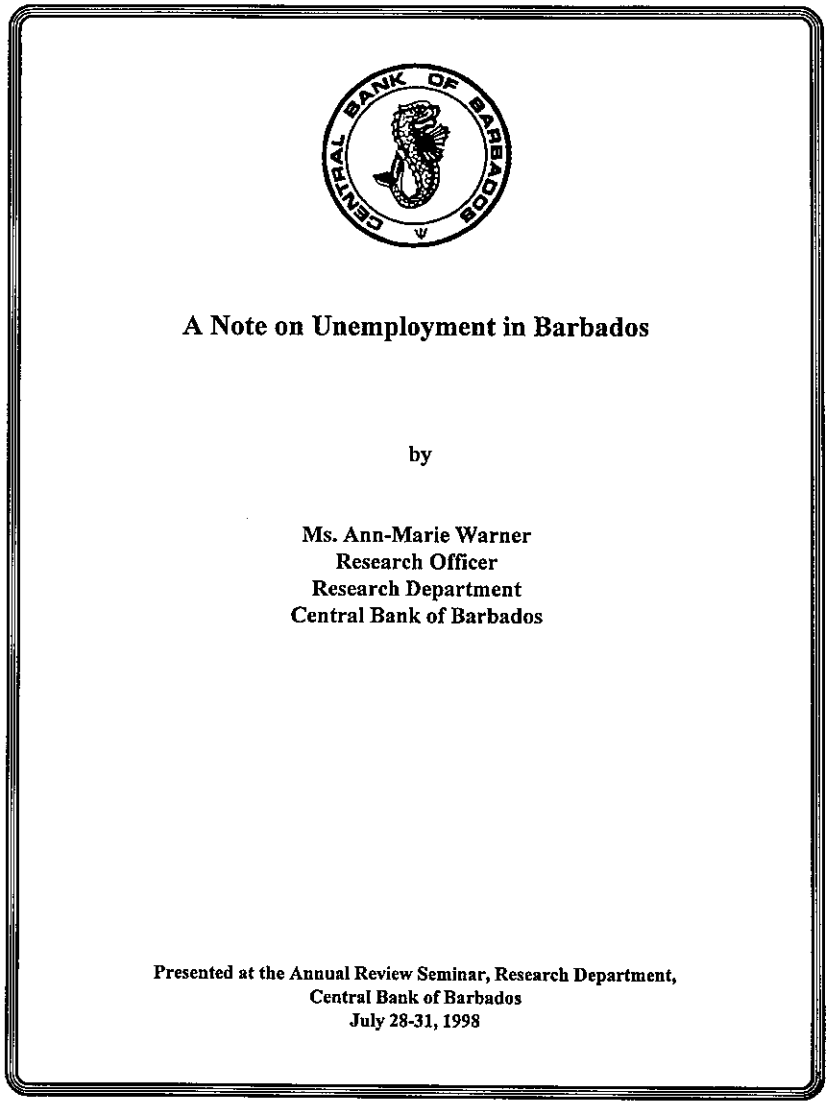


A Note on Unemployment in Barbados

by

Ms. Ann-Marie Warner
Research Officer
Research Department
Central Bank of Barbados

Presented at the Annual Review Seminar, Research Department,
Central Bank of Barbados
July 28-31, 1998

A Note On Unemployment In Barbados

The sorest ill that heaven hath
Sent on this lower world in wrath—
Unemployment (to call it by its name)
Waged war on economics,
Sparing no country from the plague.
They died not all, but all were sick.
No jobs were left;
So hope and therefore joy were dead...

Anonymous

Introduction

Throughout the years, one of the main policy objectives of Barbadian governments has been to reduce the level of unemployment in the country. While the most recent statistics indicate that the number of unemployed persons may be on the decline, falling to 12.2% of the labour force in the last quarter of 1997, the unemployment rate still lies well above that recorded for the more industrialised countries of the United States (4.7%), Canada (8.6%) and the United Kingdom (5.0%). Although this has been a major concern to policy makers, few Caribbean researchers have attempted to address the problem of unemployment. This is indeed unfortunate as it affects the social fabric of a country and is considered to be one of the main indicators of economic health. The aim of this paper will therefore be to determine some of the causes of unemployment in Barbados in the hope that it may contribute to a better understanding of this problem that has plagued Barbadian society for so many years.

