price indices published by the Central Bureau of Statistics and as reported in various issues of Economic Surveys.

Employment rate(L_t): This is the total number of persons considered to be gainfully engaged. Data on reported employment in the private sector as reflected in various issues of Statistical Abstracts and Economic Surveys has been used in this study.

Union strength(UM_t): This is the ability of a union to negotiate for higher wages and improved terms and conditions of service for their members. It is a measure of the bargaining power of a union or its assertiveness. In this study, the number of collective

bargaining agreements registered by the Industrial Court has been taken as a proxy for union strength. Data on this variable was extracted from various issues of Economic Surveys.

Real Gross Domestic Product(GDP_t) growth: This is the change in the value (at constant price) of goods and services produced within an economy over a period of time, usually one year. In this study real GDP growth figures reported in the various official documents such as Economic Surveys and Statistical Abstracts were used.

Labour Productivity Growth(PG_t): This is the change in output per unit of labour input. It was measured by first dividing real Gross Domestic Product figures by the number of employees engaged in the economy and then taking the change in this index over the years.

Tax rate(T_t): This is the tax rate levied on wage incomes. In this study, tax rates published by the Kenya Revenue Authority were used.

Rate of interest on capital(R_t): This is the rate of interest charged on borrowed capital. Average bank lending rates reported in Statistical Abstracts and Statistical Bulletins published by the Central Bank of Kenya have been used in the study.

Previous rate of interest on capital(R_{t-1}): This is one year lagged rate of interest on capital.

Investment level (I_t): This is the level of investment in the economy. It was proxied by taking Gross Domestic investment as a percent of GDP. Data on this variable was extracted from various issues of World Tables, a World Bank publication.

Lagged Investment level (I_{t-1}): This is one year lagged level of investment in the economy.

Wage Guidelines(WG_t): This is a wage policy instrument. It outlines the factors to be considered in wage compensation and the guidelines to be followed by the Industrial Court in adjudicating industrial disputes and registration of collective agreements. It has been captured by use of a dummy variable, where $WG_t = 1$ if period is between 1980-1993 and 0 otherwise. The dichotomy of the dummy variable into the two periods has been influenced by the fact that guidelines which were issued prior to 1994 stipulated specific wage compensation levels for price increases. This limited the scope of negotiation and compensation during the period. On the other hand, the 1994 guidelines do not give specific limits on the levels of wage compensation for price increases. Parties to collective bargaining have since then negotiated for even up to 100 percent compensation.

3.4 Data and stationarity problem

The real wage model (equation 13) was estimated using time series data for the period 1980-97 (Appendix i). Time series data sometimes exhibit non-stationarity (because they have both time and variable specific effects) and if OLS method is applied directly, the results may be spurious. Because of this, a unit root test was conducted using Dickey-Fuller (DF) test. The cointergration results are set out in Appendix ii. The series were then differenced before estimation to induce stationarity.

CHAPTER FOUR

4.0 DATA ANALYSIS, RESULTS AND INTERPRETATION

In this chapter we present both descriptive and regression results of the study. We first present the descriptive results and then follow with the estimation results.

4.1.0 Descriptive Results

The descriptive statistics (details in Table 3) indicated that over the period 1980-97, an annual average of 292 collective bargaining agreements were registered by the Industrial Court. The mean negotiated annual real wage arising from the agreements was 716.78 Kenya shillings. Over the same period, the mean statutory real wage was 383.39 Kenya shillings. Thus, the negotiated real wage was almost double the statutory real wage. During this period, the rate of growth of the economy averaged 3.57 percent with labour productivity being negative for most of the years. The mean labour productivity was negative 4.08 percent. During same period, the mean tax rate on wage incomes was 32.16 percent while the mean rate of interest was 23.26 percent.

Table 3: Descriptive statistics

Variable	Mean	Standard Deviation
L_t	694100	128427.99
w_t	716.78	356.28
w_{t-1}	765.75	387.34
SMw_t	383.39	81.58
UM_t	291.5	60.69
GDP_t	3.57	1.67
PG_t	-4.08	6.90
T_t	32.16	6.79
R_t	23.26	14.33
R_{t-1}	22.17	14.48

Source: own computation based on Research data.

