

Abstract

The role that women play in the economy of any society is a desirable goal for equity and efficiency considerations. Just as with the rest of the world, the South African women lagged behind their male counterparts within the economic empowerment space and in the formal labour force. However, the role of women has undergone some transformations with issues relating to employment opportunities, such that their labour force participation has risen considerably since 1994. The female labour force participation rate is still seen to be persistently lower compared to the male participation rate even in the second decade of democracy. The rate of women labour force participation is even lower than the average. On the other hand, the increases have also been coupled with the rising rate of unemployment among women.

The objective of this study was to investigate the determinants of female labour force participation in the South African labour market. The study uses a regression analysis on a cross sectional panel data covering a period of 1995 to 2010. Unlike most popular beliefs, the findings of this study reveal that fertility though not statistically significant, positively influences labour force participation of women. Other variables that are statistically significant in explaining female labour force are HIV/AIDS, marital status, age, household income and education. Race was found to be insignificant in explaining female labour force participation in the South African labour force.

Key words: Labour Market, Labour force participation, Labour force participation rate, economically active, Employment, Unemployment

Declarations and Copyright

I, the undersigned, Mahali E. Lesala, hereby declare that this dissertation is my original work, except where acknowledged in the text, and that it has not been submitted, and will not be presented at another University for similar or any other degree award.

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Signature

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Date

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Dedications

This dissertation is dedicated to the Lesala family, to my late parents; Mr Pius and Mrs Mamohapi (Madaniel) Lesala, to my two beautiful daughters, Ntswaki Lesala and Buhle Dube and the only son Neo Dube for their outpouring love and patience.

Acronyms and Abbreviations

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criteria
ANC	Antenatal Clinics
APC	Age, Period and Cohort
AR	Autoregression
ARMA	Autoregression with Moving Average
BCEA	Basic Conditions of Employment Act
BEE	Black Economic Empowerment
CLRM	Classical Linear Regression Model
CSG	Child Support Grant
CSS	Central Statistics Services
DW	Durbin Watson
EAP	Economically Active Population
EEA	Employment Equity Act
FLFP	Female Labour Force Participation
FLFPR	Female Labour Force Participation Rate
FPE	Criterion Final Prediction Error
FR	Fertility Rate
GEAR	Growth, Employment and Redistribution
GLS	Generalised Least Squares
GMM	Generalised Methods of Moments
HCT	Human Capital Theory
HHY	Household Income
HIV	Human Immunodeficiency Virus
HIV/AIDS	Human Immunodeficiency Virus-Acquired Immune Deficiency Syndrome
HSRC	Human Science Research Council
HQI	Hannan-Quinn Information
ILO	International Labour Organisation
JB	Jarque-Bera

KAP-IV	Knowledge, Attitudes, and Practices of Contraceptives,
LFP	Labour Force Participation
LFPR	Labour Force Participation Rate
LFS	Labour Force Survey
LM	Lagrange Multiplier
LR	Likelihood Ratio test
LRA	Labour Relations Act
MDG	Millennium Development Goal
OECD	Organisation of Economic Co-operation and Development
OHS	October Household Survey
OLS	Ordinary least square
PP	Phillip Perron
QLFS	Quarterly Labour Force Survey
RDP	Reconstruction and Development program
SALDRU	Southern African Labour and Development Research Unit
SDA	Skills Development Act
SIC	Schwarz Information Criterion
UN	United Nations
UNAIDS	Joint United Nations programme on Acquired Immune Deficiency Syndrome
UNDP	United Nations Development Program

Contents

Abstract	i
Declarations and Copyright	ii
Acknowledgements	iii
Dedications	iv
Acronyms and Abbreviations	v
Contents	vii
List of figures	x
List of Tables	x
Chapter One	1
Introduction and Background	1
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Objectives of the Study.....	3
1.4 Hypothesis.....	3
1.5 The significance of the study	3
1.6 Research Methodology	4
1.7 Organization of the study.....	4
1.8 Concluding remarks.....	5
Chapter Two	6
Literature Review	6
2.1 Introduction.....	6
2.2 Theoretical Literature	6
2.2.1 The income labour-leisure choice model of labour supply	6
2.2.2 Becker’s household production model of Labour Supply	9

2.2.3	Becker’s optimal allocation of time model of labour supply	10
2.2.4	Assessment of theoretical literature	11
2.3	Empirical literature on female labour force participation.....	12
2.3.1	Empirical literature on labour force participation: The international perspective	12
2.3.2	Empirical literature on South African women labour force participation	21
2.3.3	Assessment of empirical literature	27
2.4	Concluding remarks.....	28
Chapter Three	29
Overview of the Labour market in South Africa	29
3.1	Introduction.....	29
3.2	The South African labour market.....	29
3.2.1	Employment in the South African labour market.....	30
3.2.2	Employment by industry, occupation and earnings.....	33
3.3	Unemployment and overview of female labour force participation.....	38
3.3.1	Factors affecting female labour force participation.....	44
3.4	Concluding remarks.....	54
Chapter Four	55
Research Methodology	55
4.1	Introduction.....	55
4.2	Development of the Model	55
4.2.1	Theoretical predictions and expected signs of the coefficients.....	56
4.3	Data sources	57
4.4	The technique for estimation.....	58
4.4.1	Ordinary Least Squares model (OLS)	59
4.5	Diagnostic checks	65

4.6 Concluding remarks.....	67
Chapter 5.....	69
Data analysis and Interpretation of results	69
5.1 Introduction.....	69
5.2 The regression results	77
5.2.1 The OLS model	78
5.2.2 Diagnostic checks	80
5.3 Generalized least squares regression	82
5.3.1 Implications of the findings.....	83
5.4 Concluding remarks.....	85
Chapter 6.....	86
Summary, Conclusions and Recommendations	86
6.1 Introduction.....	86
6.2 Summary	86
6.3 Conclusions.....	87
6.4 Recommendations	88
6.5 Limitations of the study	89
6.6 Recommendations for future research.....	90
References.....	91

List of figures

Figure 3.1: Employed women by age, 2010 (in millions).....	32
Figure 3.2: Unemployment rate by gender, 1995-2010	39
Figure 3.3 (a): Unemployment rate by race and gender between the period 1995-2010 (male)...	40
Figure 3.3 (b): Unemployment rate by race and gender between the period 1995-2010 (female)	40
Figure 3.4: Labour force participation rate by gender	42
Figure 3.5: Female labour force participation by age categories, 2010 (in percentage)	49
Figure 3.6: Young and adult women labour force participation (1995-2010)	49
Figure 3.7: Female HIV/Aids infections in percentage rate.....	52
Figure 5.1: Trends in the variables	74
Figure 5.2: Graphical presentations of variables after first differencing.....	75

List of Tables

Table 3.1: The number of employed people by gender between 2000 and 2010 (in millions)	31
Table 3.2: Employment by industry by gender, 2010.....	33
Table 3.3: Employment in skilled occupations by gender, 1995-2010 (in millions).....	34
Table 3.4: Personals in skilled occupations by education and gender, 2010	35
Table 3.5: Median earnings by occupation and gender, 2010 (in Rands).....	36
Table 3.6: Average real hourly wage, by race and gender: 1997 and 2006	37
Table 3.7: Fertility rate in South Africa (in percentage)	46
Table 3.8: Marital status and labour force participation of women, 2001-2008	48
Table 3.9: labour force participation rate by gender and race	51
Table 3.10: Estimated HIV prevalence rate by age by gender, 2008.....	53
Table 3.11: The estimated life expectancy (1995-2010).....	53
Table 4.1: Definition and description of variables examined in the study.....	57
Table 5.1: Augmented Dickey-Fuller tests results.....	785
Table 5.2: Phillip-Perron tests results	816

Table 5.3: OLS regression results	782
Table 5.4: Results from the diagnostics error tests	81
Table 5.5: Generalized Least Model	85

Chapter One

Introduction and Background

1.1 Introduction

The role that women play in the economy of any society is a desirable goal for equity and efficiency considerations (Ntuli, 2007:4, International Center for Research on Women (ICRW), 2012). Just as with the rest of the world, the South African women lagged behind their male counterparts within the economic empowerment space and in the formal labour force. The consequences of the past injustices which included various kinds of discrimination behaviour, attitudes and policies had unjustly affected women. The problems faced by women in the labour market include inadequate education and development, sector participation and unequal recruitment and employment practices. These practices go against the equity policy of the Millennium Development Goal (MDG) (UNDP, 2008:4).

However, since 1994, the role of women has undergone changes with respect to issues relating to employment opportunities (Lee, 2005:1). In response to achieving gender equality, equity and efficiency, the South African government adopted legislation initiated for the improvement and empowerment of women, as well as to ensure equal and fair access to human rights (Department of Public Service and Administration, 2007:7). For an example, the Reconstruction and development program (RDP) which was later abandoned to promote the economic strategy Growth, employment and redistribution (GEAR), Draft National Programme for Action for Women's Empowerment and Gender Equality 2005-2015 and projects like Decisions for life which aims at raising awareness among young women about employment opportunities and career possibilities, family building and work-family balance (van Klaveren Tijdens, Ramos Martin, & Hughie-Williams, 2009:7). Programs such as the already mentioned enabled women in many regions to use their potential, to become active agents in the labour market and to achieve and improve their relative economic independence (Ntuli, 2007:2), (Yakubu, 2010:87). The obvious impact of these changes was seen by the rise in the employment opportunities for women (van der Westhuizen, Goga & Oosthuizen, 2007:1). The rise in women's labour force

participation is illustrated by the fact that as of September 2000, 53% of (based on the strict definition of unemployment) working age women was considered to be economically active. This is compared to a 38.3% (based on the strict definition of unemployment) female labour force participation rate (FLFPR) in 1995 (Statistics South Africa, 2009: 4, Casale, 2004:2).

Evidence shows that the labour force participation rate (LFPR) of women had grown twice faster than that of their male counterparts. However, this increase in employment for women has not been sufficient to absorb the women entrants who are looking and willing to work (Casale and Posel, 2002:2). According to Burger and Jafta (2010:12-15), data presented on the unemployment rate, and occupation for all race and gender between 1997 and 2006, showed that all the parameters measured were not in favour of women, more particularly African women. In addition, the data showed that women had a higher probability of being unemployed than men. For an example, in Burger and Jafta (2010:14), even though the unemployment rate had declined for African women from 53.7% in 1997 to 51.3% in 2006, the percentage rate of unemployment is still higher than that of their male counterparts, (African men) 36.7% to 35.3% respectively.

1.2 Problem Statement

Developing economies across the world have formulated policies resulting in significant increase in the proportion of women participation in economic activities (Department of labour, 2005:1). In South Africa, advances and all efforts made to assimilate women in the post apartheid labour market have not been commensurate with the female population. Women comprise the majority of the South African population, amounting to 51% (based on the strict definition of unemployment) of the total population. Yet they account for only 47.1% of the total workforce compared to 61.7% of their male counterparts in 2010 (Statistics South Africa, 2010: 2-3). Thus, the gap between male and female participation in the labour market remains the glaring one that the government endeavours to correct.

A number of studies on the labour supply of South African women, such as Casale and Posel (2002), Serumaga-Zake and Naude (2003), Rulof and Woollard (2005) and Yakubu (2009, 2010) indicated that the male labour force had grown at an average annual rate of 3.5% over the period

1995-2010. However, female labour force participation has remained substantially lower than that of men at 38.3%, 50.4% and 47.9% compared to 58.6%, 64.3% and 61.8% of their male counterparts for the periods 1995, 2005 and 2010 respectively.

In accordance with the Education statistics (Department of Education, 2010:30), the enrollment of female students is in the majority at universities in South Africa. This in a nutshell, is a reflection of the gradual expansion of the number of women who are acquiring professional qualifications but their participation still is persistently low, even lower in managerial and professional levels.

1.3 Objectives of the Study

The main aim of this study is to investigate the persistently low labour force participation of women in the South African labour market. To accomplish this aim, the following objectives were outlined:

- To analyse the trends in the female labour force participation rates for the period 1995 to 2010.
- To explore the factors that determine the participation of the South African women in the labour market.
- To provide policy recommendations.

1.4 Hypothesis

Ho 1: Higher education has a positive impact on the labour force participation of women.

Ho 2: Fertility rate increases the likelihood of participation in the labour market for women.

1.5 The significance of the study

The government had taken steps to improve the welfare and status of women in South Africa in order to empower the South African women since 1994. The government had passed various acts

at parliament such as ‘Labour Relations Act’ (LRA) of 1996 and ‘Basic Conditions of Employment Act’ (BCEA) of 1997 and ‘the Employment Equity Act’ of 1998. However, in 17 years of democracy, South African women are still on the periphery of not only access to credit and finance but also of economic opportunities and the labour market (Minister of the department of women, children and people with disabilities, Xingwana, 2012). Despite the advancements, the relatively low level of female labour force participation rate in the South African labour market is in conflict with the equity and efficiency goals provided that as stated earlier, women form the majority of the South African population. The results of this study can go a long way in unpacking the determinants of female labour force participation. Furthermore, the results can serve as a guide to policy makers at all levels of government.

1.6 Research Methodology

Data is obtained from the specialised survey conducted by statistics South Africa between the periods 1995 and 2010, and through previously published research reports and journals. The study also follows a quantitative methodology in which econometric techniques are applied. The analysis of data and the trends of the labour force participation rate is based on the strict definition of unemployment. The full discussion of the research methodology is outlined in chapter 4.

1.7 Organization of the study

The rest of the study will be organized as follows;

- **Chapter 1** presents the background to the study, highlights the reason for the investigation and the purpose of this study, the hypothesis to be tested and the importance of the study.
- **Chapter 2** provides literature review.
- **Chapter 3** gives an overview of the South African labour market with special reference to female labour supply.
- **Chapter 4** presents the methodologies to be employed.

- **Chapter 5** presents empirical findings
- **Chapter 6** provides the main highlight of the study, conclusions and policy recommendations.

1.8 Concluding remarks

The aim of this chapter was to provide introduction and background of the study. The problem statement, objectives, hypothesis and justification of the study were outlined in the chapter. In order to provide a conceptual framework to this study, a literature review will be provided in the next chapter.

Chapter Two

Literature Review

2.1 Introduction

The aim of this chapter is to provide a literature review on female labour force participation in South Africa. The chapter is divided into three sections. The first section covers theoretical literature of female labour force participation. The second section presents empirical literature on female labour supply both nationally and internationally. Concluding remarks are provided towards the end of the chapter in section three.

2.2 Theoretical Literature

This section reviews the Income labour-leisure choice model, Becker's household production model and optimal allocation of time model. These theories are useful in explaining the decision to participate in the labour market and what factors influence participation decisions.

2.2.1 The income labour-leisure choice model of labour supply

This is the simplest and typical framework that economists use to analyse the labour supply behavior of participants in the labour market. The income labour-leisure choice model provides for the choice between two activities, namely work and leisure time (van der Stoep, 2008:18). Individuals make the decision on how best to allocate time between market work and non-market activities. The model assumes that individuals seek to maximise utility. Therefore, utility is derived from work in the labour market through wages and some intrinsic satisfaction while leisure also produces satisfaction (Borjars, 2005:21). Leisure in this model refers to any activity besides work in the labour market, for instance, for women leisure includes taking care of the household and children.

Participation in the labour market in this model concerns the willingness of the individual to supply labour at the going wage and the individual spend desired hours of work on labour market activities (Borjas, 2005:37-38). However, maximising utility is subject to budget constraints Chaykowski and Powell (1999:3). Therefore, an individual chooses an activity that best maximises satisfaction or utility but not both at the same time. That is, individuals cannot enjoy leisure time when they are at work. Each hour spent in any of the two activities means an opportunity cost of losing time spend on the other. For example, an hour spent on taking care of the household and children would mean an hourly wage forfeited.

Based on the labour-leisure choice model, the individual's decision to participate in the labour market or not to participate is based on the preferences that maximises satisfaction and is determined by the market wage and the reservation wage, that is, non-labour income (Borjas, 2005:37-38). If the value of time spent on market activities is higher than the value of non-market activities, then an individual decides to participate or vice versa. For an example, women are bearers of a traditional role, which presumably includes homemaking and caretaking. As a result, the value women places on these activities have been high such that participation in the labour market has been considered to be the least of their priorities. Therefore, the choice between leisure and work has to be one that maximises benefits whilst minimising costs (van der Stoep, 2008:18).

In the process of making participation decision, each individual's choice is affected to a large extent by a diverse number of factors, which include; individual tastes and preferences, level of education, family traits, current financial circumstances, and opportunities that confront them in the labour market (Lee, 2005:18). In other words, one may be willing to put their available time towards labour market activities but if labour market demands the skills which individuals do not possess these individuals cannot be absorbed in the labour market.

2.2.1.1 The shortcomings of the labour leisure model

In as much as participation decision is concerned, the theory of labour leisure choice fails to explain the situation that is prevalent in the South African labour market. Women's decision to

participate in South African labour force is not actually guided by the comparison between the market wage and the reservation wage but Lisaniler and Bhatti (2004:211) urges that the economic and social circumstances also play an important role in influencing women's participation in the labour market. Many women may be forced to join the labour market in order to support and to provide for themselves and their dependents, as well as assisting their spouses (for married women) in maintaining the living standard.

The theory also gives a false impression in that workers face a choice whether they work or not and for how long or how many hours they can work. In the real world, and in the South African case, individuals do not have a complete choice over the numbers of hours that they can work. The market conditions determine the pay and the hours of work and individuals just have to take these as they are for as long as it is in a formal labour market. However, in the informal labour market there can be flexible hours as most individuals are entrepreneurs, deciding on earnings and how much time to work. Another criticism of the labour-leisure model is the fact that the theory ignores the family context in the labour supply. Therefore, this makes it weaker in application as individuals do not live in isolation, neither do they to independently decide their allocation of time. Rather, jointly with other household members put resources together and maximise utility of the entire family (Borsworth, Dawkins and Stromback, 1996:45).