The first part of the paper will look at some trends of unemployment in Barbados over the period 1980 to 1996 and examine various labour market policies adopted by government and other decision makers to reduce unemployment. In the second part of the study, emphasis will be placed on the construction and estimation of an Autoregressive Distributed Lag Model of the labour market. Herein lies the contribution of the paper to the topic of unemployment in the country as such a model has not been developed to address this issue in the country.

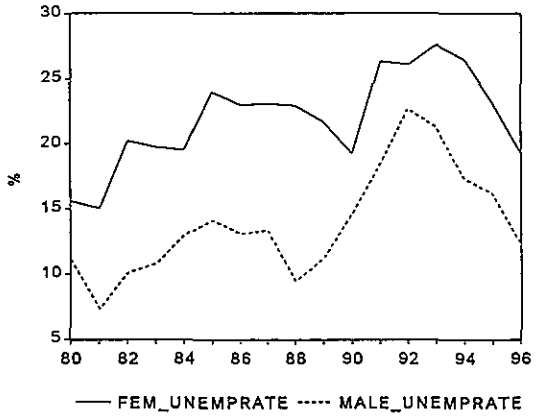
Some Features of Unemployment In Barbados

The Unemployment Rate

Over the years, the unemployment rate has tended to fluctuate, moving from 11.4% in 1980 to 18.6% in 1985, to 16.9% in 1989. During the years 1990 to 1992, the Barbadian economy went through a period of severe recession, which resulted in lower public sector wage bills and massive layoffs. These adjustments led to an increase in the unemployment rate from 17.3% in 1990 to 23.0% in 1992. Despite initial signs of recovery in 1993, the unemployment rate rose again to 24.3%. Thereafter, the average annual rate of unemployment fell steadily to 14.6 % in 1997.

Turning now to male and female unemployment reveals that from as early as the 1970's when an official series on unemployment rates was made available, the female unemployment rate has surpassed that of the males. The trend has continued through the eighties, with the female unemployment rate at times doubling the male unemployment rate. However, this gap has narrowed slightly from the early nineties. The development is shown in figure 2.

Figure 1 - Comparison of Male and Female Unemployment Rates



Examination of the unemployed labour force by age group shows the extent of the youth unemployment problem in Barbados. Approximately one of every two unemployed persons is between the ages of 15 and 24. This statistic, though large, is not surprising as persons leaving secondary school, and those graduating from university tend to fall within this age group. Generally, these persons experience some difficulty finding jobs as they often have little or no job experience. As is expected, unemployment declines with an increase in age, falling from 49.1% in the 15-24 age group to 4.0% in the 55 and over category. This is partly because in Barbados, persons can retire between 60 and 65 years of age or at 55 if they have provided $33^{1}/^{3}$ years of service in the public sector.

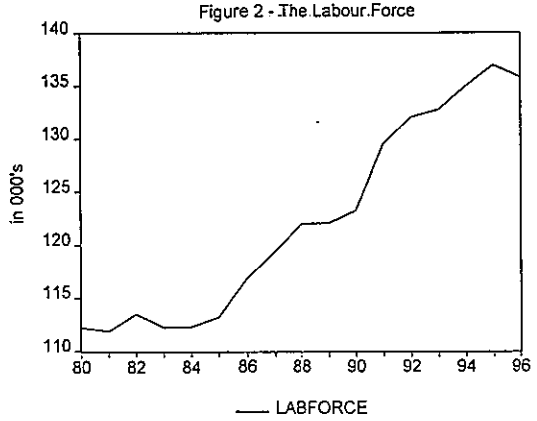
Table 1

Age Group	Percentage Of Total Unemployed
15-24	49.1
25-44	41.6
45-54	6.3
55 and over	4.0

Labour Force

Over the last eighteen years, the labour force has risen steadily from 112,000 persons in 1980 to 135,800 persons in 1996, owing to increased participation from an expanding adult population. This rise in participation is largely as a result of higher numbers of females entering the work force. Increasingly, households are being led solely by females, and this has necessitated their involvement in the labour force. Even in cases where women are not required to earn a living to support their families, the society has evolved to a level where it is now considered a social norm for female school leavers to seek employment.