4.1.1 Empirical results

Both linear and log-linear specifications of the real wage model was estimated using Two Stage Least Squares (2SLS) regression technique. On the basis of the coefficient of multiple regression (R^2), Adjusted R^2, consistency in the signs of parameters and the significance of coefficients of the variables, the linear model was found to be superior. Our interpretations are therefore based on the results of the linear model. Coefficients of linear functions measure propensities.

The regression results showed a high degree of multicollinearity. This was manifested by high coefficient of multiple regression and standard errors, insignificant t-ratios and inconsistent signs of some parameters. It was confirmed by the high correlation coefficients between some variables as shown in the correlation matrix, Appendix iii.

The level of employment (L_t), was in particular found to be strongly correlated with most of the variables in the model. The variables with which L_t was correlated were: previous real wage (-0.8257), statutory minimum real wage (-0.8361), price level (0.9634), tax rate (-0.9136), wage guidelines dummy (-0.8034), interest rate (0.6559) and lagged interest rate (0.6920). The high correlation between the level of employment and some variables within the model makes it suspect of the cause of the multicollinearity problem. When the variable was removed from the model, the results improved. The linear model however still yielded superior results than the log-linear model. However, the Durbin Watson statistic (2.13772) showed that autocorrelation was absent. The regression results for the linear model after correcting for multicollinearity are presented in Table 4.

Table 4: Regression Results (Dependent variable - w_t)

Variable	Estimated coefficient	Standard Error	t-statistic
C	-835.018	1031.96	-0.809155
w_{t-1}	1.03386	0.280975	3.67955
SMw_t	0.504304	0.236232	2.13478
UM_t	0.430286	1.42107	0.302791
GDP_t	-40.1462	32.2180	-1.24608
PG_t	-0.038073	7.56978	-0.502956
T_t	24.0210	20.3630	1.17964
R_t	-6.36190	3.47394	-1.83133
R_{t-1}	-8.52158	4.10962	-2.07357
WG_t	399.656	650.903	0.614002

R-squared = 0.976501
Adjusted R-squared = 0.950066
Durbin-Watson statistic = 2.13772

The estimation results show that the model explains 95 percent of the variations in the dependent variable (w_t), confirming that the model fits well the regression line. The regression results further indicate that at 95 percent level of confidence, one year lagged real wage, Statutory Minimum real wage and lagged interest rate, are statistically significant in determining changes in negotiated real wages. However, at 90 percent level of confidence, all the above variables remained significant including values of current rate of interest. The rest of the variables in the model namely, union strength, real GDP growth, labour productivity, tax rate and the dummy for wage guidelines were found to be insignificant determinants of negotiated real wages both at 90 and 95 percent levels of confidence.

The coefficient of one year lagged negotiated real wage had the expected positive sign. The implication is that an increase in previous real wage would lead to an increase in current negotiated real wage. The coefficient of this variable was found to be 1.03386. This means that an increase in previous real wage would lead to a proportionate increase in negotiated real wage. The estimate of this variable was found to be statistically significant implying that values of previous year's negotiated real wage is important in explaining changes in negotiated real wages.

The parameter estimate of statutory minimum real wage was found to have the expected positive sign and was statistically significant at 95 percent level of confidence. The positive relationship between the two variables indicates that as statutory real wages increase, negotiated real wages also increase. The significant influence of statutory minimum real wages on negotiated real wages means that the variable is an important determinant of negotiated real wages. The coefficient of statutory minimum real wages was found to be 0.50, implying that if statutory minimum real wages increases by one shilling, negotiated real wages would increase by 50 cents.

Union strength was found to be positively related with negotiated real wage. The implication is that as the bargaining power of a union improves, negotiated real wages also increase. The coefficient of this variable was found to be 0.43 which shows that a unit increase in union strength, as proxied by the number of collective bargaining agreements registered, would lead to an increase in negotiated real wages of about 45 cents. The coefficient of the variable was however found to be insignificant. This implies that union strength is not important in explaining changes in negotiated real wages.