The theory had also been criticized for being stereotyped towards the use of time, that it does not show how the non market time is used or spent. The theory assumes non-market time as leisure. Van der Stoep (2008:20) asserts that non-market involves two different activities, namely, household consumption which include sleeping and entertainment, as well as household production such as cleaning, cooking and taking care of the children. Nonetheless, with the latter being referred to as unpaid work, pure leisure cannot be highly substitutable with market work as household production can be (Van der Stoep, 2008:20). Thus, one can make the decision to reduce household work by seeking help such as hiring a housekeeper or by a use of labour or time saving technologies such as washing machines. In essence, the hired help and household appliances help reduce the load of household work while it leaves a woman with time that can be spend on the market work.

In view of the weaknesses of the labour leisure model, Becker's model of household production is discussed in the next section.

2.2.2 Becker's household production model of Labour Supply

The theory of household production addresses the limitations of the labour-leisure model of labour supply. The model recognises that both consumption and production take place in the household and distinguishes between three different uses of time, namely; leisure, home production and market paid work (Lee, 2005:21). Becker (1965) views a household as a single decision making unit that maximises utility of the entire household through the consumption of goods and leisure produced by a combination of the goods the family purchases from the market and time. Therefore, the entire household is faced with the choice between market work, household production or domestic unpaid work and leisure (Borjesson et al. (1996:45).

The main objective of the household is to allocate each household member's time to the three activities in order to maximise utility. However, the household is subject to the constraint, namely, the prices of the market goods, earnings and income. This means that the household cannot spend on consumption and leisure more than the income the household has at its disposal. According to the theory, the decision to participate in labour market activities is mainly influenced by the total household income or wealth as well as the productivity of household members in market work and household production.

Initially, a man will work while a woman devotes time to home production. However, a woman will consider work in the labour market if the market wage is higher than the household productivity given the woman's preferences. For a woman supplying labour to the market and earning a wage is meaningful as long as the additional earnings can purchase more goods and services than required to make up for the lost home production and possibly also some of leisure (Mammen & Paxson, 2000:142). Thus, a woman will consider working while she reduces time spent on home production and leisure. Assuming a household with a husband and a wife, thus, any factor affecting the husband's role in the labour market forces the response in a woman with regard to labour force participation (Jaumotte, 2003:6). This implies that an increase in the

husband's work market wage will lead to a rise in a woman's non-labour income, as a result, a distorted encouragement for work on the market and vice versa.

The household production model provides a theoretical framework suitable to the South African labour force participation decision, because South African women makes their participation decisions taking into account the fact that they can share with their partners some family resources as well as the partner's income. However, the model has been criticized for restricting the household behavior since it assumes that household members pool their income, and that compensated wage changes of spouses have the same effect on each other's labor supply (van Klaveren, 2009:3). The basic assumption of a unitary decision making process does not always apply in most families as husbands and wives do not always agree on things. Thus, one's decision to participate may be influenced by their own preferences and desires other than maximizing the family's total utility. Besides, in most families (for married women), wives do not depend greatly on their husbands' income. This is because some men do not really care to provide for their family needs. Therefore, a woman will be forced to work in order to earn a living for herself and even her offspring.

Another drawback of the household production model is with regard to hours of work. In practice, especially in the developing world, workers have no control over the hours of work. Hours of work are determined by the labour market. Besides, employers themselves tend to manipulate workers to reach their own targets, while on the other hand, as wages fall; workers appear to work longer hours to maintain a living wage.

2.2.3 Becker's optimal allocation of time model of labour supply

As an extension of the household production model, the allocation of time model emphasises that obtaining utility does not only involve the cost in terms of goods but also cost in terms of time spent in producing those goods. The important issue in the optimal allocation of time theory is that as the costs of time change so will the way in which the household produces the commodities that yields satisfaction. The model puts emphasis on the value of time and that household income is determined within the household. Therefore, it is useful in studying the

female labour supply, since it takes into account the traditional role played by a woman within the household. The model emphasises how a woman's choice to participate relates to the allocation of time among work in the market place, household work and leisure. The model recognizes that women not only arbitrate between leisure and labour, but between leisure, labour (supplied in the market in order to buy goods and services) and home production of goods and services (Jaumotte, 2003:6). Therefore, women are not only motivated to substitute time from non-market uses to market work, but also substituting away from activities which are relatively time intensive, to time consuming but more income intensive.

2.2.4 Assessment of theoretical literature

Having reviewed the above theories, from the labour-leisure perspective female labour supply can take different forms and shapes due to cultural or structural differences between economies, and also taking into account individual characteristics and preferences in an attempt to maximise utility. The labour-leisure model presents alternative uses of time. Individuals are assumed to effectively choose whether they want to work or not and also how long they work, depending upon their preferences and the level of real wages. The decision to participate is mainly determined by the reservation wage and the market expected wage. The reservation wage can as well be determined by factors such as non-labour income and personal characteristics, such as race, age, marital status, ages and the number of other dependants and human capital characteristics which include schooling, experience and unobserved parameters reflecting innate ability. The labour force participation decision is thus based on a comparison of the market wage with the reservation wage. This implies that an increase in the labour force participation of women could be due not only to a rise in the market wage rate, but also a decline in their reservation wage rate (Lee, 2005:85).

Becker's theory of household production also indicates that a woman's labour supply decision is usually not taken by herself alone, but it involves all adult members of the household, especially the adult males who would typically participate in this decision. Thus, a woman's labour supply decision depends on the collective utility of the household, as well as the market wages. In a nutshell, it is clear that the person's wage rate is the prime factor of labour force participation as

the household total income is determined by the wage rate. Among other applications, optimal allocation of time theory encourages a better understanding of the true leisure from work done in the home so that the effects of how changes in the home production technology and changes in individual behaviour become apparent towards a woman's market work decisions.

2.3 Empirical literature on female labour force participation

Empirical work on female labour supply and determinants of female labour force participation is extensive and assumes an important part in the labour market research, both in developed and developing worlds. The interest among researchers with respect to the supply of labour by women stems from the fact that participation in the labour force by women had been the least of women's priorities prior the Second World War (Kolesnikova, 2007:2). This is not because most women did not want to work but due to the then imposed legal systems, cultural beliefs and traditional roles borne by women, while men worked to generate income to take care of the households and even provide for women's needs.

In surveying the literature on labour force, the study aims to present a review of literature on determinants of female labour force participation highlighting relevant findings from the survey and to complement those with a more in-depth look at additional and more recent literature. The study has focused on empirical work on the female labour supply from the international viewpoint and from South Africa. The choice of this review is merely based on the topic and the availability of such a literature across countries. No specific order was followed especially on the international literature, while in South Africa, a review started with earlier works to the recent.

2.3.1 Empirical literature on labour force participation: The international perspective

Jaumotte (2003:6) emphasised that traditionally, home production is often regarded as a better alternative to market production for women than for men. As a result, it is crucial in explaining women's weaker attachment to the labour market. On the analysis of the labour market Jaumotte (2003) attempted to explain the determinants of female labour force participation in the OECD countries. The main focus of the analysis was on married women with children, for whom actual

participation was well below preferences. Two different models were used for the estimation. In the first model, Jaumotte (2003) estimated the total female participation rate against the policy variables which include tax wedge between second earners and single individuals, public childcare spending per child, child benefits, paid parental leave, and the share of part time employment as a proxy for the flexibility of working time arrangements. The specification also includes the proportion of married women, the number of children per woman, female education, the female and male unemployment rates, the degree of employment protection legislation, the degree of product market regulation, and country fixed effects. The second model composed of two equations relating to part time and full time participation respectively to the policy variables and other determinants.

The main results from both these models revealed that a more neutral tax encourages married women to participate in labour force and can also increase incentives to share work between spouses, persuading a non-working woman to take on part time jobs. The availability of part time work opportunities for women also raised participation, though this varies with countries depending on the labour market structure of each country. It was also found that child benefits generate an income effect that reduces female labour supply, particularly of potential part time workers. The provision of paid parental leave also tends to boost female labour participation by helping women to reconcile work and family life and strengthening their attachment to the labour market through a job guarantee. Based on the findings of this study an increase in the level of female participation does not necessarily come at the cost of a reduction of fertility, instead when the increase in female participation is supported by appropriate work-family reconciliation policies, women tend to achieve a higher level of labour force participation without reducing fertility and even perhaps with a small increase in fertility.

However, unlike in other OECD countries where the participation of women in the economic activities had been substantially high since the World War II, in Turkey, Ercan, Hosgor, and Yilmaz (2010), had a concern over the Labour force participation rate (LFPR) of women which they identified as low by international standards. Ercan et al. (2010) carried out a study in three cities in Gaziantep, Ankara and Konya. This research was provoked by the phenomenon “jobless growth” which had severely impacted on the youth and women’s employment. As a result the

labour force participation rate for women including agricultural employment was only 30%. The other reason was the fact that Turkey is the only OECD country which exhibits this problem. Given the situation, the research was intended to investigate the obstacles that stand in the way of increasing women's employment that comply with the decent work definition of the International labour organisation (ILO).

The results of this study are similar to that of Lisaniler and Bhatti (2004) and Jaumotte (2003) with regard to education, that the low level of women's labour force participation rate is the resultant of the low levels of women's education. Therefore, in order to increase the participation of women, education is necessary even though it is said to be insufficient. If employment opportunities are forthcoming, it will be possible to gainfully employ a larger segment of the women population. In addition, education for women according to Ercan et al. (2010) is not only crucial to participation in the labour market, but also to the controlled birth rate in that women who are high school graduates have a relatively low fertility rate compared to women who have never gone to school or who are primary graduates.

The other significant factor identified is women's education level. Equally important men's education was found very significant because educated men understand the importance of education for women much better, as the income a woman could earn would add to the household's total income, and therefore relieve the burden borne by a man towards a better and higher standard of living. Besides, educated men would also change their attitude and perception of women being home-makers, but will instead let women join the labour market. The study therefore concluded that gender equality can only be achieved when men and women are both employed. What is needed as key terms for progress are awareness and role models, while child care opportunities and flexible work conditions are also important for increasing women's labour force participation rate.

Prior to the study by Ercan et al. (2010) in Turkey, the World Bank and the State Planning Organization (2009) had conducted a survey on women to explain the factors that determine female labour force participation in Turkey. The main purpose of this survey was to find reasons for the low participation of women in the Turkish labour market. The findings correspond with

those in Ercan et al. (2010). The analysis indicated that female labour force remains low mainly due to the very low participation rate of women with low levels of education in urban areas. Based on the report, urban women with low levels of education are faced with complex cultural and economic barriers that constrain their participation in the labour market. The report concluded that creating job opportunities for first time job seekers and sustaining investments on education would be the best tools for women's improvement.

In North Cyprus, men and women have equal rights and are treated equally under the law (Lisaniler and Bhatti, 2004:9). Women have the same opportunities and rights for participation in the political, economic and social life. However, the participation rate of women labour force in this country is very low, even lower compared to the developing countries (Lisaniler and Bhatti, 2004:210). According to Lisaniler and Bhatti (2004) this situation is surprising in that North Cyprus is a modern and secular country and therefore begs a question of why and provoked an investigation of factors shaping the labour supply decisions of women in North Cyprus. Lisaniler and Bhatti, carried a study in this regard, the study hypothesized that a woman's level of education influences, in a positive way, the labour force participation (LFP) of a woman, and that for women, marriage decreases the likelihood of participating in the labour market. In an attempt to determine those factors that influence the participation decisions of women, the survey was conducted in North Cyprus and data collected was analysed by using the binomial Logit analysis.

The main results of this study revealed that completing high school increases the likelihood of participating in the labour market, which is even higher if one's education increases to a university degree and or a higher level. Age had also been identified to be another significant factor for women's labour force participation in North Cyprus. Findings have shown that women aged 25 to 34 and 35 to 44 are more likely to be in the labour market compared to other age groups. Another enlightening result that came out of this study has been the effect of the city residence. It was found that women living in Morphou and Iskele (rural areas) are less likely to participate. Marriage was also found to affect the women's labour supply decisions negatively.

Lisaniler and Bhatti (2004) made a remark that the decision of women to participate cannot be independent from the existence of patriarchy and strong cultural factors. That is, before a woman

decides to join the workforce, a woman would first consider the societal and household norms. This result is in line with Becker's household production model that a woman's decision to participate is not hers alone but the entire family. For other women who were not seeking jobs, the women referred to reasons such as taking care of the children and elderly people, household duties and the disapproval of their husbands as obstacles for seeking employment.

Furthermore, women who were previously employed but were out of the labour market at the time of the survey stated that their marriages were the main reason for leaving jobs. They indicated that the North Cyprus' attitude towards women's employment is also not encouraging. However, some women believe that women's work interferes with the order of the family; that it negatively affects the children's education, and, create problems within the family as a working woman give less attention or not at all towards family.

Euwals, Knoef and van Vuuren (2007) in Netherlands estimated participation of women using a binary choice model of women born between 1925 and 1986 on the basis of Dutch Labour Force survey 1929-2004. In an attempt to find which factors determine participation of women in the labour market, the results indicated that in the Netherlands, female participation rate is higher when the labour market is relatively tight. That is, a market is tight when low unemployment rate is accompanied by high participation rate. As for education, real wage, marriage, and the effect of children on the female labour market, the results are in line with the previous researches on the subject, although the effect of children is different for single women, as the presence of children was found to have a less significant effect on participation.

Vendrik and Corvers (2009) also in the Netherlands estimated an error correction model (ECMs) for male and female participation rates between 1969 and 2004. The model used time series data for the Netherlands. Vendrik and Corvers (2009) investigated the extent and speed of dynamic adjustment of labour supply changes in labour demand, government policies and autonomous trends. The results show that labour demand has a very strong impact on the supply of labour. That is labour supply respond positively to the increasing demand for labour. However, for women the results show that in the long-run, female labour force participation rate does not respond to variations in labour demand. The findings also revealed a strong positive autonomous

trend for female participation. Changes in social security policies were found to have made it easy for men and women to enter the labour market while such policies made it difficult for workers to withdraw from the labour market.

Vendrik and Corvers (2009) carried out a decomposition analysis on dynamics in male and female participation, they found women's participation rate to be lower at young age, however, it increases strongly as women reach the ages 45 to 54 years old, then decline gradually with the older age as women of old age classes participate less since they grow towards retirement age. The negative response to labour force participation was found on married women with schooling children. The changing social norms and population was found to have impact on participation rate. With respect to education, the results show that the higher the education the greater the incentive to work and lastly, participation was found to decrease with the rising share of most ethnical minorities in the Netherlands.

In US, Coen-Pirani and Leon (2008), with respect to technological changes attempted to investigate and identify the causal effect of home appliance ownership on married women LFPR. These empirical results support the idea that technological progress in the household sector played an important role in the liberation of women from housework, increasing the labour force participation.

In Taiwan, Vere and Wong (2002), using data from the Taiwanese Knowledge, Attitudes, and practices of Contraceptives, (KAP-IV and KAP-VI) survey of fertility and the Taiwanese Panel Survey of Family Dynamics, estimated a linear probability model of women's labour force participation, with marriage and occupational types. The study intended to study the effect of changes in occupational composition to changes in the overall female labour force participation rate. The results showed that the Taiwanese women with education remain in employment even after marriage and children than for women with lower education levels who settle for just any kind of work.

On the other hand, Jao (2010) in Taiwan, on a survey data used a logistic regression model on labour force participation of married women with preschool children and a set of age, period and

cohort (APC) models to examine trends in labour force of those women. Although the results exhibit a negative effect on labour force participation of married women with preschool children, the regression findings revealed that the presence of other adult member in the household offload the responsibility on a married woman as it serves as help in childcare. With education and earnings for spouse, Jao (2010) urges that though participation by a woman married to a high earning husband is likely to be discouraged, a highly educated husband on the other hand would appreciate an economically active wife compared to the traditional husband, thereby encouraging a woman to participate in the labour market.

Kamitewoko and Andzio-bika (2004) seeking to identify the determinants of women's labour force supply in urban Zhejiang (China) employed the probit regression technique to analyze the data that was collected through direct personal interviews. The analysis of the results in Kamitewoko and Andzio-bika (2004) provides a strong confirmation for the individual characteristics and the family context on the woman's decision to take part in the labour market. However, they emphasized that wage is the important determinant on a woman's decision to work, as it raises the quality of life not only at the level of household but also for society at large.

El-Hamidi (2003) in Egypt had focused on female supply of labour in Egypt. Egyptian women represented half of the population but only account for 27% of the total workforce compared to 73% of their male counterparts in 1998. El-Hamidi (2003) examined whether factors that determine labour supply decisions differ according to the economic well being of the household where the worker lives. He adapted the Heckman's procedures which consist of first estimating participation equation for all observations in the sample, using the maximum likelihood technique model, and ordinary least squares (OLS) to estimate the parameters.

The results of this study indicated that low wage rates affect the labour force participation of women in a negative way. Child care and household responsibilities were also found to hamper participation at a low wage rate more especially if conditions improve at home. The study concluded that programs assisting women to setup their income generating activities should be encouraged. There should also be a provision for the availability of industries that demand the use of female labour.

In Pakistan, Mehak (2007) employed the probit and logit model, which both revealed a very interesting result about the female characteristics; that a female that is educated, not married and between the ages of 15 and 49 would have the greatest chance of being part of the labour force. However, Mehak (2007) identified that the situation of women varies according to their geographical location and class. In addition the crucial issue was that the female labour force participation rate relates to the fact that women essentially tend to concentrate more on providing services to the household. Thus, a reduction in the hours of work. However, the availability and improvement in home appliances has made it easier for women to divide their time and spend a little more time on the market work than at home.