Figure 2 - The Labour.Force



Number of Persons Employed by Industry Group

Looking at the number of persons employed by industry group reveals that government has been the largest employer, accounting for approximately 21825 jobs. Commerce and manufacturing also contribute significantly to employment, providing 16, 400 jobs and 11,100 jobs respectively. Tourism was the only other industry providing in excess of 10,000 jobs. Barbados, like many other countries has experienced a shift away from manufacturing towards the more service oriented industries. Evidence of this is provided in the average annual growth rates of the individual industries. Of these major industries, all with the exception of manufacturing and agriculture have recorded a positive average annual growth rates. Construction, the other industry of interest, registered a growth rate of 0.03.

Table 2

Industry	Average Growth Rate %
Manufacturing	-2.0
Government	2.0
Financial Services	11.2
Tourism	4.4
Transport	-
Electricity	15.1
Construction	3.4
Commerce	1.2
Agriculture	2.0

Wages, Productivity and Employment

In a recent small sample conducted by Downes (1997), analysis of the relationship between wages and employment revealed that changes in wage rates play only a minor role in the determination of employment in Barbados. The main factors affecting employment decisions were found to be expected changes in the demand for goods and services, as well as legal requirements. Misconduct was also given as one of the main reasons for terminating employment.

The signing of the Prices and Incomes Protocol resulted in a concerted effort by government, employers and trade unions to establish a relationship between salaries and productivity in Barbados. Initially, this thrust led to the development of numerous productivity and performance-based bonuses, but over the years, interest in implementing such schemes waned. Some reasons cited for this include the replacement of the wage freeze[1] with a wage restraint[2] which removed some of the pressures on employers to implement such measures, and workers' lack of interest and education about gain sharing and performance-based schemes. However, those employers which established these schemes noted an increase in productivity and motivation among its workers.

Unemployment Policies

In the past, several policies have been directed towards reduction of the unemployment problem in Barbados. Brathwaite (1984) appropriately classifies these as;

1. Job creation policies designed to increase the demand for labour;
2. Training programmes aimed at increasing the supply of appropriately trained labour;
3. Registration and placement programmes designed to match labour with available jobs; and
4. Social security measures aimed at easing the financial burden of those displaced from employment.

Job Creation

Over the years attempts to reduce the level of unemployment in the country have centered mainly on job creation policies. These policies formed part of a larger initiative to increase the level of economic development in Barbados though diversification of what was a monocrop agricultural economy by strengthening the manufacturing, tourism and offshore sectors. In recent times, there has been a renewed thrust in policies directed at increasing the

[1]The wage freeze was part of the first Incomes and Prices Protocol which lasted from 1993 to 1995.

[2]Wage restraint formed part of the second Incomes and Prices Protocol from 1995 to 1997

number of self-employed persons in the country. This has resulted in the establishment of the Microenterprise Growth Fund and the Youth Entrepreneurship Scheme, both of which are intended to encourage persons to start their own businesses.

Efforts to stimulate production and hence employment in the manufacturing sector have mainly taken the form of tax concessions, and special legislation such as the Industrial Development Act of 1969, the Income Tax Amendment Act of 1974, and the Fiscal Incentives Act of 1974. In addition, various fiscal incentives were offered to foreign investors to encourage growth within the sector. These included income tax allowances on export profits, tax holidays on profits, dividends and interest payments, depreciation allowances and duty concessions on raw materials, machinery and equipment. Statistics show that initially the measures were successful at increasing production as the contribution of the manufacturing sector to GDP rose from 7.8% in 1950 to 11.8% in 1980 but fell to 9.5% in 1996. The policies were less successful at stimulating employment, as the number of jobs created by the sector fell short of expectations by 800 in 1973-78 and by 6200 in 1979-83 (Brathwaite 1984). Additionally, the number of persons employed by the sector as a percentage of the total number employed fell from 15.1 % in 1980 to 8.5% in 1996.