The coefficient of tax rate variable was found to be positive. This means that as tax rate increases, negotiated real wages also increase. This finding is in line with the

postulations of the study that the higher the tax rate on wage incomes, the lower the disposable wage and the higher the negotiated wages. In this case, workers are presumed to negotiate for wages which compensate them even for increased taxation. The coefficient of this variable was 24.02 meaning that a change in tax rate of 1 percent would induce a corresponding change in negotiated real wages of twenty four shillings. The variable was however found to be insignificant. The implication is that tax rate is not an important factor in explaining changes in negotiated real wages.

The parameter estimates of the rate of interest on capital and its one year lagged effect were found to be negative. The implication of this is that negotiated real wage is a decreasing function of both current and lagged rates of interest on capital. The finding was consistent with "apriori" expectations. The parameter estimates of both variables were found to be statistically significant at 90 percent confidence level, implying that they are important determinants of negotiated real wages. The coefficient of the current rate of interest on capital was -6.36 indicating that an increase in interest rate of one percent would lead to a decrease in negotiated real wages of 6.36 shillings. The coefficient of lagged rate of interest was found to be -8.52, implying that if the previous rate of interest was one percent higher than the current rate, then negotiated real wages would decrease by 8.52 shillings.

The coefficient of the dummy for wage guidelines was positive and consistent with "apriori" expectations. The positive relationship between the two variables imply that the more flexible the wage guidelines, the higher would be the negotiated real wages. The variable was however found to be an insignificant determinant of real wages, meaning that it is not important in explaining changes in negotiated real wages.

The parameter estimates of real GDP growth was found to be negative, implying that negotiated real wage is a decreasing function of real GDP growth. This finding is contrary to the hypothesized relationship. The coefficient of this variable was found to be -40.15, indicating that if real GDP growth rate increases by one percent, negotiated real wages would decrease by 40.15 shillings. The coefficient of real GDP growth was found to be statistically insignificant, meaning that real GDP growth is not an important variable in explaining changes in negotiated real wages.

The coefficient of labour productivity variable was found to be negative and inconsistent with stipulations of economic theory. The negative relationship between labour productivity and negotiated real wages implies that an improvement in labour productivity would lead to a decrease in negotiated real wages. The coefficient of the variable was -0.04, meaning that a change in labour productivity index of one unit causes an inverse change in negotiated real wages of about 5 cents. In Kenya, existing unionized sector wage policy recognizes labour productivity as a major factor for wage compensation (Republic of Kenya 1994: Wage Guidelines, 2(ii)). However, empirical results of this study do not find labour productivity to be a decisive factor in the determination of negotiated real wages.

The parameter estimate of the constant term was negative. This shows that if all other variables included in the model are held constant, then negotiated real wages would still decline. The coefficient of the constant term was found to be statistically insignificant. The implication is that the variables included in the model satisfactorily explain the variations in negotiated real wages and that no important variables were left out.

The overall fit of the model under review is satisfactory. The Adjusted R^2 is 95 percent meaning that the model adequately captures the variations in negotiated real wages. It therefore leaves only 5 percent of the changes in negotiated real wages to be explained by other factors not included in the model.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Summary and Conclusions

The main objective of this study has been to find out factors that determine unionized private sector real wages in Kenya. Empirical analysis was carried out to determine how the various factors affect negotiated real wages. These factors included one year lagged negotiated real wage, statutory minimum real wage, union strength, real GDP growth, labour productivity, tax rate, rate of interest on capital and its one year lagged effect, and a dummy variable to capture the impact of wage guidelines on negotiated real wages.

The estimation results indicated that at 90 percent confidence level, one year lagged negotiated real wage, statutory minimum real wage, rate of interest and its one year lagged effect were statistically significant in determining changes in negotiated real wages. However, when the results were analysed at 95 percent confidence level, all the above variables remained significant except current rate of interest. The rest of the variables in the model, that is, union strength, real GDP growth, labour productivity, tax rate and wage guidelines dummy were insignificant. The regression results further showed that lagged real wage, statutory minimum real wage, union strength, tax rate and wage guidelines dummy were positively related to the negotiated real wage while real GDP growth, labour productivity growth, rate of interest and its one year lagged effect had a negative relationship with negotiated real wages.