Rosemary (2006) in Kenya investigated the factors determining the participation of women in the informal sector. The findings showed that education is very important factor in determining women's participation not only in the formal labour market alone, but even in the informal sector. Rosemary (2006) therefore concluded that efforts to address the problem of women's access to the labour market should focus on improving their access to education as one important factor for improving their human capital.

Sackey (2005) in Ghana hypothesized that education positively affects female labour force participation while it affects fertility negatively. Sackey (2005) used a probit and multinomial logit model on to estimate the LFP, in order to find out what factors explain women's decision to participate in the labour market and employment choice model. The results in both the probit model and multinomial logit model on female labour participation showed that education of females not only exerts a positive impact on women's participation in the labour market, but also results in a reduction in the number of children ever born to a woman. Religion was also found to negatively impact on female participation, for women in the urban areas only.

The reduced form equation for married women was also estimated using the ordinary least squares (OLS) in the case of fertility. The results obtained from the use of OLS on the reduced form fertility model indicated that the relationship between education and fertility is negative and that for women both in urban and rural areas, the husband's post-primary education helps in the

reduction of children born. Sackey (2005) concluded that with an enhancement in women's human capital, women will be better equipped to participate in a more productive way in the labour market.

In Uganda, Bbaale (2011) hypothesized that female education leads to higher labour force participation of women, from which the outcomes lead to a lower fertility rate. The other hypothesis was that education increases the child survival rate. To test these hypotheses, various models were estimated. Models included among others, determinants of labour force participation. The findings confirmed the hypothesis that women's education at secondary level and partner's education at all levels above primary, play an important role in female labour force participation which in turn has a significant impact on fertility.

Lim (2002) examines the relationship between fertility and women's labour force participation in the developing countries. Lim (2002) had identified that in countries like Tanzania, socio-cultural norms support a high fertility rate, as a results women engage less in the formal labour market but mostly dominate the informal sector (agricultural activities). The study then concluded that there is a positive relationship between fertility and work in the informal sector and yet inverse with the labour force participation of women employed in the service sector. Bloom et al. (2007), and Porter and King (2010), had also found a large negative effect of fertility rate on female labour force participation on the prime age

Lawason (2008) highlighted that in Nigeria women are still excluded from certain occupational categories even in recent years. When he examined the factors that influence and hinder the participation of females in the labour force, he put forward that lack of education and technical training, labour laws and trading customs, customs and religious practices, women's traditional role, management and worker attitude restrain women to take part in the formal labour market.

Borjas (2000), highlights the role of changes in the wage rate as a key determinant of the increase in female labour force participation that as the wage rate increases, non-working women have an incentive to reduce the time they allocate to the household sector and are more likely to

enter the labour market. The labour force participation decision is thus based on a comparison of the market wage with the reservation wage.

2.3.2 Empirical literature on South African women labour force participation

Winter (1999), studied gender differences in the formal labour market participation and pay, and then determined the factors that lie behind the differences in the South African labour market. The study used data from the 1994 October Household Survey (OHS) to examine the magnitude of the differences and identified that gender, wage, occupation, sex, limitation on the right to title and unequal investment in training discrimination were the basis for gender differences in the labour market. Winter (1999) utilised a quantitative analysis, to examine whether the identified factors operate differently for men and women. The probit model was ran and for women, the findings indicated that education plays a very important role in that those women with a much lower level or no education at all have a much lower probability of participation in the labour market than those women who have gone beyond primary. For those women with post-secondary education, participation was found to increase considerably. The findings on age suggested that participation rates are low among the youngest ages, rise with age and then decline steadily as workers approach retirement. In terms of racial participation, it was found that African women's participation remain lower than participation of other racial groups. However, African women compared to other racial groups were found to remain in the labour market for a little bit longer time at their old age.

The findings showed a negative effect of the presence of children on the probability of women's participation. However, the effect was found to differ with racial groups. The findings also suggest that there is a degree of differences in the factors that affect the labour force of men and women in South Africa. This is with regard to the question of whether the factors affecting men's and women's labour force participation differs. Winter (1999) suggests that education and the presence of children were the factors that differently affect men's and women's participation in labour market.

Bhorat and Hodge (1999) had focused on the structure of the labour market and its changing pattern. They identified that as changes in structures and methods of production occur within the sectors of the economy, so does the nature of the demand for labour in the South African economy. They examined the causes of changing structure of labour demand. They found that technological changes have brought about higher productivity and more efficient methods of production. These as well leads to the demand for highly skilled individuals, with professional skills, for instance IT, increased dramatically. While on the other hand, the rising capital intensive production resulted in a shift away from the elementary occupations towards the utilization of machinery. As a result, most individuals lose employment. The decomposition of the growth in the formal employment by occupation and race analysis was made and the results indicated that for skilled workers the impact was positive and negative for unskilled employees. Consequently, Asians and Whites gained from these changes whilst Africans and Coloureds lost. The study concluded that, there is a need to meet the demand in such a way that the outcome breaks the skills-race overlap and the gender concentration in the labour market.

Mlatsheni and Leibbrandt (2001) investigated the relationships between education, fertility, labour force participation and employment of African women. These researchers had identified that among the women, is not always that higher education attainment would enhance the possibility for participation in the labour market. However, using logistic regression analysis, their findings showed that women with a higher education have a greater chance of employment, and that the availability of young children in an African woman's household does not significantly affect participation in the labour market. Having more children by an African woman is thought to necessitate more income, as a result, an African woman is driven to work in the labour market. Married women were found to be less likely to participate. One other finding was that the presence of any working household member has a positive relationship with participation in the labour market because the working household member provides those that are unemployed with the labour market information about the opportunities and the resources that enables the job search. It was also found that labour force participation decreases with age.

Naude and Serumaga-Zake (2001) carried out the study to investigate the determinants of labour force participation and unemployment in the North West province. They used the data from the

household survey of the Southern African labour and development research unit (SALDRU, 1993) and the Central Statistical Services (CSS, 1995). Estimation of a probit model revealed that when women reside in the semi-urban the probability of participation in the labour market decreases. Naude and Serumaga-Zake (2001) found that there is a relationship between non-labour income and the household head. Thus, the impact of income not worked for on labour force participation would depend on the level of non-labour income compared to the reservation wage as well as whom the household head is. Such a relationship was found to be more likely to reduce the probability of African's participation in the labour market.

Casale and Posel (2002) explored the changes in female labour supply, using data from 1995 and 1999 OHS. When analysing the increasing number of women in the labour force of South Africa, they found that women are pushed rather than pulled into the labour market. For instance, an important factor pushing women into the labour market is the decline in access to male income because of the increase in male unemployment. As a result most men fail to maintain and provide for the needs of their families. Another possible explanation for the declining male income support over the period is the effect of the HIV/AIDS epidemic, as well as the greater possibility for male migrants to settle in urban areas, which could be associated with a reduction in remittance transfers to women. The study had also found that most households headed by women necessitate women to participate in the labour force.

In response to increasing trends identified in Casale and Posel (2002), Casale (2004), examined in more detail how feminisation of the labour force has benefited women in South Africa. Race, occupational categories and earnings were found to play a critical role on female labour, as they affect mostly African women compared to white women in South Africa. Casale (2004) urges that, among women, affirmative action has served to benefit relatively more white women than African women. However, earnings for women contribute significantly to the welfare levels of their households. Casale (2004) then highlighted that in the majority of occupational categories white women earn the highest returns than African women. African men and women are concentrated in the informal self employment where almost half of the African women were crowded into elementary and low skilled occupations. Clearly, not all women benefitted from the feminisation of the South African labour market.

In their study, Serumaga-Zake and Naude (2003) used the data from the 1995 OHS pertaining to the North West province. They analysed the determinants of the labour force participation of women in North West. They employed the Heckman two step procedures and estimated the participation model using a probit regression and then the OLS. Similar to other previous work, they found that like with all other women in South Africa, the North West women's labour force participation is in other income is of labour force participation by African women in the North West province. Other significant determinants are age, education, region, marital status and household have been found to affect the labour force participation of women.

Serumaga-Zake and Kotze (2004) carried out a study to investigate the determinants of LFP of married women in South Africa. The study used the data from the 1999 OHS. Running the probit regression procedure, it was found that other than the findings in previous studies in South Africa, a husband's wage and potential wage are identified as the determinants of married women LFP. Serumaga-Zake and Kotze (2004) further posited that the implication of this is that the cultural family responsibilities are still keeping the participation rate of married women down. Therefore, the results suggest that government policies that focus on women's education and training, and those which are intended to promote gender and racial equality in all spheres of employment, should be encouraged as an endeavor to increase the participation of married women in the South African labour force.

In the second decade of democracy, Lee (2005) estimated the labour force participation of women using the logistic regression analysis. The findings showed that divorced women are more likely to participate in the labour market, followed by married women and lastly, single women. It was also found that being widowed, however, decreases a woman's chances of participating in the labour market. Lee (2005) also found that the presence of children aged below 15 years (fertility) in the household, accord with household production theory that fertility tends to increase the housewife's value of time at home, thus negatively affecting the prospects of participating in the labour market in times in which the need for childcare or housework is high. Thus, additional children in the household, raises the wife's reservation wage and lower her likelihood of participating in the labour market.

Van der Westhuizen, Goga and Oosthuizen (2007) reviewed the changes in the status of women in the South African labour market between the periods 1995 to 2005. In line with earlier researches, they had identified that the changing policies and attitudes and improved economic performance have impacted on the labour market dynamics for women such that employment for women has increased more rapidly compared to that of men. Analyzing from the data set (from the 1995 OHS and 2005 LFS), it was identified that the increased number of women entering the labour market over this period has been driven specifically by a greater number of African women. However, based on the study, women continued to suffer discrimination, women were still over-represented among the unemployed, while they continued to be disadvantaged relative to men within the labour market.

Van der Westhuizen et al. (2007) then highlighted that gender and race, more importantly for women, age and literacy level play an important role with regard to employment. If women are young and poorly educated and are African, to find employment is relatively difficult compared to women of other races. Even those African women who did find employment continue to earn considerably less than their white counterparts, with very large differences especially at the lower skill levels.

Ntuli (2007) examined the determinants of the low level and also of the changes in African women's labour force participation, during the first decade of democracy (1995-2004). The study utilized a probit and logit decomposition analysis devised by Even and Macpherson (1990). The findings exhibit that female participation responded positively to education, which has been the prime factor. Non-labour income, marriage, fertility and geographical variations in economic development persistently stifled participation. The most important fact discovered in this study was that the observed shifts in the participation rates of women from 1995-2004 relate to responses to policies rather than to changes in the labour market characteristics. This could mean that the demand for female labour force participation does not meet the supply of female labour.

These findings point to the important role of education in determining whether or not a woman is a participant in the South African labour market. The study also emphasized that the prospects of African women to participate in the South African labour market differed according to the

residential settlements (rural/urban). Women who specifically lived in urban areas had greater chances of participating in the labour force as compared to those in rural areas. It was then suggested and urged that the government still had a challenge in amending cultural and historical legacies, which kept African women out of urban areas and hence, limited their opportunities to participate in economic activities. In the case of marital status, it was established that marriage considerably reduced the probability of a South African woman to participate in the labour market. While divorced and single women lack prospects for economic dependence on a spouse, they resort to work for survival.

Yakubu (2009) carried out the study on female labour force participation seeking to investigate the factors influencing female labour force participation status, to investigate the relationship between female labour force participation and education in the South African labour force. The study was supported by the Human Capital Theory (HCT), which postulates that the education of women is positively related to the likelihood of their labor force participation. The data employed on the study were extracted from the 2008 Quarterly labor force survey (QLFS) of Statistics South Africa. Logistic regression modeling was used to estimate the influence of education on labor force participation, while controlling for other demographic and economic factors. The results showed that there is an association between the level of education status and female labour force participation. However, Yakubu (2009) pointed out that although the South Africa's female labour force participation has increased over the past two decades, the female labour force participation rates are still low in comparison to the rates of their male counterparts despite the advances in female educational attainment and the expansion of the market economy. The study also found that there were more black women participating in the labour market than all other racial groups. Young and single women were also found to be more likely to participate. Yakubu (2009) also found out that women in the Limpopo province had the lowest participation rates from all other provinces. In addition to these findings, Yakubu (2010) found that women work in formal sectors of the labour market than all others sectors. The findings also revealed that most women occupy the elementary positions, domestic and clerk with only a few in agriculture and fishery work.

2.3.3 Assessment of empirical literature

From the above review of literature on the women's supply of labour, it is demonstrated that the increase in women's employment in South Africa, and around the world is as a result of the rising education attainment of women and falling birth rates, among all women; married or single. Those women with no or less years of schooling have a much lower probability of participating than women who completed at least higher education. Some studies argue that the main driving force for women to participate in the South African labour market is largely economic. Women therefore make labour market decisions based on market wages and on the business cycle. Women decide to enter the labour market when their wages are greater than the reservation wage.

In general, the participation rates of women are increasing, although they are still lower than those for men. Based on the empirical literature analysed above, this is due partly to the different cultural family and responsibilities of men and women, which tend to favour men over women and are basically discriminatory towards women. Women's changing aspirations, as well as the economic needs and household survival strategies, and the change in the composition of the labour market has led to the prevalence of situations and conditions that force women into leaving the traditional role in the household, for more economic activities outside the home.

The review of South African literature indicates that the analysis from most previous studies was done on the micro-data. At the micro level, the data collected can be treated as randomly selected observations from the population. In this case, it means that the decision to participate in the labour market was considered as a dichotomous random variable that takes the value of 1, if an individual participate and 0, if an individual does not participate in the labour market. Hence, most of these studies estimated the probit and logit regression models, and those that used a two step model, that is, a probit model and OLS. However, none of these previous works had analysed labour force participation as a time series data using a pure OLS model. To the researcher's knowledge, this study would be the first in South Africa. The researcher in this study also believes that this analysis will contribute a considerable credibility to the determinants analysed and to the existing literature.

2.4 Concluding remarks

The aim of this chapter was to review a number of theories on the supply of labour and to explore various empirical works conducted on the international and national level. In view of understanding the factors underlying the decision to participate in the labour market, we consider three theories namely; the labour-leisure choice model, the household production function and the allocation of time model. The labour-leisure model suggests that individuals will participate only if the market expected wage is higher than the reservation wage. The household production function on the other hand, argues that the decision to participate is determined by the household's total income. In addition to household income, the allocation of time model emphasises the value of time in participation decision making process.

A review of literature reveals that women form a large and growing part of every nation's labour market. The earlier notion that a woman's place ends in a kitchen is long gone. The perception that a woman worked only until marriage and then vanishes from the labour force is now obsolete. It has now become a norm for a woman to take part in the labour market, regardless of whether it is an effect of a "push" factor or a "pull" factor. The implementation of the affirmative action measures have led to a positive change in employers' attitudes and the hiring practices towards women in South Africa. Most of these studies analysed the decision to participate using a binary probit and logit regression. Some estimated a two or three-stage model and not many have used OLS. The assessment of literature in this study identified the determinants of female labour force participation as education for women and husband's education, age, marital status, region, area of residence or province, presence of children or young children, non-labour income, wages, husband's earnings and race. Some identified the indirect impact of HIV/AIDS through the loss of male income as also one of the possible factors influencing labour force participation of women. This study follows the approach of Ntuli (2007) and Yakubu (2009) and we consider the likely effects of the HIV/AIDS epidemic. Having outlined the theoretical foundation of the study in this chapter, the following chapter presents an overview of the labour force in South Africa.

Chapter Three

Overview of the Labour market in South Africa

3.1 Introduction

The aim of this chapter is to provide an overview of the trends in the labour market of South Africa. The chapter is divided into three sections. Section two presents the analyses of the changes in economic participation between men and women by comparing employment levels, by industry, occupation and earnings. Section three presents the trends unemployment levels and overview of labour force participation with focus on women in comparison with their male counterparts. Section three also analyses the factors affecting labour force participation in South Africa. The data presented on employment, unemployment and labour force participation is based on the official or strict definition of unemployment, using the October household Survey (OHS), Labour force Survey (LFS) and the Quarterly labour force Survey (QLFS) data. The official definition requires that those individuals without work must be actively seeking work and therefore, treats discouraged job seekers as part of the not economically active population (Foro & Komatsu, 2011:5). The chapter concludes with section four by providing concluding remarks towards the end of the chapter

3.2 The South African labour market

The labour market consists of men and women of the working ages (between 15 and 65 years) who possess different skills, abilities, motivations and family circumstances, and who are working or willing and available to offer their labour services for hire (Department of Labour, 2004:5).

The South Africa labour force has grown remarkably rapidly. Kingdon and Knight (2005:5) suggests the possible cause as rapid increase in the number of working age people and increased labour force participation. However, due to the South African political background, the South

African labour market has not been representative of all the population groups of South Africa. Borat and Leibbrandt (1999:3) points out that disparity in terms of occupational positions and pay affected mostly the non-white South Africans. Differences were reflected by the fact that in 1996; white South Africans earnings were 5 times higher compared to that of Africans who suffered occupational segregation and lower earnings. In addition, non- white South Africans occupied low paying jobs with fewer opportunities for improvements and benefits compared to positions occupied by Whites.

Interventions aimed at eliminating the labour inequalities of the past and improving the general working conditions for all South Africans were implemented since 1994 (Oosthuizen & Borat, 2004:1). The enactment of legislations such as the Basic Conditions of Employment Act (BCEA) of 1997 which provides for the improvement and coverage of labour market standards, Employment Equity Act (EEA) of 1998, to eliminate unfair employment practices and wage differentials, the Skills Development Act (SDA) of 1998 forcing employers to offer training and educational skill of their employees, and later the Broad Based Black Economic Empowerment Act 53 (BEE) of 2003 which was aimed at promoting economic transformation for all black people, including women, in order to enable meaningful participation in the economy (Department of Labour (2004:4), van Klaveren et al (2009:21).