The recognition that the tourism sector is a major source of employment has influenced policy makers from as early as the 1950s when both legislative and non-legislative steps were taken to encourage growth in the sector. These included the Hotel Aids Act of 1956, the formation of the Barbados Hotel Association in 1957 and the Tourism Board Act of 1958. In addition, a seven year tax holiday for the operation and construction of tourist accommodations made it possible for tourism's contribution to foreign exchange to increase from 19.6% in 1946 to 40.7% in 1980 and again to 50.6% in 1996. These increases corresponded to rises in employment as the number of jobs created by this sector increased from 710 in 1946 to 4381 in 1980 to 14100 in 1996. More recently, the tourism sector has benefitted from increased government spending aimed at marketing the island as a major tourist destination. In addition, the sector is only subject to 7.5% Value Added Tax (VAT) whereas the other sectors are required to pay 15% VAT on all goods and services.

Authorities have also sought to increase the level of employment through development of the offshore sector. To this end, Barbados negotiated a network of tax information exchange agreements and tax treaties, and created a low tax jurisdiction. These measures along with numerous legislation have resulted in the rapid expansion of this sector. Indeed the 2126 licensed offshore companies at the end of 1996 is almost quadruple the number of licensed companies at the end of 1988. Not surprisingly, this has resulted in increased employment, with the number of jobs estimated at over 3000 in 1996.

Training

Training has also been used extensively to reduce the scourge of unemployment in the country. The objective of training was to increase the supply of skilled labour, and was based on the premise that inadequate skills and training were the main factors contributing to unemployment. Brathwaite notes that this policy approach dates back to the development of the Board of Industrial Training 1924, and the passing of legislation such as the Apprenticeship and Bursaries Act of 1928 and subsequent amendments in 1940, 1951 and 1958. These measures made it possible for a Skills Training Programme to be developed, and institutions such as the Polytechnic and the National Training Board to be established.

While it has been shown that these measures were successful in providing skills to the untrained, there have been indications that the effectiveness of such policies are limited because of the difficulties experienced in finding employment for these persons on completion of training.

Registration and Placement

Another approach to the reduction of unemployment in Barbados, was based on matching labour with available jobs primarily through registration and placement. These services are administered by the National Employment Bureau (NEB) which has been charged with the responsibilty of finding placement for job seekers within the local private sector as well as overseas, and the Personnel Administrative Division (PAD) which tries to satisfy the demand for labour within the public sector.

The placement of potential employees overseas has mainly been in the farm labour programmes in Canada and the US, with a small number of persons entering the nursing and catering programmes. These initiatives were successful in the early stages with 1664 persons receiving employment in 1970. Since that time, there has been a steady fall off in the number of persons seeking jobs abroad, as interest in agriculture has waned.

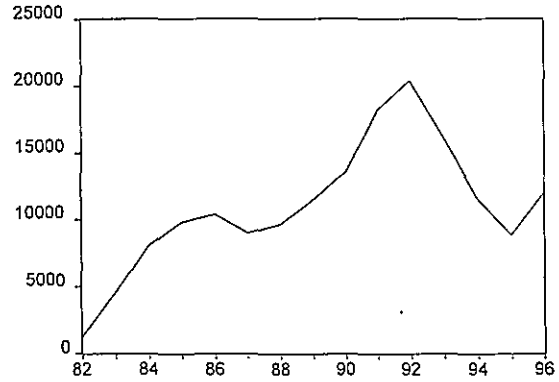
The picture has even been less impressive with respect to placements in the local market. Available data indicates that registrations have consistently exceeded placements by at least four or five to one. The PAD has also had limited success in this regard as government tends to operate with its maximum compliment of staff and turn over appears to be relatively low.