Real GDP growth had a negative relationship with negotiated real wages. Although this was contrary to economic theory that real wage is an increasing function of real GDP growth, it was consistent with the World Bank's finding that real wages and

the rate of growth of the Kenyan economy have never moved together (World Bank, 1994). The inconsistency in the sign of the coefficient of real GDP growth may be attributed to the fact that Kenya's wage policy guidelines have tended to restrict wage compensation below the rate of economic growth in some years.

Labour productivity was found to have a negative effect on negotiated real wages. The coefficient of the variable was insignificant. The insignificant and inconsistent relationship between real wages and labour productivity may be attributed to the fact that wage policy guidelines were until 1994 not specific on firm (enterprise) labour productivity as a factor for wage compensation during collective bargaining. Before the 1994 review of wage guidelines, the policy instrument provided for national productivity indicators such as GDP per capita a factor for wage compensation. The national indicators are however, poor proxies since they fail to distinguish between sectors. The important role of labour productivity in wage determination may have therefore been downplayed by the provisions of the wage guidelines.

The other possible cause of inconsistency in the sign of the parameter estimate for labour productivity and its insignificance is the problem of computation of productivity indices and interpretation by parties to collective bargaining. In Kenya, free sharing of company information by both labour and management is minimal. As a result, unionized workers and their representatives alike lack relevant and/or adequate data for calculation of productivity indices. Secondly, even if data for computation of the indices were to be availed, some parties to collective bargaining would in most cases still not be able to compute, interpret and effectively utilize the indices in negotiations due to their generally low levels of education and poor negotiating skills. This study recommends therefore that sensitization seminars for employers, workers and trade union bodies be mounted to

educate the parties on the need for free sharing of labour market information. Parties to collective bargaining should also be educated on computation and interpretation of productivity indices. An institution such as a productivity centre should also be established and be mandated to collect, collate, analyse, store and disseminate data on productivity both at enterprise and national levels. The body should also underatake productivity enhancement campaigns.

The coefficients of present and previous rates of interest on capital were found to be negative. This finding is in line with the assumption made in this study of a production technology that utilizes labour and capital as complements. According to the estimation results, the two variables had significant effects on real wages when tested at 90 percent confidence level. However, at 95 percent level of confidence, it was only the lagged interest rate that proved important in explaining changes in negotiated real wages. Thus, in the unionized private sector in Kenya, capital and labour combine in the production process as complements and not substitutes as implied in the existing wage policy instrument[11]. The possible explanation for this, is that, in this sector, majority of workers are unskilled and therefore cannot be easily substituted by capital but rather augment the services of one another.

The inverse relationship between negotiated real wages and the rates of interest on capital is also due to the fact that low rates of interest increases investments which then stimulate employment growth (increased demand for labour) thus bidding up workers' wages.

One year lagged real wage was found to be positively related to current values of negotiated real wages. This may be attributed to the fact that negotiated wage increases

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[11] see Republic of Kenya, 1994: wage Guidelines, Preamble.

are compounded on previously negotiated rates, hence the higher the previous values of negotiated real wages, the higher the current values of negotiated real wages.

According to the study results, negotiated real wages increase with an increase in statutory minimum real wages. The finding supports the theoretical definition of statutory minimum wages as wage floors (fixed by the government) below which firms are not allowed to pay. In Kenya, parties to collective bargaining are prohibited by law from negotiating wage rates which are less favourable than the statutory rates.

Negotiated real wages was found to increase with an improvement in union strength. The variable was however found to be an insignificant determinant of negotiated real wages. In this study, the number of collective agreements registered by the Industrial Court was used as a proxy for union strength. The absence of significant effect of this variable on negotiated real wages may be attributed to the fact that collective agreements entered by parties remain effective for a specific duration, usually between 1-3 years, after which they are reviewed. Thus, the bargaining strength of any union may not rightfully be gauged by the number of agreements concluded by the union.