Such interventions as the ones mentioned above, have all contributed to the increasing opportunities for both men and women in the South African labour market. Similarly, employment among women has increased more rapidly than that of men over the past decade (Ntuli, 2007:4). The analysis conducted by the Department of Labour (2004:4), signaled that these changes allowed opportunities for those South Africans who were previously marginalized. The report further indicated that despite the advancements, women who are employed still have challenges with regard to pay and are still less likely to have access to benefits compared to men.

3.2.1 Employment in the South African labour market

The restructuring of the labour market over the last decade in South Africa resulted in the increase in employment with a number of jobs being created. Of the 2, 8 million new jobs over

the period 1995 to 2005, among those who were employed women benefited the most. It has been estimated that of out of the total employment, female employment increased by 41% almost double the increase of 22% in male employment (Statistics South Africa, 2011, Bhorat and Oosthuizen, 2005:1). Even so, on average, there are still more males from all racial groups who are in the formal employment than females, and opportunities have not been equal, certain groups of individuals have been victims of low pay, such as women (Statistics South Africa, 2002:21).

Barker (2003:40) emphasized that more than a half of these jobs are rather created in the informal sector, meaning that women create employment for themselves. Casale, Muller and Posel (2004:979) are of the opinion that the rising labour force participation, especially between 1995 and 2001, may simply be a reflection of the improvements made by Statistics South Africa in the collection of data since 1995, specifically recording self-employment in the informal sector. On the other hand, the increased response to participation in the labour market was identified to have been due to migration from agricultural activities. Equally important, innovation of the new labour saving methods has made it easier for women to take up employment in the formal labour market as it has become easier for them to perform tasks which required physical strength which were traditionally held by men. Table 3.1 provides data on employed men and women between period 2000 and 2010.

Table 3.1: The number of employed people by gender between 2000 and 2010 (in millions)

	2000	2005	2008	2010
Male	6770	7167	7866	7390
Female	5566	5602	6000	5671

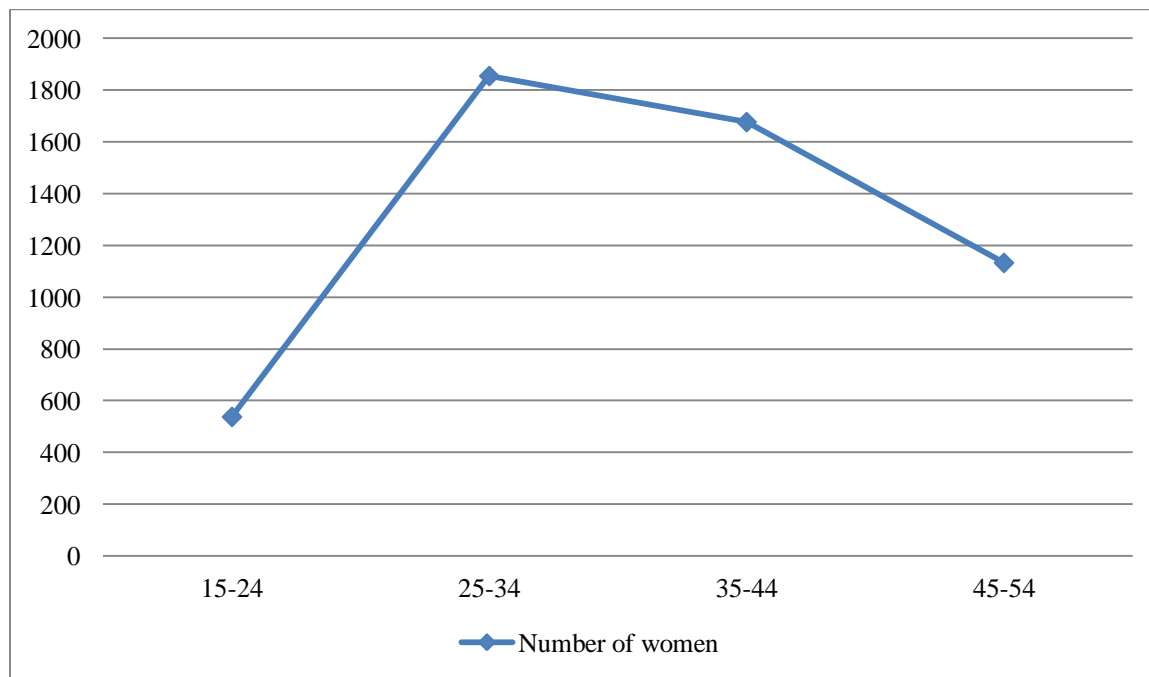
Source: Statistics South Africa (2005, 2010)

It can be seen from the above table that throughout the years, fewer women are employed compared to men. Employment for women has consistently been lower compared to that of men despite women comprising majority of the South African population. Only about 5.7 million of women were working in 2010 compared to 7.4 million men. For both men and women, employment growth occurred between 2005 and 2008 after which the levels were seen to drop.

In 2009 an economic recession was experienced and therefore the labour market became weaker than in the previous years as the economy struggled to create jobs. The crisis resulted in massive job losses. It was estimated that over a million jobs were lost for both men and women with fewer women than men being employed. Consequently, the male-female employment gap persists (Statistics South Africa, 2010:14).

Employment level also reflects a unique pattern among women of different ages. The figure 3.1 below shows the number of employed women by age in 2010.

Figure 3.1: Employed women by age, 2010 (in millions)



Source: Statistics South Africa (2010)

The figure 3.1 above shows that in 2010, women employment is lowest among the 15-24 age groups. Labour force participation at these ages had been seen to gradually decline globally more and more of the youth stay in schools longer and delay entering the labour market (Leibrandt et al., 2010:7). However, employment picks up as women grow to the next stage, at 25-34 age groups. At 25-34 group employment is highest compared to all other age groups. The data shows the greater gap existing between young and adult women with regard to entering labour market.

The young-adult employment gap could suggest the increasing scarcity of employment opportunities accessible for young people with a growing number of new entrants to the labour force. Anh, Duong and Van (2005:8) suggest that the low levels of employment among the young women as due to the mismatch between education labour demand.

3.2.2 Employment by industry, occupation and earnings

The South African labour market is highly segmented, characterized by high skilled occupation and industries targeted for white males and to a lesser extent females, while African males and females are concentrated in the low skilled occupations. Although most Africans have been able to manoeuvre within the system and hold key positions, evidence shows that they still occupy a few of the top management positions compared to the white South Africans, specifically males (van Klaveren et al., 2009:10). The situation differs considerably for women. Statistics show that even in 2010 women are still less likely to participate in certain types of jobs or occupy certain positions such as the managerial positions. Table 3.2 illustrates the differences in employment in certain types of industries.

Table 3.2: Employment by industry by gender, 2010

Industry type	Men	Women
Agriculture	66.0	34.0
Mining	88.3	11.7
Manufacturing	66.6	33.4
Utilities	76.8	23.2
Construction	89.1	10.9
Trade	51.9	48.1
Transport	79.8	20.2
Finance	59.2	40.8
Community & Social service	42.1	57.9
Private households	22.9	77.1

Source: Statistics South Africa (2010)

The data on table 3.2 shows that the higher proportions of men were employed in all other industries except community and social services and private households. Community and social service and private household employed majority of the women, at least 57.9% and 77.1% respectively. The data also shows that mining and constructions employs more men than any other industries. Among those who were employed in the mining and construction were 88.3% and 89.1% of men while women constitute only 11.7 and 10.9.

The analysis on employment levels shows gender disparity in terms of occupation distribution. It shows that women have made slow and irregular progress in obtaining a share in certain positions, such as of managerial positions. Table 3.3 below shows the differences in employment in the more skilled occupations.

Table 3.3: Employment in skilled occupations by gender, 1995-2010 (in millions)

	2005	2010
women		
Manager	29.3	29.7
Professional	46.3	45.4
Technician	54.2	55.0
Men		
Manager	70.7	70.3
Professional	53.8	54.5
Technician	45.8	45.0

Source: Statistics South Africa (QLFS, 2011)

From the table 3.3, the data shows gender disparity in terms of the professional and managerial positions. For example, between the period 2005 and 2010, there were more than twice as many male managers than there were women managers, 70.3% as opposed to 29.7%. There has been a drop in the share of female professionals' occupations between 2005 and 2010 whilst for the same position; there has been an increase for men. Likewise, men accounted for a higher proportion among professionals 54.5% compared to 45.4% of women. The labour market seem to attract more women in technical occupations than men such that the rate of employment in these positions increased from 54.2% in 2005 to 55% in 2010 whilst there was a decline of 0.8%

for men in the same position. In general, it can be deduced that among those in skilled occupations, men accounted for 55.4 % compared to 44.6% of women occupying skilled positions.

From the above analysis it can be suggested that women have so far made a little or minimal improvements in occupying the main positions. This implies that women have not reached a point where the labour market allows them to explore opportunities in equal proportions as men. Men are seen to still play a major role in decision making positions while women play subordinate to men. However, education has played a significant role in increasing the chances of women filling these positions. As illustrated on table 3.4 below, women with tertiary education were more likely to be in managerial and professional occupations compared to women without tertiary education. For example; of the women in managerial positions, 46.0% has tertiary education, 37.5% have matric, and 15.4% have not completed their matric while only 0.4% have not been to school. The table also shows that tertiary education enhances the probability of participation in technical and managerial positions which clearly are an indication that advances in education for women compared to men unleashed more opportunities in the technical aspects than other areas of education.

Table 3.4: Personals in skilled occupations by education and gender, 2010

	Profession	Technician	Manager
Proportions of women			
No Schooling	0.1	0.5	0.4
Less than Matriculation	9.0	13.2	15.4
Matriculation	24.4	27.3	37.5
Tertiary	66.2	58.4	46.0
Proportions of men			
No Schooling	0.3	0.7	0.6
Less than Matriculation	7.7	18.8	17.6
Matriculation	20.1	34.2	39.1
Tertiary	70.8	39.1	41.0

Source: Statistics South Africa (QLSF, 2011)

Although women are increasingly penetrating the managerial and professional occupations, remunerations on an equal basis are a concern for equity and equality. The pay gap between men and women has narrowed in the last 16 years, however, the pay discrepancies against women persist. There is enough evidence that women still earn significantly less than men who are employed in the same category, for example; the average earnings for women were about 69% of average earnings for men in 1997, and increased to 75% of average earnings for men in 2006 (Posel & Rogan, 2009:28). In addition, it has been established that at times when women occupy positions and perform the same work done primarily by men; the remuneration becomes lower, while women's work earns higher pay when done by men (Adebayo, 2004:2).

Below table 3.5 illustrates the differences in earnings between men and women. The summary on median earnings on table 3.5 confirms that women do not earn the same with men for the same work. The median earnings show that men's earnings are higher than women's earnings in all occupations except domestic work. The biggest gap in earnings is among the managers, then professionals with a difference of R3 000 and R2 000 respectively, and the gap narrows down from technicians to elementary and domestic.

Table3.5: Median earnings by occupation and gender, 2010 (in Rands)

	Men	Women
Manager	12000	9000
Professional	12000	10000
Technician	8000	7500
Sales	5000	4000
Elementary	1630	1451
Domestic	996	1000

Source: Statistics South Africa (2010)

The overall earning distribution also shows that the South African labour market still reflects gender disparities. It shows that women still earn considerably less compared to their male counterparts. This explains why the labour force participation rate of women increased over the years while at some point it increased at a constant or even declining rate for men. This is

explained as a pure substitution effect, resulting from a replacement of the male expensive labour with a cheap women labour Ntuli (2007:4). The Table 3.6 below compares the labour market hourly average earnings of men and women by population group in two periods, 1997 and 2006.

Table3.6: Average real hourly wage, by race and gender: 1997 and 2006

	1997	2006	% change
All workers	11.66	11.71	0.5
Women			
African women	8.61	8.88	3.0
Coloured women	10.18	10.88	6.9
Indian women	11.70	14.39	23.0
White women	19.56	24.53	25.4
Men			
African men	9.15	8.85	-3.3
Coloured men	11.43	12.68	10.9
Indian men	16.28	20.98	28.8
White men	26.1	32.24	23.4

Source: Burger and Jafta (2010:15), calculated using geometric rather than arithmetic means

The analysis on the real hourly wage shows disparities not only in gender but a wide gap in racial groups. It shows that the white women followed by the Indian women earn a relatively higher wages than African and coloured women. The wages for all women have remained lower during this period, compared to the male earnings. However, the average increase in women wages has narrowed the gap leaving the difference of only 0.4%. The table also shows that while the African women wages increased in 2006, the wages of their African male counterparts dropped by 3.3%, making the wages for all Africans almost equal or even higher for African women. On the other hand, the white women's wages grew at a more rapid pace than their white male counterparts in 2006, by 2% higher.

Generally, the above analysis shows that women compared to men still earn a significantly lower wages than men who possess the same qualifications and occupy similar positions and occupations.

3.3 Unemployment and overview of female labour force participation

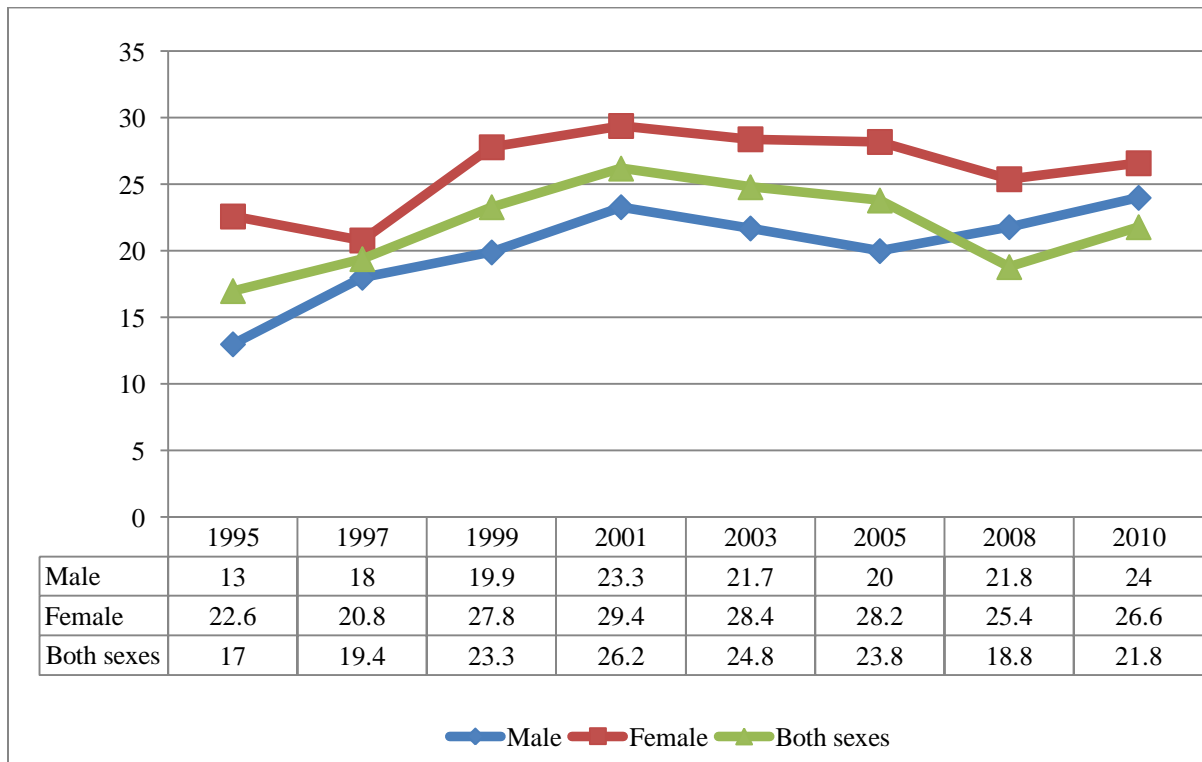
The salient feature of any labour market is the relationship between the number of people unemployed and the economically active population (EAP) (Department of Labour, 2005:2). This means that the size of the economically active population determines the level of unemployment. This section provides an overview trends in the levels of unemployment and some key trends in labour force participation of women over 16 year period under review. Women status varies considerably across the country in South Africa. For the purpose of this study, overview of trends in the labour force is focused on the South African women of all races who are economically active. But for the sake of comparison, male trends are also observed.

Since 1995, the South African labour force has shown a combination of two phenomena, namely increased absolute employment and increased absolute unemployment (Bhorat & Oosthuizen, 2005:7). Over the period 1995-2002, the labour force has been growing at a rapid pace, employment expanded, however, resulting in the unemployment rate rising from 17.6% to 30.5% (Department of Labour, 2004:19). This implies that the economy is failing to create jobs equivalent to the growing population of the working age. For example, in 1999, there were 26.3 million South Africans of the working age. Of these people it was estimated that 12.8 million were classified as not economically active while 3.2 million were estimated to be unemployed (Statistics South Africa, 1999). The Department of Labour (2004:19) suggests that over the period 1995-2002 the economy has been able to provide 32 jobs for every 100 economically active individuals in the labour market, of which 68 of the remaining were first entrants into the labour market and have been rendered or have remained jobless since 1995. The following figure 3.2 shows the rate of unemployment in South Africa.