Unemployment Benefits

Social security measures designed to ease the financial burden of persons who have been displaced from employment have resulted in the distribution of unemployment benefits. To qualify for these benefits, there must be no less than 20 contributions in 3 consecutive quarters ending in the relevant quarter, and not less than 7 contributions paid in the relevant quarter. Persons may be disqualified from receiving benefits for up to six weeks if he or she refuses or fails to apply for a suitable vacancy, voluntarily leaves work without good cause, is dismissed, or fails to carry out the directions of a Chief Labour Officer that would assist him in finding work.

While these measures may provide assistance for some persons, they do not adequately address one of the main causes of unemployment in the country. Seasonal work, particularly in the tourism and agriculture sectors is still a major source of employment and the stipulations mentioned above place these groups at a major disadvantage. In addition, the measures do not address the nature of the problem of those seeking employment for the first time.

Figure 3 - Unemployment Claims Received



Econometric Investigation

Literature Review

In the past, while some studies have focussed on the causes of unemployment in the Caribbean, few have attempted to empirically examine the determinants of unemployment. Brewster (1972) was one of the first persons to attempt such a study. In this analysis, the factors determining the yearly percentage changes in employment in Trinidad and Tobago over the period 1951 to 1968 were identified. The theoretical single equation model was represented as:

$E = f(C, W, Yd, K, Prod, EW, I, R, P, X)$

where E is employment, C is consumption, W is the wage rate, Yd is domestic output, K is capital formation, Prod is labour productivity, EW is the export wage gap (the rate of increase in exports less the ratio of increase in wage rates), I is the import coefficient (ratio of imports to GDP), R is the revenue coefficient (ratio of government revenue to GDP). P is the profit tax coefficient (ratio of corporation tax to GDP), and X is exports. After running a series of experimental regressions, the study found that employment was positively impacted by changes in consumption and domestic output, but negatively affected by the wage rate, and to a lesser extent, growth in labour productivity. This study however, was plagued with multicollinearity and serial correlation in addition to simultaneous equation bias.

Boamah (1984), in the determination of those influences that affect employment, suggested that aggregate employment is largely dependent upon real value added, the previous period's level of employment, money wages, and slack conditions in the economy.

The functional relationship was represented as:

$E= f(Q, W/RPI, S, E(-1))$

where the slack conditions in the economy, represented by S, is the difference between actual output and potential output. W is money wages, RPI is the retail price index, Q is output, and E is employment. Wages were in turn posited to be affected by a wage bargaining process where one of the major factors was future price movements. The rationale being that if unions perceived a future increase in prices, the more likely they would be to push for higher wage demands. These demands were however, expected to be moderated by any surpluses in labour brought about by recession. In the absence of information on union assertiveness, real wages was used as a proxy. The unemployment rate was used to model this effect. Changes in productivity were also modelled to affect wages, as such variations were the largely the result of an increase in the level of skilled workers. Finance costs, measured here by the rate of interest, was seen as exerting a moderating force on the money wage by increasing the producer's cost of production and hence reducing their profit levels. This equation was summarised mathematically as:

$W= f(Pe, Rd, U, (Q/E)-1, (EN/RPI))$

where W is money wages, Pe is the price expectations variable, Rd is teh prime lending rate, Q is the index of real output, and EN is the index of weekly earnings

Results of the estimation suggested that output and employment in the previous period positively affected employment while slack conditions exhibited a negative impact on employment. The wage rate was found not to significantly affect the level of aggregate employment in the country. The results of the wage equation showed that both expected prices and real earnings exerted a positive effect on wages. The unemployment rate and the

prime lending rate did not impact significantly on the dependent variable. While the results for the most part agreed with a priori expectations, one major draw back of the study was that it assumed the labour supply to be exogenously determined.

The Model

The model, developed by Franks, is an Autoregressive Distributed Lag (ARDL) model of the labour market. It consists of three equations designed to measure the interactions between the supply of labour, the demand for labour, and real wages. Each equation uses a set of lags on both the endogenous and exogenous variables to facilitate analysis of the adjustment processes and dynamics within the labour market.