The study results indicated that workers' real wages increased with an increase in tax rates. This may be attributed to the fact that taxes on wages reduces disposable wage incomes hence workers negotiate for wages which compensates them even for increased taxation. The absence of any significant relationship between negotiated real wages and tax rates supports the provisions of the wage guidelines which prohibits compensation of price increases emanating from increased taxation (Republic of Kenya, 1994: Wage Guidelines, 2(i)).

5.2 Policy Recommendations

The results of the study have the following implications for policy.

i) The study finds statutory minimum wage regulation to be one of the most effective ways of improving unionized worker's real wages. Thus, although the Government is intent on gradually liberalizing the labour market, it should continue playing its regulatory role of administering minimum wages. Minimum wage regulation is still necessary in Kenya given that the country is a labour surplus economy with the bulk of the labour force being unskilled, less organized and therefore in a weak bargaining position. If wages were to be set purely by market forces, these sections of the population may be undercompensated for their labour efforts.

ii) Given the significant effect of statutory minimum real wages on negotiated real wages, it may be important that work place inspections be stepped up to ensure compliance to statutory wage regulations by employers.

iii) Policy formulation should ensure reduction in interest rates on borrowed capital in order to attract more investments. Increased investment will lead to increased job creation and will also complement Government's efforts towards Industrialization.

iv) Existing unionized private sector wage policies should be reviewed to incorporate changes in interest rates as an additional factor for wage compensation. The current policy recognizes only changes in consumer price indices (cost of living) and labour productivity as wage compensation factors.

5.3 Suggested Areas for further Research

i) Given the significance of minimum wages in the determination of negotiated real wages, it is suggested that a study on minimum wage setting in Kenya be undertaken.

ii) It may also be important to ascertain through empirical analysis or otherwise, the degree of compliance to minimum wage regulation by firms and the effect of minimum wage fixing in the economy.

iii) It may be necessary to undertake a study similar to the present one using cross-sectional data to ascertain the consistency of results in both approaches.

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APPENDICES

Appendix i

a) Data

Year	L_t	w_t	w_{t-1}	Smw_t	P_t	UM_t	GDP_t	PG_t	T_t	R_t	R_{t-1}	I_t	I_{t-1}	WG_t
1980	534300	1364	1417.89	588.39	100.00	247	3.0	2.35	38.125	11.00	11.00	29.20	22.30	1
1981	540200	1562.14	1364.00	524.93	112.09	174	4.8	-0.35	38.125	14.00	11.00	27.70	29.20	1
1982	540400	1209.16	1562.14	454.53	136.26	187	4.8	-1.10	38.125	16.00	14.00	21.80	27.70	1
1983	565500	1154.75	1209.16	404.74	153.02	245	3.5	-5.67	38.125	15.00	16.00	20.80	21.80	1
1984	578200	974.86	1154.75	368.15	168.23	260	0.9	1.14	38.125	12.50	15.00	20.70	20.80	1
1985	599800	563.68	974.86	408.14	189.47	297	4.8	-1.15	38.125	12.50	12.50	26.00	20.70	1
1986	620700	602.70	563.68	423.98	198.44	257	5.5	1.50	38.125	14.00	12.50	21.80	26.00	1
1987	639900	632.22	602.70	398.28	215.59	297	4.8	-0.10	38.125	14.00	14.00	24.30	21.80	1
1988	650100	578.62	632.22	425.42	242.30	384	5.2	0.04	38.125	15.00	14.00	25.00	24.30	1
1989	682800	648.35	578.62	375.04	274.85	307	5.0	1.19	38.125	15.50	15.00	24.70	25.00	1
1990	708900	488.47	648.35	372.72	317.93	379	4.3	-1.19	26.00	19.00	15.50	24.30	24.70	1
1991	726600	471.46	488.47	361.48	380.31	372	2.3	-3.50	26.00	29.00	19.00	21.30	24.30	1
1992	768400	470.66	471.46	356.16	484.21	247	0.4	-28.26	26.00	30.00	29.00	17.50	21.30	1
1993	789500	393.06	470.66	285.39	707.02	337	0.2	-7.84	26.00	72.00	30.00	16.10	17.50	1
1994	816800	372.89	393.06	266.73	910.72	307	3.0	-8.32	26.429	30.93	72.00	16.60	16.10	0
1995	867000	456.46	372.89	293.19	924.95	377	4.8	-9.19	23.75	33.14	30.93	17.40	16.60	0
1996	917900	422.16	456.46	295.70	1008.38	269	4.6	-7.10	21.00	34.60	33.14	18.20	17.40	0
1997	946800	536.45	422.16	298.05	1121.25	304	2.3	-6.03	22.50	30.43	34.60	18.60	18.20	0

b) Linear and log linear Estimation results for Employment equation(12)