Figure 3.2 shows that unemployment has been fluctuating throughout the period 1995-2010. It shows that within the period 1995-1997, unemployment levels among women declined as more and more women entered the labour force. While in the same period, the unemployment levels among men were rising, suggesting that as the labour market adjusted, more and more men also entered the labour market but could not find jobs, or it could mean that as women acquired equal rights to economic independence, a lot of men lost jobs to women. Following this period, the

unemployment rate among women was seen to increase gradually until 2001 when it gradually declined and leveled off between the periods 2003-2005. On the other hand, the unemployment rate for men follows the same pattern as that of women until only after 2001 where we observe a decline up to the year 2008.

Figure 3.2: Unemployment rate by gender, 1995-2010



Source: Statistics South Africa (1999, 2007 & 2011)

Following 2008, the country's economy was on a downturn, employment for all South Africans contracted by 3.0% or by 395 000 jobs in 2010 (Statistics South Africa, 2011:9). As a result, both men and women unemployment levels increased. However, based on the data presented in figure 3.2, the increase in women's unemployment rate grew at a very low at 1.2% compared to 2.2% for men. The period after 2008 suggests that both men and women lost jobs while it also became difficult for the labour market to absorb the new entrants, hence the increased levels of unemployment in this period. Consequently, the overall unemployment rate over the period 1995-2010 has risen by 11% for men and 4% for women suggesting that during this period, women enjoyed more of the employment opportunities than men. The striking feature illustrated

by the data is that, regardless of the advancements made for women in the labour market, the unemployment rate has remained high among the women than it has been for men. The discrepancies underlying female unemployment are also established among population groups. Figure 3.3 below presents the unemployment rate by population groups and gender.

Figure 3.3 (a): Unemployment rate by race and gender between the period 1995-2010 (Male)

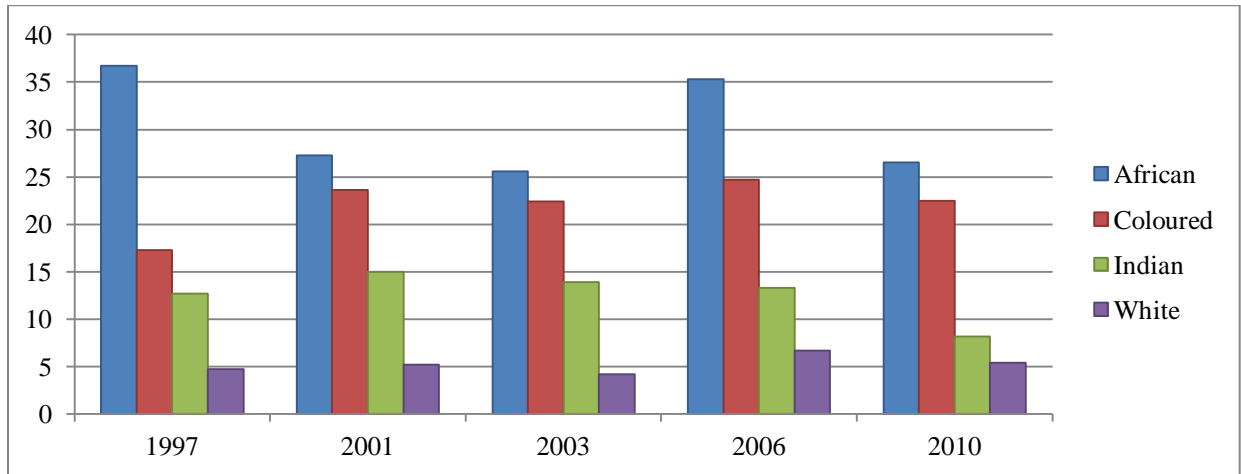
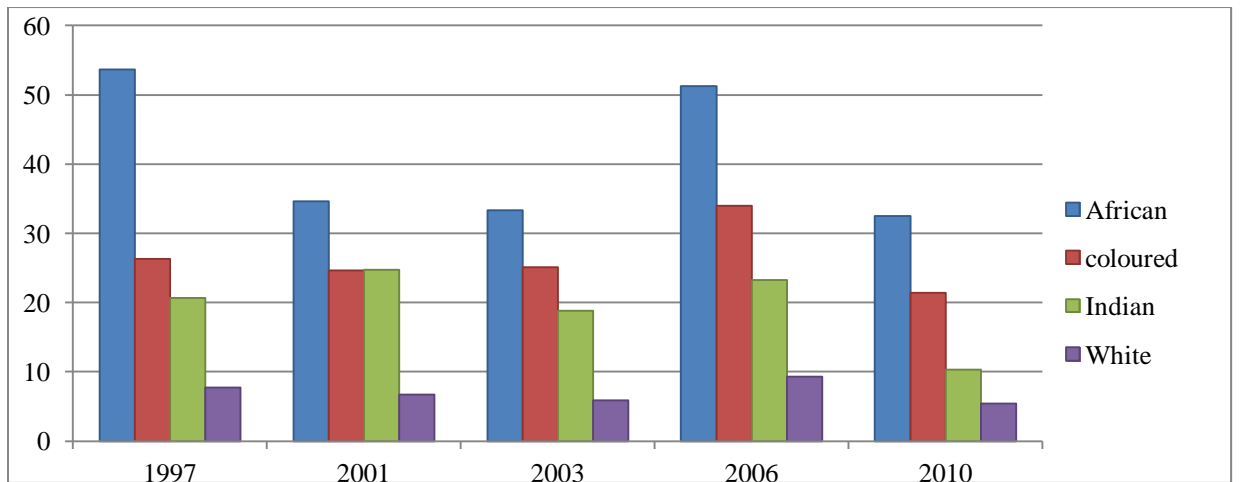


Figure 3.3 (b): Unemployment rate by race and gender between the period 1995-2010 (Female)



Source: Statistics South Africa (1999, 2007 and 2011)

From the table, the data shows that for both African men and women, unemployment declined between the period 1995 and 2003. In the period 2006, unemployment increased for all women and then decline again in 2010. Over the period, 1995-2010, the data shows that unemployment rate was highest among Black African women than it was for other women. Although the rate of unemployment declined for African women, it is still highest at 32.5% in 2010 compared to women of other race. For men, white men had the lowest unemployment rate of 5.4% in 2010. The overall analysis shows that unemployment remains high among the women than it is for men.

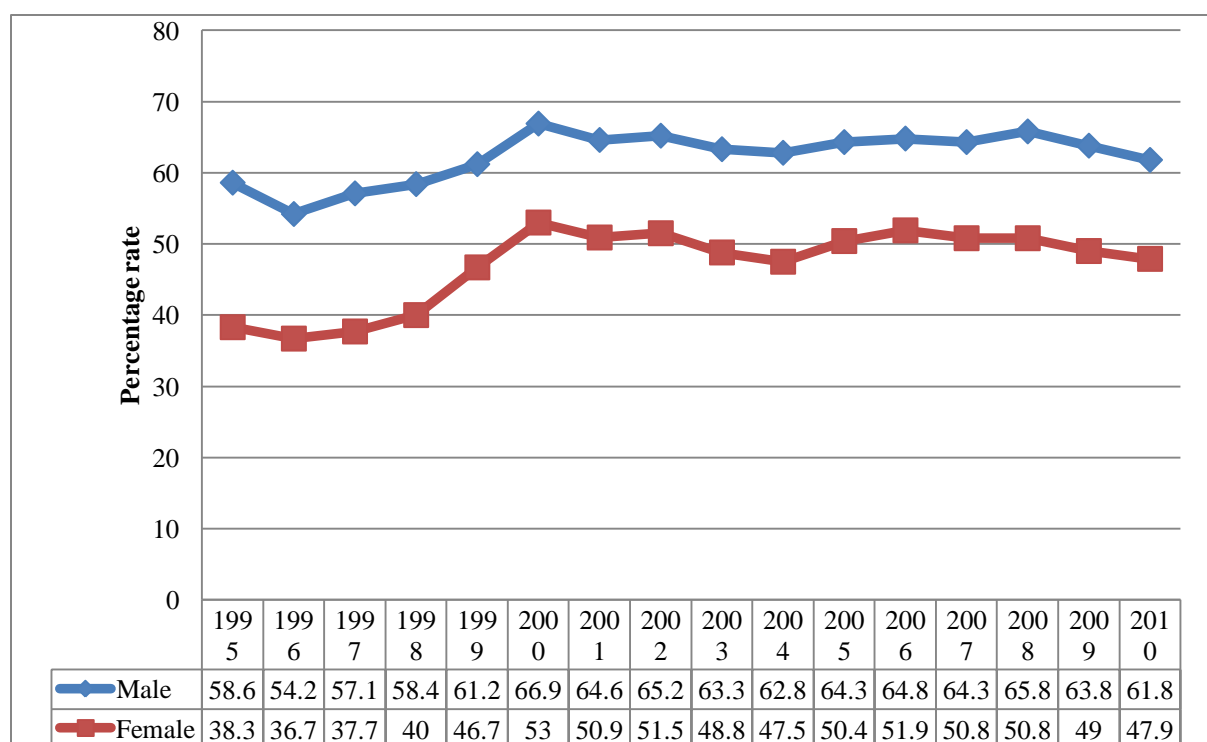
From the above analysis, it is clear that the rising unemployment rate is the result of a mismatch between total employment and the fast growing labour force. That is, the creation of jobs does not keep pace with the supply of labour of the working age and so the rapidly rising number of unemployed individuals (Bhorat & Oosthuizen, 2005:3). For an example, those people who were previously scholars and students became available for work and are looking for work. Leibbrandt, Woolard, McEwen and Koep (2010:5) asserts that mostly unemployment is higher among the young South Africans compared to the older, who are better educated and are new entrants into the labour market. They highlighted that this age group faces a great difficulty in finding jobs and entering the labour market, thus, raising the cost of job search for those who cannot afford it. Secondly, the South African labour market has high levels of skill mismatch. This reflects excess demand for skilled labour versus high levels of supply of unskilled labour. These can be reflected in the numbers and the inability of skilled people to find suitable jobs or no jobs at all.

Figure 3.4 below, provides the labour force participation rates for both men and women in the South African labour market over the period 1995-2010. The figure illustrates that a greater proportion of men and women of working age (15-65 years) were working or willing to work in 2005 than in 1995 and 2010. The data shows that in the periods 1995 to 2000, labour force participation of women increased by 6.4% higher than the labour force of men. This period marked the highest labour force participation rates the South African labour market has ever had for both men and women. For women labour force participation rate was at 53%, however, still lower than 66.9% of the male participation rate. Nonetheless, Yu (2008:4) suggests that the great

increase that occurred over this period can be attributed to the fact that the Statistics South Africa switched from the OHS to LFS in 2000. 46.7% to 53%. From the years that followed, year 2001 to 2004, the rates dropped by 5.5% for women and 4.1% for men. In 2005, the labour participation rate for women increased by almost twice the increase in participation rate of their male counterparts. That is 2.9% increase for women against 1.5% increase for men in 2006. After which participation rates for women were seen to level off and gradually declined to 47.4% in 2010.

Despite the decline, it is observed that when the total labour force participation increased by 6.6% over the period 1995 and 2010, the overall participation rate of women had increased by 9.1% more than 3.2% (for men) which is twice the growth of their male counterparts .

Figure 3.4: labour force participation rate by gender



Source: statistics South Africa (1999, 2007, & 2011)

The data also indicates that even women though comprise the majority of the population in South Africa, approximately, more than 50 percent of the total population (van Klaveren et al,

2009:31), only 47.4% are economically active in 2010. On the whole, women have lower labour force participation rate compared to their male counterparts. Leibbrandt, et al. (2010:7) however, argues that this difference is to be expected as women continue to exit the labour market to become mothers, caregivers and homemakers while men continue to work.

Winter (1999:10), identified a slow progress in labour participation of women because women had lagged behind men in terms of investment in human capital and therefore were less likely to participate in skills requiring jobs. Although the female labour force is lower compared to that of males, Winter (1999:10) had identified that the male-female gap in the labour force is narrowing due to improvements in educational attainment. On the one hand, Ntuli (2007:4) believed that the observed increases on female labour force participation over this period can be attributed to the improvements in male earnings and the availability of low class jobs, which are undertaken in large numbers by women with lower levels of education. Ntuli (2007:4) also suggested that the trend can be as a result of changes in response to policies rather than actual changes in the behavior of the labour market.

As expected, labour force participation is lowest among the youngest and oldest age groups, estimated at 40% in 2002, mainly because most of the younger groups are still enrolled at the educational institution, while the old age is already out of the market and some with special or scarce skill are recorded not economically active yet at times, they often work as consultants. Based on participation by racial groups, it was found that over the period, several groups have seen substantial increases in the labour force, even though it had been higher for Africans than any other groups (Burger & Woolard, 2005:12). The overall analysis of the trends shows disparities between man and women in the labour market.

As for the recent declining trend in labour force participation of women, the Department of labour (2010-2011:9) and Mantshimuli (2009:1) confirms that the country experienced a slow growth of the economy as a result of the global credit crisis. Consequently, even if women wanted to increase their participation during recessions, they may be limited by a decline in demand for labour (Bhalotra & Umana-Aponte, 2010:2).

3.3.1 Factors affecting female labour force participation

Although progress has been made in enhancing women's access to higher education, there have been a number of factors affecting their participation in the labour force. Such factors continue to impede women's full and effective labour force integration. It is therefore, vital to understand those factors that affect the female labour force participation (FLFP) so that the reasons for the low and declining women's participation are reviewed.

3.3.1.1 Education

It is highly desirable for countries to see their people acquire the highest levels of education for the benefit of both individuals and national development (Bbaale, 2011:5). Education does form a stepping stone towards individual improvement and self empowerment in all spheres of society. For both men and women, girls and boys, education has many positive effects as it enhances opportunities for employment, it motivates individuals to work as it raises their earnings potential and for the benefit and development of the economy as a whole as they learn and become more involved in their societies. For women, investment in human capital improves their competitive power in the labour market; it provides them with more complete information regarding work opportunities and expands their prospects in search of better economic conditions.

The role of education is supported by empirical evidence. Background work of Arora and Ricci, (2006:31) shows that if the percentage of the labour force with no schooling declines by 1% point, unemployment would also decline by 1% point. Thus, with increase in levels of education, unemployment is expected to decrease. In South Africa, as elsewhere, an important labour supply issue is the degree to which participants in the labour market have equal opportunities to use skills and to obtain equal rewards for doing so. Based on the data from the 1999 report by Statistics South Africa, formal education has been low for both school going age and adults amongst women. Most South Africans have been seen not to be able to complete both primary and secondary school, while very few attend tertiary institution.

However, compared to all other regions of Africa, South Africa has the highest primary and secondary school enrollment of 96% and 70% respectively; even though, enrollment falls drastically at college level at 7% (Anzia, 2011). It is therefore clear that not many South Africans make it beyond matric as most of the students drop out of school for many different reasons, with economic and socio-cultural factors playing a bigger part. With girls, adolescence pregnancy, early marriage and motherhood force them to give up on their education and are encouraged to leave school to work, so they can provide for their offspring (Bayisenge, 2012:8).

For women, education enhances the skills for employability and being in a position to contribute towards the household and to the improvement of the economy as a whole (Khan & Khan 2010:5). Hence, the “then” Deputy President Phumzile Mlambo-Ngcuka, as she spoke out on the importance for girls education at the 4th annual Women’s Parliament Conference in Cape Town, on Tuesday, the 28th August 2007, said that; “*Educate a woman, you educate a nation,*” (Anzia, 2011). In this regard, South Africa aims to improve its education for girls in order to improve the conditions for women. Among other things, the government of South Africa committed to free basic education and the female education awareness campaigns. Such initiatives are to enable women to acquire significant skills and so to enhance employability in the formal labour market. As a result, women are now seen to acquire the levels education which put them in a position to claim higher positions. This is illustrated by the fact that in 2008, women constituted approximately 54% of the total university enrollment (Department of Education, 2010:30).

3.3.1.2 Fertility

Fertility has traditionally been employed to explain why countries vary in rates of female labour force participation. Women have always been home makers, specializing in domestic production which include raising and rearing children as well as performing household duties where men had been providers through earnings in the labour market (Ganguli, Hausmann & Viarengo, 2011:6). Participation in the labour market was found to be even worse for women with children of a young age, however, increases as children grow and start school.

Bloom, et al (2007:2) and Hoffman (2009:3), with regard to labour force participation, had found that women of the ages ranging between 20 to 39 years or 25 to 44 years, were the most likely to be affected as fertility is stronger at this age, especially for married women. However, due to the rising number of single women of the same ages, participation is also higher regardless of the availability of children, as these women become household heads assume responsibility and becoming sole providers.

Swartz (2002:539) indicated that Africa, compared to the rest of the world, lags behind in terms of fertility levels. However, South Africa reflects a significantly lower fertility rate compared to other Southern and East African countries. The table below shows the average rates on fertility in South Africa.

Table 3.7: Fertility rate in South Africa (in percentage)

Year	Fertility rate
1995	3.1
2000	2.9
2005	2.7
2010	2.4

Source: Health Survey (2011)

It can be seen on the table above that in 1995, fertility rate was highest at 3.1% and it was seen to decline to 2.4% in 2010. Thus, rather than a woman having more than 3 children as it used to be prior 2005, in 2010, a South African woman can at least have two to three children. Previous studies on fertility, Lam and Adderson (2002:160), Mlatsheni and Leibbrandt (2001:6) believe that over a period, the declining rate of having children had been associated with the increasing rate at which women engage in the wage employment as they have fewer children to look after. While women also focus on how best they can improve themselves.

The expansion of education has been found to relate to a decline in fertility. According to Leon (2004:2), for both developed and developing economies, a strong correlation has been identified between schooling for women and their choice of having children. Thus, as education increases,

women are empowered and tend to have control over the number and spacing between children which also leads to changes in issues around child health, survival, and schooling attainment.