The mathematical specifications are based on an underlying right-to-manage wage and employment setting process. The basic model is as follows:

$$\ln LF_t = \alpha + \sum_{i=0}^{n} \beta_i \ln UR_{t-i} + \sum_{i=0}^{n} \gamma_i \ln W_{t-i} + \sum_{i=1}^{n} \delta_i \ln LF_{t-i} + \Theta_i \ln WAP_t + \varepsilon \quad (1)$$

$$\ln W_t = \alpha + \sum_{i=0}^{n} \beta_i \ln UR_{t-i} + \sum_{i=1}^{n} \gamma_i \ln W_{t-i} + \sum_{i=0}^{n} \rho_i \ln PROD_{t-i} + \Theta_i \ln W_{min} + \varepsilon \quad (2)$$

$$\ln E_t = \alpha + \sum_{i=0}^{n} \beta_i \ln W_{emp_{t-i}} + \sum_{i=1}^{n} \delta_i \ln E_{t-i} + \Theta_i \ln Y_t + \varepsilon \quad (3)$$

and is closed by the following identities:

$$W_{emp} = W + TSS \quad (4)$$

$$UR = 1 - (E/LF) \quad (5)$$

$$PROD = (GDP/E) \quad (6)$$

where LF is the labour force, W is the real wage, UR is the unemployment rate, PROD is labour productivity, E is employment, W_{emp} is the wage paid by the employer, Y is the level of output measured by GDP, TSS is social security taxes, WAP is working age population, and W_{min} is the minimum wage.

Equation (1) is a labour supply equation and is modelled as a function of the real wage, the unemployment rate, and the working age population, which is assumed to be exogenous. The rationale behind this formulation is that potential employees will determine whether or not to enter the labour market based on the probability of employment, the wages they can get if employed, and other social and demographic influences exogenous to the model. In order to accommodate adjustment processes, lagged dependent and independent variables were included.

Equation (2) is a wage setting equation which is assumed to be jointly determined by the bargaining process between the unions and employers. This process is posited to be affected by the unemployment rate, the productivity of labour, the minimum wage, and past real wages. The minimum wage is included on the premise that increases in the minimum wage have been a factor in the determination of real wages.

Equation (3) is the labour demand (or employment) equation. Right-to-manage literature suggests that once the wages have been determined by the bargaining process, employers are at liberty to set employment at a level that will maximise profits. Employment therefore depends on the wages paid by employers, past levels of employment, and output.

Characteristics of the Data

The observations used in the study were collected on a quarterly basis from 1980 to 1996. Data were for the most part directly obtainable from the Annual Statistical Digest and the Economic and Financial Statistics published by the Central Bank of Barbados. GDP data, for which official quarterly information was not available for most of the period, the series developed by Lewis (1997) was used. In addition, the wages series was spliced, with 1980 being used as the base year, and disaggregated prior to estimation.

Estimation

Before estimation could begin, the variables were tested for stationarity. This was done using the Augmented Dickey-Fuller (ADF) test for the presence of a unit root. The results of the test indicated that the variables were all non-stationary in their levels, and furthermore, that they could all be treated as I(1) variables. After exploratory OLS regressions to test for the significance of variables and the possibility of cointegration, the autoregressive distributed lag model of the labour market was estimated using the methodology developed by Pesaran and Shin (1997). In this approach, the view that the ARDL model is no longer valid when I(1) variables are used, is discarded. Pesaran and Shin have shown that once the appropriate lag structure is chosen, OLS estimators of the short run and long run[3] parameters are consistent. To determine the optimal lag structure, a search procedure was conducted over eight lags using the Schwarz criterion, but only those that were significant were retained in the final specifications. It should be noted that these equations passed all the standard tests for misspecification, heteroscedasticity, autocorrelation, and serially uncorrelated errors.

[3] In this approach, the long run coefficients are computed by dividing the short run parameters (in levels), by one minus the sum of the coefficients of the lagged dependent variable.