Linear Regression results (Dependent variable- L_t)

Variable	Estimated coefficient	Standard Error	t-statistic
C	12696.0	4993.18	2.54266
w_{t-1}	-19.0307	11.3056	-1.68330
SMw_t	-67.4555	69.2791	-0.973678
I_{t-1}	-1082.09	549.702	-1.96850
UM_t	-124.020	34.5717	-3.58732
GDP_t	1479.31	1015.64	1.45653
PG_t	-1059.40	231.855	-4.56926
T_t	-1187.75	539.611	-2.20111
R_t	-644.303	200.777	-3.20904
R_{t-1}	-1164.76	315.603	-3.69059
P_t	233.038	98.9234	2.35574
WG_t	-11127.3	5556.99	-2.00239

R-squared = 0.884706
Adjusted R-squared = 0.673334
Durbin-Watson statistic = 2.09859

Log linear Regression results (Dependent variable- $LogL_t$)

Variable	Estimated coefficient	Standard Error	t-statistic
C	-11.6778	6.69059	-1.74541
$logw_{t-1}$	-0.871114	0.217521	-0.040047
$logSMw_t$	0.089964	0.260629	0.345181
$logI_{t-1}$	-0.042258	0.403794	-0.104653
$logUM_t$	1.00176	0.384577	2.60484
$logGDP_t$	-0.179196	0.685732	-0.261321
$logPG_t$	-1.16210	0.526392	-2.20768
$logT_t$	0.097380	0.513536	0.189626
$logR_t$	2.59949	0.682804	3.80709
$logR_{t-1}$	18.5799	3.32006	5.59624
$logP_t$	-13.7980	2.40010	-5.74895
WG_t	-1.92682	1.38093	-1.39531

R-squared = 0.893400
Adjusted R-squared = 0.697966
Durbin-Watson statistic = 1.88933

Appendix ii

Cointergration results

Variable	Number of lags
w_t	2
L_t	6
w_{t-1}	2
SMw_t	2
I_{t-1}	6
UM_t	2
GDP_t	6
T_t	2
R_t	6
R_{t-1}	6
P_t	6

Appendix iii

Correlation Matrix

	L_t	w_{t-1}	SMw_t	P_t	UM_t	GDP_t	PG_t	T_t	R_t	R_{t-1}	I_{t-1}	WG_t
L_t	1.0000											
w_{t-1}	-0.8257	1.0000										
SMw_t	-0.8361	0.7889	1.0000									
P_t	0.9634	-0.6982	-0.8037	1.0000								
UM_t	0.4854	-0.6925	-0.5126	0.3571	1.0000							
GDP_t	-0.2378	0.1288	0.3178	-0.2427	-0.0186	1.0000						
PG_t	-0.5177	0.4223	0.4734	-0.4756	-0.0095	0.5331	1.0000					
T_t	-0.9136	0.6890	0.7436	-0.8767	-0.4410	0.3766	0.5938	1.0000				
R_t	0.6559	-0.5369	-0.6580	0.6660	0.3350	-0.5506	-0.4822	-0.7020	1.0000			
R_{t-1}	0.6920	-0.5411	-0.7031	0.7845	0.2015	-0.3062	-0.4891	-0.7693	0.5194	1.0000		
I_{t-1}	-0.7158	0.5456	0.7267	-0.7806	-0.3787	0.4114	-0.4302	0.6259	-0.5826	-0.7087	1.000	
WG_t	-0.8034	0.4893	0.6223	-0.8994	-0.2004	-0.0347	0.2763	0.6886	-0.3364	-0.7564	0.7029	1.0000