The neoclassical theory suggests that as investment in human capital increases, and as more women participate in the labour market, the fertility behaviour of households is bound to change, as women will prefer to have fewer children (Bbaale, 2011:3). Bratti, (2001:1) asserts that education can also affect fertility indirectly through delayed marriage. For instance, as women invest more in education, women tend to delay marriage, and therefore, delay having children, as a result, influence labour force participation.

3.3.1.3 Marital status

Marriage and participation decisions are one of the challenges in studying the female labour market behaviour. Delayed marriage can lead to reduced fertility rate, which will translate into significant increases in female participation in the labour market. For unmarried women, decisions to join the labour market can only be restricted by the level of education. Thus, there is no husband to decide for a single woman whether to participate or not. Besides, a woman has to provide for her own needs through participation in the labour market.

Hoffman (2009:6); Serumaga-Zake and Kotze (2004) analyzed the behaviour of married women towards the labour market and had found that women of the working age who were never married were more likely to engage in the economic activities than women who were married or living with a partner. Whilst, Mutedi (2002:22) found that the unmarried people were less likely to participate than the married people.

The table 3.8 below shows the participation rates of women in the labour market by their marital status comparing two periods. The data on the table shows that the labour force participation rate is significantly higher among women who are not married than those who are married. Based on the data, in 2008, labour force participation for women who were married amounted to 28.9% compared to 33.7% in 2001; this reflects a decline of 4.8% between these two periods. The same

pattern occurs for those women who were living together with a partner, while it increased for those women who were widowed or single or never married in 2008.

Table 3.8: Marital status and labour force participation of women, 2001-2008

Marital status	Female participation by marital status (%)	
	2001	2008
Married	33.7	28.9
Living together	8.2	7.7
Widow	5.3	6.7
Divorced/Separated	3.5	3.8
Never Married	49.3	52.9
Total	100	100

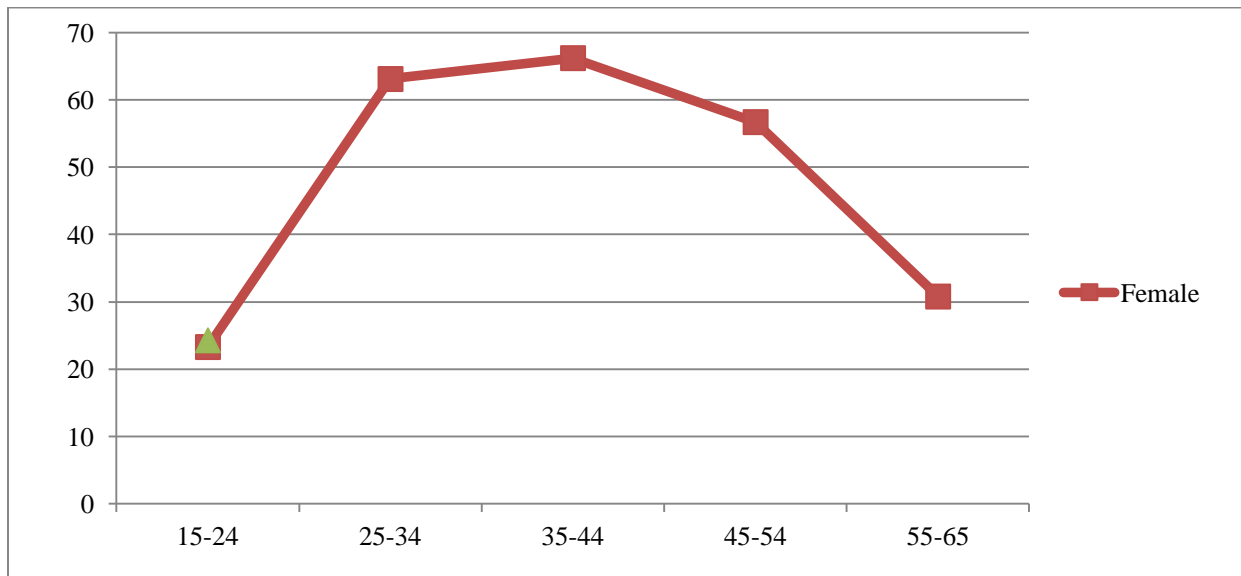
Source: Statistic South Africa (2008)

3.3.1.4 Age

One of the most important demographic changes affecting the South African labour force participation rate is the evolution of the population's age distribution. In South Africa, labour force participation is generally lower for females than it is for males in each age category but rises steadily once they leave school. It hit the highest point during the childbearing years (25-44), and then declined steadily afterwards (Winter, 1999:18), as shown in figure 3.5 below. By comparisons, the figure shows that labour force participation is highest among women of ages 25-34 and it increases even further for the ages 35-44, while it is lowest among the young age group (15-24), followed by the older group (55-65 and 45-54).

Thus, at this age, the female rates are not only lower than the corresponding male values, but often reflect a critical behaviour. This gives the implication that women tend to leave the labour force to give birth and raise children. They do return when the children are older but do so at the lower rate. In addition women who enter the labour force do so at a fairly young age, after completing school, and then remain in the labour market throughout their working lives.

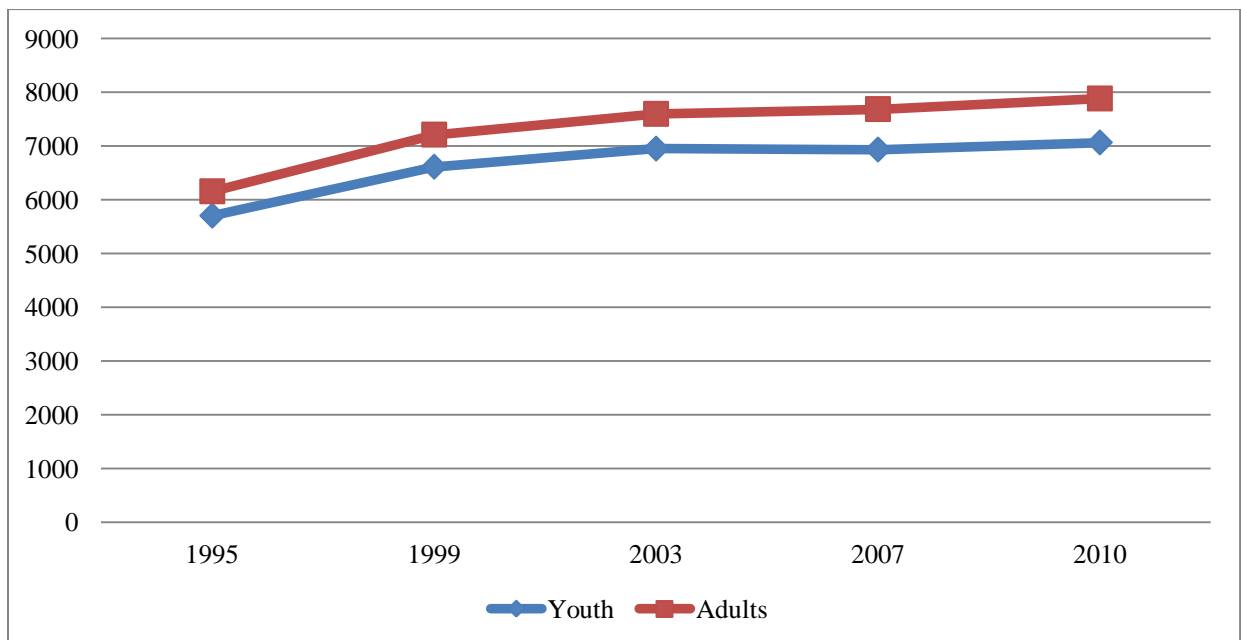
Figure 3.5: Female labour force participation by age categories, 2010 (in percentage)



Source: OHS (1995), Statistics South Africa, 2000-2011

Figure 3.6 below shows the differences in participation of the female adults and female youth.

Figure 3.6: Young and adult women labour force participation (1995-2010)



Source: Statistics South Africa, (OHS,1999), (QLFS, 2010)

It can be observed from the above figure that participation is fairly increasing for both age categories, between 1995 and 2003. From after the year 2003, the labour participation of the youth seems to start increasing at a declining rate, thereby allowing the gap between the youth and adult participation to widen.

3.3.1.5 Race

The increase in racial diversity is one other demographic feature influencing the evolution of labour force participation rate. Whether because of social, economic or political factors, participation rates vary across racial groups (DiCecio, Engemann, Owayang, & Wheeler, 2008:57). According to Leibbrandt et al (2010:8), the South African labour market is becoming African, this had occurred because, since 1995, a large number of black African women have entered the labour market. It has grown faster compared to all other population groups. Leibbrandt et al (2010:8), assert that this increase is attributable to the increased educational attainment for Africans. Below is table 3.6 that shows the labour force of men and women of different racial groups.

From the table, the data shows the lowest labour force participation among the Africans, both men and women throughout the years. In 2000, labour force participation for both men and women of all racial groups increased. However, participation dropped in 2005 for African women while it continued to increase for women of other racial groups. Labour force participation rate was highest among white men at 76.5% in 2010, which shows an increase of about 4.4% over the period from 1995. The labour force participation rate was only higher for Indian men in 2005 than in 2010. While there has been a decrease in 2010 on the participation of all women except for the white women labour force participation. The rates were higher among men than they were among women of all population groups. However, the overall labour force of all South African women had increased.

Table 3.9: labour force participation rate by gender and race

%	1995	2000	2005	2010
Female				
Black African	44.3	51.2	49.0	44.7
Coloured	55.4	61.3	61.3	55.9
Indian/Asian	39.2	49.7	49.9	48.5
White	47.9	58.3	58.9	60.2
Male				
Black African	59.9	63.7	61.2	58.2
Coloured	72.1	76.7	76.8	72.8
Indian/Asian	75.7	77.8	79.1	72.5
White	72.1	75.7	74.8	76.5

Source: OHS, 1995, LFS, 2001-2005, Statistics South Africa, 2000-2011

3.3.1.6 HIV/AIDS

Around the world, HIV/AIDS is one of the factors which have an impact on the lives of the people. Among other things, gender is the most affected, as women are disproportionately affected (Vass, 2005:2-3). This is confirmed by the fact that about more than a half of all people living with HIV are females (UNAIDS Action Framework, 2009:2). HIV infections are higher among women and are concentrated among younger women than men, with approximately 45% of all new infections worldwide occurring among those aged 15-24 years. Generally, girls are increasingly vulnerable to HIV, compounding other vulnerabilities such as poverty, humanitarian and food crises and the increased economic needs (van Aardt 2001-2002:47).

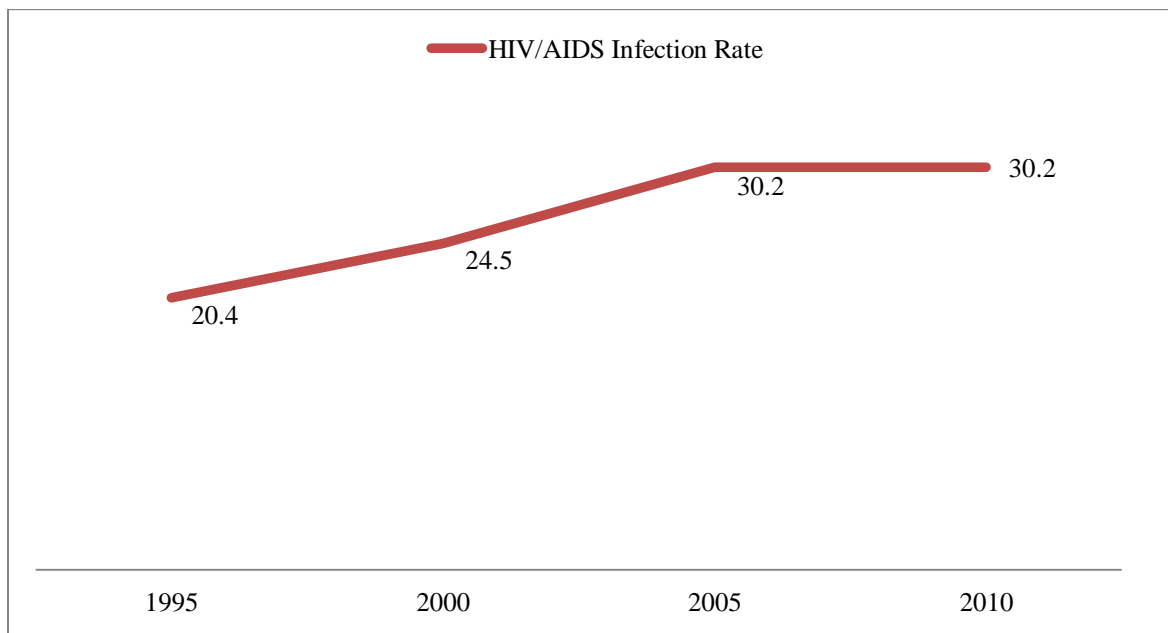
In Southern Africa, girls are 2 to 4.5 times more likely to be infected with HIV than young men. Statistics shows that in every 5 person with HIV/AIDS are women (UNAIDS, 2010:10), such that their life expectancy compared to men, has dropped from 65 in 1995 to 37 years in 2010 whilst for men, life expectancy dropped from 57 to 38 years South Africa is regarded as having the most severe HIV epidemic in the world (UNAIDS, 2010:10). The contributing factors to the

spread of HIV among others include: poverty; inequality and social instability; the low status of women; sexual violence and high mobility, particularly amongst migrant labourers (AIDS Foundation, 2009).

Figure 3.7 below show that HIV/AIDS has been leveling off since 2005. However, by world standards South Africa has taken the fourth position of HIV/AIDS infections with 17.5% of the population estimated to be infected.

The UNAIDS (2009:3) indicated that the majority of people show to still lack knowledge and understanding of the existence of the virus. It indicated that, of the infected girls and young women, only 38% show accurate and comprehensive knowledge about HIV and how to avoid transmission. The table below shows the projections on life expectancy for both men and women.

Figure 3.7: Female HIV/Aids infections in percentage rate



Source: Antenatal Clinic and HSRC national household prevalence survey (2002)

Table 3.10: Estimated HIV prevalence rate by age by gender, 2008

Age	Female	Male
15-19	6.7	2.5
20-24	21.1	5.1
25-29	32.7	15.7
30-34	29.1	25.8
35-39	24.8	18.5
40-44	16.3	19.2
45-49	14.1	6.4
50-54	10.2	10.4
55-59	7.7	6.2
60-	1.8	3.5

Source: SA National department of Health (2009): 2008 National Antenatal Sentinel HIV & Syphilis prevalence Survey.

Data presented on HIV infections as shown on table 3.10 shows that women are the most vulnerable towards the prevalence of HIV. From the very young age, women already dominate men in terms of catching the virus. The rate of HIV infection is even higher among the 20-24 years age group, about 4 times the rate of infections among men. Of all the age categories, HIV prevalence is highest among women of 25-29 years of age, 32.7%, while for men, HIV prevalence is highest among those who are between 30 and 34 years at 25.8%.

Table 3.11: The estimated life expectancy (1995-2010)

	Life expectancy in number of years			
	1995	1999	2005	2010
Life expectancy: female	65 years	54 years	43 years	37 years
Life expectancy: male	57 years	50 years	43 years	38 years

Source: Vass (2005:7) and Leibbrant et al. (2010:47)

In the South African labour market, the HIV epidemic shows a particular distribution by age, population group and sex. The obvious demographic impact is that the HIV/AIDS pandemic will

change and reduce the composition and size of the labour force of women in their most economically productive years. As a result, given the declines in the productive lives, women are less likely to accumulate sufficient skills and experience to advance sufficiently in the labour market, or take advantage of employment equity and training opportunities (Burger & Woolard, 2005:22).

3.4 Concluding remarks

The purpose of this chapter was to analyse the South African labour force so as to identify the trend in the labour force participation of women. In the analysis, it was identified that although a lot has been done by the South African government in bringing changes that saw women penetrate the post apartheid labor market, the distribution of jobs, occupational and income distribution still correlates strongly with race, gender and age. However, the labour market opportunities have been higher for women so much that labour force participation of women has increased. With the current situation the popular belief or attitude that “busy with household chores” cannot be a reason for women not to participate in the labour market. In the process, whether women hold an important position at work or not, they are still expected to be responsible for running the household and child care. Thus, women find themselves juggling careers with child care arrangements and trying to be all things to all people.

It is without doubt that women empowerment correlates strongly with education. However, education alone is not sufficient to ensure increased labour force participation by women. This makes it clear that even if women have access to education, there are still other factors such as, socio-economic, cultural and political aspects that continue to hinder women’s full employment. Nonetheless, there has been the overall improvement in women’s economic status relative to men, even though, women labour force participation still remain low. From this analysis, it is clear that real gender equity has not been achieved and cannot be reached until the overall society is in the position to create equal opportunities and benefits for its entire people.

Chapter Four

Research Methodology

4.1 Introduction

The previous works on the labour force participation of women, Serumaga-Zake and Naude (2003), Lee (2005), Sackey (2005), Ntuli (2007) and Yakubu (2009) shed some light on the determinants of female labour force participation. This chapter is underpinned by literature in the previous chapters. The chapter uses information from these previous works to develop an analytical model. The chapter is divided into nine sections. Following the introduction is section 4.2 which develops and specifies the model including the definitions of variables. Data source and the expected signs of coefficients are presented in section 4.3. In section 4.4 is a review of estimation techniques. Section 4.5 discusses diagnostic tests, while section 4.6 concludes the chapter.