RESULTS

Labour Force Equation

The results obtained from estimation of the labour force equation showed that both the unemployment rate and the real wage were negatively correlated with the labour force, while the total adult population was found to have a positive effect.

Further examination of the equation reveals that even though the coefficient of the lagged dependent variable is relatively high, the fact that only one lagged dependent variable is significant indicates that labour force growth does not exhibit any great persistence. This may suggest that leaving and entering the workforce does not involve large adjustment costs. The fact that unemployment enters the equation in lagged form suggests that it takes some time before it discourages workers from seeking employment. Measures to keep the long term unemployed involved in the labour market are therefore of great importance. The negative correlation between the real wage and the labour force comes as somewhat of a surprise as one would have expected the attraction of higher real wages to lead to an increase in participation in the labour force. Finally examination of the relationship between the population and the labour force has provided some support for the belief that increases in the population have over the years, been one of the main factors contributing to growth in the labour force.

Table 3 - Results Of the Labour Force Equation

Variable	Coefficient	Std. Error	t-Statistic
@TREND(1980:1)	0.0031	0.0008	3.5422
LnLF(-2)	0.4968	0.1113	4.4607
LnUR	-0.0008	0.0267	2.0329
DLnUR	0.0611	0.0233	2.6153
DLnUR(-4)	0.0411	0.0241	1.7058
DLnUR(-6)	-0.0487	0.0267	-1.8185
DLnUR(-7)	-0.0784	0.0274	-2.8600
DLnUR(-8)	-0.0552	0.0248	-2.2261
LnW	-0.0569	0.0676	-2.8417
DLnW	0.2273	0.1098	2.0688
DLnW(-1)	-0.2174	0.0960	-2.2645
DLnW(-3)	0.2450	0.0979	2.5019
DLnW(-6)	-0.1864	0.0831	-2.2419
DLnW(-7)	-0.1685	0.0769	-2.1916
LWAP	0.4334	0.4251	2.0195
C	4.5985	2.2144	2.0766

R-squared 0.9561
Adjusted R-squared 0.9411
S.E. of regression 0.0167
Sum squared resid 0.0106
Implied long run equation:
Ln LF = 0.0064*trend - 0.0017*LnUR - 0.1132*LnW +0 .3618*LnWAP + 9.1421

Wage Bargaining Equation

Estimation of the wage equation showed that while both the minimum wage and the unemployment rate were found to be inversely related to the real wage, a positive relationship was discovered between productivity and the real wage.

Examination of the wage bargaining equation revealed that real wages exhibited a high level of persistence as indicated by the magnitude of the summed coefficients of the lagged dependent variables (0.95). This may be due in part to staggered wage setting which will tend to make current wages depend on their past values. One of the more interesting results from this analysis is that the minimum wage enters the equation with a negative sign. This is somewhat unexpected as one would have anticipated wage increases to follow trends set in the minimum wage. The negative relationship between unemployment and the real wage may be explained by the hypothesis that higher unemployment will reduce workers demands for wage increases by simultaneously raising the "insiders" fears of unemployment and increasing the competition for jobs from "outsiders."

Table 4 - Results of the Wage Bargaining Equation

Variable	Coefficient	Std. Error	t-Statistic
LW(-1)	0.5808	0.0867	6.6993
LW(-4)	0.2645	0.1140	2.3197
LW(-5)	-0.2286	0.1186	-1.9276
LW(-8)	0.3288	0.0820	4.0083
LnUR	-0.0445	0.0123	-3.5895
DLnUR(-1)	0.0257	0.0151	1.6932
DLnUR(-5)	-0.0273	0.0153	-1.7859
LPROD	0.0200	0.0344	1.8532
DLPROD(-8)	0.0564	0.0261	2.1571
LWmin	-0.0095	0.0051	-1.8534
@TREND(1980:1)	-0.0007	0.0002	-2.6526
C	0.3248	0.1300	2.4986

R-squared 0.9494
Adjusted R-squared 0.9297
S.E. of regression 0.0110
Sum squared resid 0.0058
Implied long run relationship
LnW = -0.1609*LnWmin - 0.7857*LnUR +0.3573*LnPROD +0.0125*trend +0.5785

Employment equation

Analysis of the labour demand or employment equation shows the existence of a negative correlation between employment and real product wages while real GDP and employment are positively correlated.