4.2 Development of the Model

Development of the model involved the generalization of the dependence of the labour force participation on all the variables (tertiary qualification, household income, fertility, HIV/AIDS). Taking into consideration the separate dependence of the LFP model, the study proposed that other things constant, the labour force participation of women is represented by;

$$PR = f(YW, AW, SN, MR, BL, WH, TQ, HY, FR, HV) \dots\dots\dots 4.1$$

The model to be estimated is then expressed as follows:

$$PR_t = \beta_0 + \beta_1 \left(\sum_{i=1}^{35} YW \right)_t + \beta_2 \left(\sum_{i=36}^{65} AW \right)_t + \beta_3 \left(\sum_{j=1}^3 SN \right)_t + \beta_4 \left(\sum_{j=1}^2 MR \right)_t + \beta_5 (\sum BL)_t + \\ + \beta_6 (\sum WH)_t + \beta_7 \left(\sum_{k=1}^3 TQ \right)_t + \beta_8 (HY)_t + \beta_9 (FR)_t + \beta_{10} (HV)_t + \varepsilon_t \\ \dots\dots\dots 4.2$$

Where,

PR represents the labour force participation rate of women measured as a percentage of the population of women that works or is willing to work overtime.

YW is the sum of young women of age i category, where i is an integer ($i = 15, 16, \dots, 35$).

AW, is the sum of all adult women in the labour force with i being the age category, ($i = 36, 37, \dots, 65$)

SN, is the sum of women who are single with j being the marital status category ($j = 1$, divorced, $j = 2$, for widowed and $j = 3$, for the never married).

MR represents the total sum of women who are married or women living with a male partner ($j=1$, for married, $j = 2$, for cohabiting women)

BL, represents the sum of women of who are black.

WH, is the sum of White women

TQ, is the sum of women with a tertiary qualification, with k being the level of education ($k = 1$, for college certificate, $k = 2$, for diploma and $k = 3$, for university degree and higher).

HY represents the total household non-labour income, measured as a percentage of total income.

FR represents fertility rate. FR represents the average number of children per a woman.

HV represents the average rate of HIV and AIDS infections among women.

β_i is the impact coefficient for each category, (with $i = 1, 2, \dots, 8$), and it represents the coefficients to be estimated.

ε is the error correction and all other factors such as innate and personal tastes and other unobserved variables are captured in the error term.

4.2.1 Theoretical predictions and expected signs of the coefficients

The signs of the coefficients show the direction of the relationship between the explanatory variables and the dependent variable (Weisberg, 2005:70). Hence in this study, a positive value implies an increase in the probability of increasing the LFP of women.

Table 4.1: Definition and description of variables examined in the study

Variable	Variable description	Anticipated sign +/-
Dependent		
Participation Rate of Women	Continuous	
Independent		
Youth	Categorical	+/-
Adults	Categorical	+
Single	Categorical	+
Married	Categorical	+/-
Black	Categorical	+
White	Categorical	+/-
Tertiary Qualification	Categorical	+
Household Income	continuous	+/-
Fertility	continuous	+/-
HIV/AIDS	continuous	-

4.3 Data sources

In an attempt to address the aims of the research, the methodology applied follows the quantitative research approach, which explicitly uses the numerical data and econometric analysis to test the validity of the hypothesis. A majority of the determinants of labour force participation have been studied in the works of Ntuli (2007) and Yakubu (2009). However, the analysis in these studies was focused on a cross-section and panel data and they used a survey and interview in data collection. This study used the time series of the aggregated quarterly estimates (secondary data) on data pertaining to 16 years over 1995-2010. This kind of approach hasn't been attempted before using data in South Africa.

These figures are extracted from a comprehensive source of data published by Statistics South Africa. This is a specialized yearly survey of households or individuals. The detailed cross-sectional data on the economically active men and women is drawn from the October Household

Surveys (OHS), the Labour Force Survey (LFS) and the Quarterly Labour Force Survey (QLFS), for the periods 1995 to 1999, 2000 to 2007 and 2008 to 2010, respectively. The HIV epidemic in South Africa is primarily on the prevalence data collected annually from pregnant women attending antenatal clinics (ANC) since 1990. The data on HIV/AIDS rates is also taken from the Department of Health and HIV survey of 2008 and 2010, while data on fertility rates is taken from the National population estimates, Stats SA, 2008, 2011. However, it has to be acknowledged that data was also taken from the works of many other researchers on the labour force of South Africa, from the previous research reports, theses and journals.

This study focuses its analysis on female labour force participation rate (FLFPR). Female labour force participation is defined as the ratio of the female labour force (employed and unemployed but seeking work) to the female population. This rate refers to the probability that a female works. The number of females employed includes those who are in paid employment and those who are in unpaid family production.

4.4 The technique for estimation

Existing analytical approaches have been used to investigate the various issues under considerations. On examining the trend in labour force participation of women, the criterion for analysis used panel data across 1995 through 2010. The analysis involved the use of graphical representations to show the trends over time with descriptions assuming reasons for the prevailing trends (chapter 3).

Estimation of the specified model assumes that the variables are exogenous and also that the error term is uncorrelated with any of the variables. The major interest here is to find in a more generic sense what factors explain participation rate of women in the labour market. Of the major interest is the role played by fertility and HIV/AIDS. The parameter estimates obtained would provide us with an idea of the direction of the effect of the covariates on participation and cannot be used for degree of impact analysis (Nagler, 2001:1). Female labour force participation rate is therefore, estimated via Ordinary Least Squares regression (OLS).

The OLS model was chosen over other estimation techniques because the model for estimation is linear with a non-dichotomous dependent variable. OLS gives results which can be easily interpreted and the method is easy to analyse, it gives parameter estimates which are consistent, efficient and normal. With estimation of other models like probit, OLS would still be used after transforming the model in order to get the efficient estimates.

4.4.1 Ordinary Least Squares model (OLS)

The OLS is a simple method for investigating the functional relationship among variables, Y as the response variable and X_1, X_2, \dots, X_n , representing the set of predictor variables. The relationship between Y and X_1, X_2, \dots, X_n can be approximated by the regression model,

$$Y = f(X_1, X_2, \dots, X_n) + u_i \dots\dots\dots 4.3$$

Where, u_i is assumed to be the error term to account for the failure of the model to perfectly fit the data. The function above is used to formulate an equation that will explain the relationship in the LFPR linear regression model,

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + u_i \dots\dots\dots 4.4$$

Where, n denotes a number of observations. Since the points are unlikely to fall directly on the line, $\beta_0, \beta_1, \dots, \beta_n$, are the regression parameters or coefficients to be estimated from the data. The model suggests that for any value of X, we predict the expected value of Y. It also suggests that if X changes by some amount ΔX , we can compute corresponding change ΔY . The OLS estimates can be used to predict the value of Y and the predicted value is \hat{Y} . The estimates of the regression parameters are denoted by $\hat{\beta}_0, \hat{\beta}_1, \dots, \hat{\beta}_2$, these can be interpreted as providing the best fitting line. \hat{Y} is generated by the following equation:

$$\hat{Y}_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + u_i \dots\dots\dots 4.5$$

The value \hat{Y} is called the fitted or predicted value and the predicted value of Y may not necessarily be expected to be equal to the true value of Y. Therefore, the error term μ_i is included in the model to capture the differences. So we alternatively write:

$$\hat{Y}_i = \hat{\beta}_0 + \sum \hat{\beta}_i X_i + \mu_i$$

$$Y_i - \hat{Y}_i = \mu_i \dots\dots\dots 4.6$$

We pick the least squares estimates $\hat{\beta}_i$ of β_i that will minimize the sum of squares of our errors. The expected result is that the OLS estimators, $\hat{\beta}_0$ and $\hat{\beta}_i$ will all be greater than zero, signifying a positive relationship between participation rate of women and the explanatory variables (Weisberg, 2005:56). An examination of these parameter estimates not only allow us to determine the goodness of fit of the regression line or how well the regression model fits, but allows us to also examine individual observations to determine which ones better explain the dependent and which ones do not.

Having obtained the OLS estimators, it would be expected that we derive the sampling variability of the estimators, that is, their variances and standard errors (se). The variances show how the given values of X are spread or distributed around its expected, or mean values (Gujarati 2004:68).

The hypothesis of the parameters β_0 and β_i must also be tested in order to determine how good the estimated regression line is. The R^2 and t -statistics are used to see whether the parameters are statistically significantly different from zero. R^2 is a measure of how well the regression fits the data. It is used to test whether all the explanatory variables jointly have any explanatory power over the dependent variable. The t -statistic of $\beta = 0$ is used to investigate whether a single explanatory variable has explanatory power for the dependent variable. When the regression test is completed, the results are then subject to a range of robustness checks.

Time series data are collected at equally spaced intervals through time, therefore, it cannot be treated as randomly selected observations from a population. As a result, data tend to be more similar and volatile than observations collected from two distant time periods. Therefore, estimation of such data violates the assumption of independence (Pickett, Reilly & McIntyre, 2005:11). To correct for this condition and violation of other assumptions of OLS, test for stationarity is performed.

4.4.2 Test for Stationarity / Unit root

Existing analytical approaches have been used to investigate the various issues under considerations. The study applies the Augmented Dickey-Fuller test and the Phillip Perron test for stationarity or unit root. For time series, stationarity test are significant because most time series are non stationary at levels and would require being differenced to achieve stationarity. To consider the long run relationship between female labour force participation rate and the explanatory variables (Young women, adult women, single women, married women, black women, white women, tertiary qualification, household income, fertility rate and HIV/AIDS), the Jahansen and Juselius (1992, 1995) technique is used. This technique is chosen because it captures the underlying time series properties of the data and also because it is a systems equation test which provides estimates of all cointegrating relationships that may exist within a vector of non-stationary variables or a mixture of stationary and non-stationary variables (Choga, 2008:77).

That is, if the series is non-stationary or has unit root means that the variable has no clear tendency to return to a common value or linear trend (Sekuma, 2011:2). Therefore, any attempt of in modeling the relationship will generate the results that are not valid (Asterious & Hall, 2007:231).

The series is said to be a stationary if its mean, variance and auto-covariance are constant over time. A stationary series can be defined as below;

A constant mean;

$$E(Y_t) = \mu \dots\dots\dots 4.7$$

A constant variance;

$$\text{Var}(Y_t) = E(Y_t - \mu)^2 = \delta^2 \dots\dots\dots 4.8$$

And a constant auto-covariance;

$$Y_k = E[(Y_t - \mu)(Y_{t-k} - \mu)] \dots\dots\dots 4.9$$

Otherwise if the series does not meet the above characteristics, is described as being a non-stationary. Statisticians such as Box and Jenkins (1970) had advocated transforming integrated series into stationary by differencing it d times before it becomes stationary. With differencing, the series then produces other sets of observations such as the first-differenced values, the second-differenced values and so on.

x level	x_t
x 1 st -differenced value	$x_t - x_{t-1}$
x 2 nd -differenced value	$x_t - x_{t-2}$

If a series is stationary without any differencing it is designed as $I(0)$, or integrated of order zero. On the other hand, applying difference operator more than d times to an $I(d)$ process will still result in a stationary series (but with a moving average error structure). The series that has a stationary after the first difference is $I(1)$, or integrated of order one (1). An $I(2)$ series have been differenced twice before it become stationary. The formal tests for order of integration, Augmented Dickey-Fuller (ADF) test and Phillipps-Perron (PP) test will be used in this research

4.4.2.1 Augmented Dickey-Fuller (ADF) test

Dickey and Fuller (1979, 1981) suggest a method for computing a test for unit root in a time series to accommodate general models with unknown orders and their test is referred to as the Augmented Dickey Fuller (ADF) (Asteriou & Hall, 2007:308). This test has become the most popular over other competing test in literature. The test has a testing strategy that determines if

an intercept, an intercept and trend, or neither an intercept nor a time trend should be included in the regression to conduct the unit root. ADF tests test the null hypothesis that a time series Y_t is integrated of order d , $I(d)$ against the alternative. The assumption is that the error terms are not correlated. So to avoid the problem of correlation, the ADF tests include the lags of the first difference in the regression equation either with or without a constant and time trend and testing

$$\Delta Y_t = \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \dots\dots\dots 4.10$$

The intercept may be included, as well as a time trend t , after which the model becomes

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \dots\dots\dots 4.11$$

The testing procedure for the ADF unit root is applied to the following model

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{j=1}^{\rho} \delta_j \Delta Y_{t-j} + \varepsilon_{it} \dots\dots\dots 4.12$$

Where α is a constant, β the coefficient on a time trend series, γ the coefficient of y_{t-1} , ρ is the lag order of the autoregressive process, $\Delta y_t = y_t - y_{t-1}$ are first differences of y_t , y_{t-1} are lagged values of order one of y_t , Δy_{t-j} are changes in lagged values, and ε_{it} is the white noise.

The decision to reject or not reject the null hypothesis is based on the comparison between the ADF critical values of test statistics and the calculated test statistics (t -statistics). If the t -statistics is less than the null hypothesis of unit root is rejected and the conclusion is that the variables of the series does not contain a unit root is non-stationary.

4.4.2.2 Phillip Perron test

Phillip Perron (PP) (1988) develops a unit root test that has become popular in the analysis of time series. The PP tests statistics can be viewed as DF statistics that have been made robust to serial correlation by using the Newey-West (1987) heteroskedasticity and autocorrelation. However, differs by incorporating an automatic correction to deal with serial correlation and heteroskedasticity in the errors (Brooks, 2008:330). In particular where the ADF tests use AR to approximate the ARMA structure of the errors in the test regression, the PP tests correct for any serial correlation and heteroskedasticity in the errors non-parametrically by modifying the DF

test statistics. Another advantage is that the user does not have to specify a lag length for the test regression. PP test estimate;

$$\Delta Y_t = \delta_t + \gamma_0 Y_{t-1} + \gamma_1 \Delta Y_{t-1} + \dots + \rho \Delta Y_{t-p} + \mu_t \quad \dots \dots \dots 4.13$$

Where ΔY_t is the first differenced operator, δ the coefficient on a time trend series, γ_i is the coefficient of y_{t-1} ,

The PP tests are run under the null hypothesis that $\rho = 0$, is tested using the t-statistic with critical values calculated by Mackinnon (1996). The null hypothesis that the series is $I(1)$ stationary is rejected when the test statistic is more negative than the critical value and is significant in favour of the alternative hypothesis that the series is stationary.

In this study, we used the principles of both ADF and PP tests. Combining the two tests provide a more clearer results for inference with regard to the order of integration the series. If the series are integrated of the same order, then the next step is to test whether the series are cointegrated to estimate a vector error-correction model to distinguish between short-run and long run responses, since cointegration provides more powerful tools when the data sets are of limited length. Therefore, the regression equation is presented in the following form:

$$\Delta Y_t = \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad \dots \dots \dots 4.14$$

The intercept may be included, as well as a time trend t , after which the model becomes

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad \dots \dots \dots 4.15$$

The testing procedure for the ADF unit root is applied to the following model

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{j=1}^p \delta_j \Delta Y_{t-j} + \varepsilon_{it} \quad \dots \dots \dots 4.16$$

Where α is a constant, β the coefficient on a time trend series, γ the coefficient of y_{t-1} , p is the lag order of the autoregressive process, $\Delta y_t = y_t - y_{t-1}$ are first differences of y_t , y_{t-1} are lagged values of order one of y_t , Δy_{t-j} are changes in lagged values, and ε_{it} is the white noise.

The decision to reject or not reject the null hypothesis is based on the comparison between the ADF critical values of test statistics and the calculated test statistics (t -statistics). If the t -statistics is less than the null hypothesis of unit root is rejected and the conclusion is that the variables of the series does not contain a unit root is non-stationary.

4.5 Diagnostic checks

Regression diagnostics refers to the techniques for detecting problems with either the model or the data (Rawlings, Pantula and Dickey, 1998:441). Diagnostic checks are crucial in the regression analysis to ensure that the classical linear regression assumptions are not violated, for valid and meaningful results. When these assumptions are violated, there is a problem in the residuals from the estimated model. It is an indication that the model is not efficient, such that parameter estimates from such a model may be biased. Then if the model is not stable, the standard results do not hold and are not valid. The tests are a proof that the residuals are normally distributed, that they are not correlated with the errors and that they are homoskedastic.

4.5.1 Test for Heteroskedasticity

In econometrics unequal variance is referred to as heteroskedasticity. In contrast, a series of random variables with a constant variance is said to be homoskedastic. According to Brooks (2002:148), the danger of using the usual testing procedures, despite the heteroskedasticity, is that the conclusions we draw from the analysis may be very misleading. In this study, we use the Breusch-Pagan-Godfrey test for heteroskedasticity. The Breusch-Pagan-Godfrey test is designed to detect any linear form of heteroskedasticity. The test is useful because after running the regression, residuals are obtained and then test regression is run by regressing each product of the residuals on the cross products of the regressors and testing the joint significant of the

regression. The null hypothesis for the Breusch-Pagan test is homoskedasticity and if we fail to reject the null hypothesis then we have homoskedasticity. If we reject the null hypothesis, then we have heteroscedasticity. In the case of the existence of heteroskedasticity, the remedy would be an application of the Generalized Least Squares (GLS).

4.5.1.1 Generalized least squares

Generalized least squares is an OLS estimator used for transforming the original variables to make the error variance constant at all observations. It is a corrective measure for heteroskedasticity. As indicated earlier, in the presence of heteroskedasticity, if no corrective action is taken, application of OLS to the raw data will result in estimated coefficients which would lead to false sense of accuracy. The corrective measure is also taken so that the standard least squares assumptions are satisfied. GLS is applied to minimize the weighted sum of squared residuals (Gujarati, 2004:396).