The results suggest that there is significant persistence in employment, as the sum of the lagged values of employment in the distributes lag model is relatively high at 0.80. This strong correlation between unemployment and its past values may be related to considerable hiring and firing costs. The negative relationship between the real product wage and employment was expected as increasing labour costs will often force employers to reduce the number of workers employed. The effect of output on the level of employment was also found to support theory, as in an effort to satisfy increasing demand for output, employers will often increase staff.

Table 5 - Results of the Labour Demand Equation

Variable	Coefficient	Std. Error	t-Statistic
LnE(-1)	0.6227	0.1495	4.1639
LnE(-2)	0.3389	0.1822	1.8600
LnE(-3)	-0.1915	0.1727	-1.9086
LnE(-4)	0.2566	0.1727	1.8827
LnE(-6)	-0.2435	0.1323	-1.8398
LnWemp	0.1346	0.1098	1.9259
DLnWemp(-2)	0.0491	0.1533	2.3233
DLnWemp(-4)	-0.0702	0.1532	-2.4604
DLnWemp(-5)	-0.2783	0.1392	-1.9993
DLnWemp(-6)	-0.1515	0.1365	-1.8085
DLnWemp(-8)	0.0394	0.1493	2.2672
LnY	0.3075	0.1060	2.8973
@TREND(1980:1)	0.0006	0.0004	1.8792
C	0.9846	0.3718	2.6475

R-squared	0.8851
Adjusted R-squared	0.8488
S.E. of regression	0.0273
SumSquared Resid	0.0283

Implied Long-run relationship

LnE = -0.6197*LnWemp + 1.4143*LnY + 0.0338*trend + 4.5301

Conclusion

The equations estimated here represent only a basic model of the Barbadian labour market. Indeed, additional variables unique to small open economies will be included in further specifications of the model. Nevertheless, there is enough evidence to suggest that some tentative conclusions could be drawn about the Barbadian labour market. One such conclusion is that the wages paid by the employer significantly affect the level of unemployment. The implication here, is that a reduction in social security taxes should increase the demand and therefore provide greater incentive for the unemployed to seek work.

While the result that it takes the unemployed some time before they become discouraged from seeking employment is a positive sign, measures should still be taken to ensure that these persons remain actively involved in the labour market. This suggests that increasing emphasis should be placed on apprenticeship programmes and the retraining of unemployed persons, particularly between the 15-24 age group. These measures must however, be coupled with job creation strategies in order to be fully effective. Although available information indicates that policy makers have reaped some success with these strategies, there is still some room for improvement, particularly within the agriculture and manufacturing sectors. The number of jobs these sectors provide could be increased if financial incentives along with programmes designed to sensitise the public to the importance of manufacturing and agriculture are implemented.

Finally, while the model yields some interesting results about the labour market, future models could be developed that facilitate analysis of the feedback processes among equations.

References

Pesaran, H., and Shin,Y. 1997, "Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis," DAE Working Paper No. 9514 (Cambridge, England : University of Cambridge, Department of Applied Economics).

Franks, J.,"Labour Market Policies and Dynamics in the Spanish Labour Market," **Economic Policies and Unemployment Dynamics in Europe**, eds. Snower, D., Henry, S. 1996 International Monetary Fund.

Annual Statistical Digest, Central Bank of Barbados, various Issues.

Economic and Financial Statistics, Central Bank of Barbados, various issues.

Downes, A.S., (1987) "Determinants of Employment in Barbados," Unpublished Paper, (University of the West Indies).

Browne, F., and McGettigan, D., "Another Look at the Causes of Irish Unemployment," Technical Paper 1/RT/93 Central Bank of Ireland.