4.5.2 Normality tests

The most popular test for normality in the field of economics and finance is the Jarque-Bera (JB) test (Jarque & Bera, 1981). The JB uses the property of a normally distributed random variable that the entire distribution is characterized by the mean and variance. The JB test statistic asymptotically follows a χ^2 (Chi squared) with 2 degrees of freedom (df) under the null hypothesis that the distribution of the series is symmetric (normally distributed errors). The null hypothesis of normality would be rejected if the residuals from the model are either significantly skewed or leptokurtic/platykurtic or both. If the residuals are normally distributed, the histogram should be bell shaped and JB statistic would not be significant. Thus, the p-value of the normality test should be bigger than 0.05 to not reject the null hypothesis of normality at 5% level (Brooks, 2008:163).

4.5.3 Serial correlation Durbin-Watson (DW) tests

The linear regression assumes that the error terms in the regression models are uncorrelated. However, this may not be the case (Gujarati, 2004:322). Similar to the effect of heterogeneous variances, correlated errors result in the loss of accuracy in the estimates which in turn, causes the estimates to be biased and nullify tests of significance (Rawlings, et al., 1998:329). The presence of serial correlation can be detected by applying Durbin-Watson (DW) test. The DW statistic d gets smaller as the serial correlation increases. DW tests the null hypothesis of no serial correlation in the errors, against the alternative hypothesis. The test reject the null hypothesis if the test statistic d , is smaller than the critical values but if d is greater than the critical values, then we fail to reject the null hypothesis, therefore conclude that there is no serial correlation in the errors.

4.6 Concluding remarks

The purpose of this chapter was to develop the model and to identify the technique for the estimation of the model. OLS would be used to estimate the parameter estimates of the variables. These coefficients help determine the relationship between participation rate and its determinants. The determinants for the labour force participation rate of women in South Africa include the household income, the women youth and adults, tertiary educational level of women, single and married women, black and white, type of industry within which women work, fertility rate and HIV/AIDS. A number of diagnostic checks have been presented including among others, heteroskedasticity, residual normality test and autocorrelation DW test to see whether the residuals passes all these diagnostic checks. The next chapter will look at the data analysis and interpretation of results.

The purpose of this chapter was to develop the model and to identify the technique for estimation of the model. The chapter had specified the potential determinants for the labour force participation rate of women in South Africa. The factors include, the household income, the women youth, tertiary educational level of women, single women, African as a racial group, type

of industry within which women work, fertility rate and HIV/AIDS. The study analyses the relationship between participation rate and its determinants. The model employs ADF and PP test for unit root check. The Johansen (1995) test for cointegration is employed because of its several advantages over other techniques such as Engle-Granger test. A number of diagnostic checks have been presented including among others, residual normality test, heteroskedasticity, autocorrelation Lagrange Multiplier to see whether the residuals passes all these diagnostic checks. The next chapter will look at the data analysis and interpretation of results.

Chapter 5

Data analysis and Interpretation of results

5.1 Introduction

Following the collection and processing of the data on the proposed variables as the determinants of labour force participation of women, the data is analyzed to determine the relationship between these variables as well as to what extent each variable can influence the dependent variable. The analysis include also checking if there exist any other relations among the independent variables themselves, so that if the kind of behaviour does exist, it is dealt with since the focus is of the study is to explain the relationship between the dependent and the independent but not the interdependency among the independent variables. The results are interpreted to so that meaningful inferences are made based on the findings.

This chapter discusses and interprets the results of the study. The chapter is divided into eight sections. The first section presents the results of Stationarity/unit root tests. The second section provides the results of a regression analysis. This is followed by a presentation of the interpretation and implications of the results. The second section presents the diagnostic checks and concluding remarks are provided in last section of the chapter.

5.2 Unit Root/Stationarity Test results

Many economic and financial time series exhibit trending behaviour or non-Stationarity in the mean. It is important to determine the most appropriate form of trend in the data, that is, the characteristics of the individual series before conducting the cointegration analysis. Thus, if two variables with unit root are regressed on each other, spurious results are obtained, t statistics are misleadingly high. Therefore, there is a need for the transformation of data to stationary form before the analysis. That is, if the data are trending, an alternative estimation procedure should be undertaken for trend removal (Elder & Kennedy, 2001:138).

The initial step in time series analysis is to test whether the series are stationary. In this study, one informal test for Stationarity and two formal tests are employed. One of the most popular informal tests for Stationarity is the graphical analysis of the series. A visual plot of the series is usually the first step in the analysis of any time series before pursuing any formal tests. In this study Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests principles are employed to identify the order of integration for all the variables. The outcomes of the tests are summarized in table 5.1 below. The graphical examination of the series is also very important before any form of analysis. This graphical examination allows for detection of any capturing errors, and checking of structural breaks or drifts that may bias the unit root tests. It allows us to have an idea of the Stationarity of the data. Figure 5.1 shows plots of all the variables used in the model in their default as well as first differences.

The first intuition of the study, both the graphical exposition and the statistical inferences plots shows that, practically all the variables in their levels have a time variant mean and variance suggesting that they are not stationary. The conclusion of non-stationarity is arrived at after observing that none of the variables in figure 5.1 graphs fluctuates around a zero mean, thus, an indication of Stationarity. It is clear from the graphs that PR, YW, AW, SN, MR, BL, WH, TQ, HHY, FR and HV in figure 5.1 illustrates the trends of the variables from 1995Q1 to 2010Q4.

The time series data was differenced once to obtain DYW, DAW, DSN, DMR, DBL, DWH, DHHY, DTQ, DFR however D(DPR) and D(DHV) were stationary at the second level difference. The first order and second order integrated series ensure that economic data is stationary after differencing for the purpose of avoiding spurious regression. To identify if time series data are stationary on graphs one checks whether the plots are fluctuating around mean zero or not. On the graphs of differenced series, variables are fluctuating around a zero mean and this indicates that they are stationary. Figure 5.2 shows all the variables on their second order differencing. It can be seen that the variables follow a stationary process as they move closely around its mean.

The graphical analysis serves as a bench mark for the formal measure of unit root, thereby with graphical analysis alone we cannot be certain and make inferences about the Stationarity status of the variables especially those that do follow a clear trend in this study.

5.2.1 Augmented Dickey Fuller (ADF) and Phillip Perron (PP) Tests

There is a need to carry out the formal tests in order to reinforce the findings from the graphical analysis in figure 5.1 and 5.2. Dickey and Fuller augment the basic autoregressive unit root test to accommodate general models with unknown orders and their test is referred to as the Augmented Dickey Fuller (ADF). This test has become the most popular over other competing test in literature, since it has a testing strategy that determines if an intercept, an intercept and trend, or neither an intercept nor a time trend should be included in the regression to conduct the unit root. In the ADF test, the inclusion of these deterministic regressors is necessary to allow representation of the alternative hypothesis against the null hypothesis of a unit root (Sekuma, 2011:6-7). The null hypothesis tested is that the variable under investigation has a unit root against the alternative that it does not. Thus, a time series is $I(1)$ that it is $I(0)$ against the alternative.

Phillip Perron (PP) (1988) develops a number of unit root test that have become popular in the analysis of time series. A PP unit root test differs from the ADF tests mainly in how they deal with serial correlation and heteroskedasticity in the errors. In particular where the ADF tests use a parametric autoregression to approximate the ARMA structure of the errors in the test regression, the PP tests ignore any serial correlation in the test regression and are also robust to general forms of heteroskedasticity in the error term. Another advantage is that one does not have to specify the lag length for the test regression.

Tables 5.1 and 5.2 below show the results for ADF and PP unit root tests respectively. The results shown are for the levels and after the first difference. Both the ADF and PP tests have the null hypothesis of a unit root. The statistic (calculated) value is compared with the critical value. If the statistic value is greater than the critical at the specified confidence levels and if the test statistic is also significant, the null hypothesis that the series have unit root is not rejected, that is,

the series are non-stationary. It is clear from the tables that the null hypothesis of no unit roots for all the time series are rejected at their first differences since the ADF and PP test statistics values are less than the critical values at 1% levels of significances. Thus, the variables are stationary and integrated of same order, that is, I (1). However, the applicant of the ADF and PP tests for participation rate (PR) revealed that this variable is stationary at second level and its first differences and trend. In this case, PR needed to be second differenced. In short, all the variables become stationary and not contain unit root in first difference.

It appears that the results from both the ADF and PP are more in line with those from the graphical analysis. We conclude therefore that all of the series are first differenced stationary I (1), thus the variables are integrated of the same order, so we carry all the variables forward to cointegration tests.

Figure 5.1 Trends in the variables

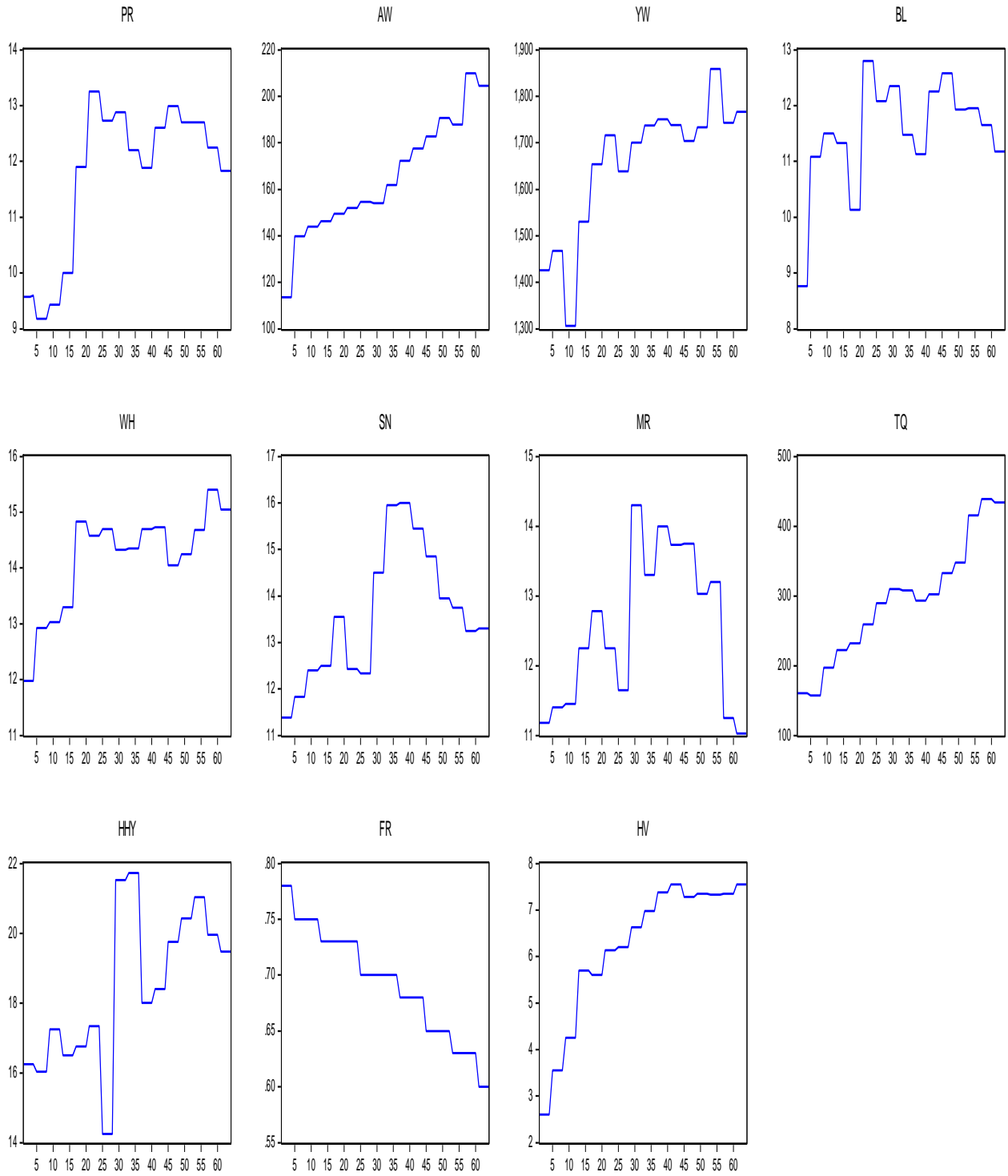


Figure 5.2 Graphical presentations of variables after first differencing

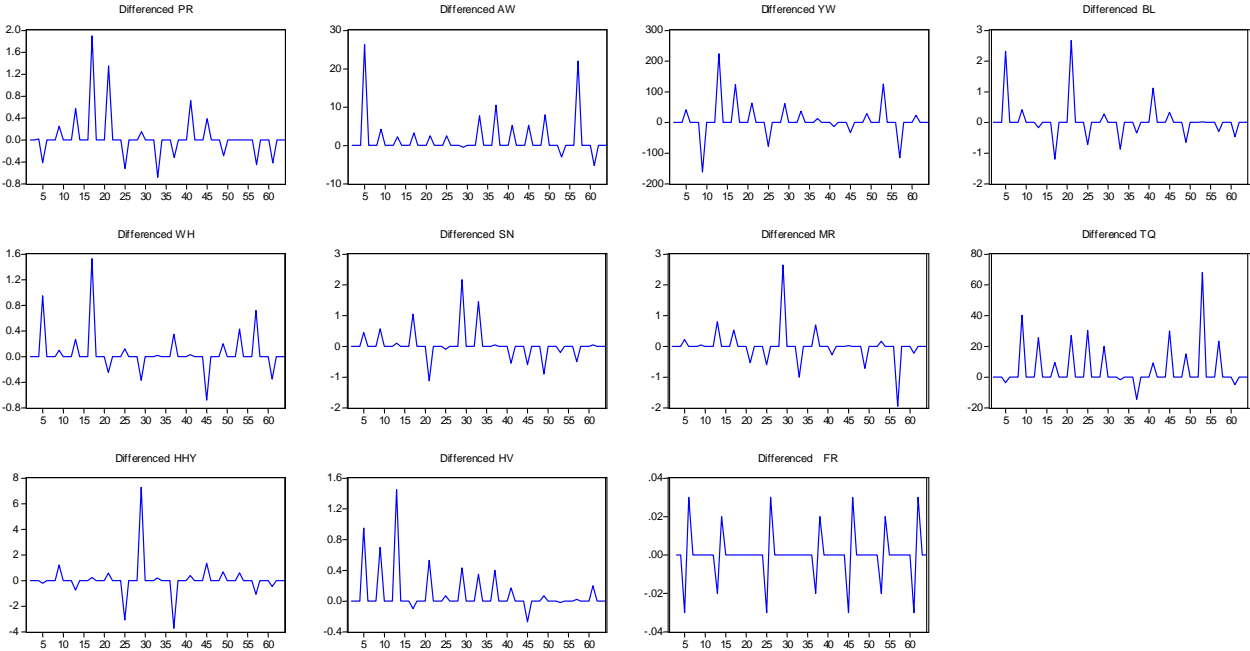


Table 5.1 Augmented Dickey-Fuller tests results

		Augmented Dickey-Fuller		
Order of integration	Variable	Intercept	Trend & Intercept	None
Level	PR	-2.5128	-1.901261	0.33978
1 st difference	DPR	-2.4933	-2.91422	-2.43395*
2 nd difference	D(DPR)	-10.7690*	-10.7122*	
Level	YW	-1.695125	-2.241144	0.760210
1 st difference	DYW	-7.851567*	-7.829857*	-7.810250*
Level	AW	-1.360147	-3.433625***	2.155378
1 st difference	DAW	-8.516903*	-8.504806	-7.810250*
Level	SN	-1.728692	-1.191741	0.385009
1 st difference	DSN	-7.786388*	-7.954852*	-7.810250*
Level	MR	-1.743606	-1.392784	-0.184722
1 st difference	DMR	-7.746159*	-7.912863*	-7.810250*
Level	BL	-3.324381	-3.009252	0.311487
1 st difference	DBL	-7.787580*	-7.953064*	-7.810250*
Level	WH	-2.378562	-2.394914	1.234671
1 st difference	DWH	-7.993191*	-8.095927*	-7.810250*
Level	TQ	-1.11956	-2.763754	-1.421342
1 st difference	DTQ	-2.86877*	-2.800062*	-2.047562*
Level	HHY	-1.2035	-2.512899	0.678621
1 st difference	DHHY	-4.7944*	-4.793584*	-4.75038*
Level	FR	1.108404	-1.9012	-2.588219
1 st difference	DFR	-3.77503*	-4.0764556*	-1.161142*
Level	HV	-2.698502	-2.518996	0.339785
1 st difference	DHV	-1.698675	-1.929174	-2.433952*
2 nd difference	D(DHV)	-7.90531*	-7.902633*	
1%	Critical values	-3.544063	-4.118444	-2.604073
5%		-2.910860	-3.486509	-1.946348
10%		-2.593090	-3.171541	-1.613293

* represents Stationarity at 1% of significance, ** represents Stationarity at 5% of significance and *** represents Stationarity at 10% of significance, L represents Logarithms of variables and D represents that the variable has been differenced.

Table 5.2 Phillip- Perron tests results

		Phillip- Perron tests		
Order of integration	Variable	Intercept	Trend & Intercept	None
Level	PR	-1.6853	-1.04184	-0.603268
1 st difference	DPR	-7.83501*	-8.02782*	-7.81837*
Level	YW	-1.695125	-2.362530	0.766280
1 st difference	DYW	-7.851563*	-7.829832*	-7.810250*
Level	AW	-1.375775	-3.365877***	3.085884
1 st difference	DAW	-8.874503*	-8.866086*	-7.810250*
Level	SN	-1.728692	-1.191741	0.385009
1 st difference	DSN	-7.786388*	-7.957376*	-7.810250*
Level	MR	-1.818879	-1.416233	-0.184722
1 st difference	DMR	-7.746159*	-7.914120*	-7.810250*
Level	BL	-3.333096**	-3.038135	0.311487
1 st difference	DBL	-7.787580*	-7.955532*	-7.810250*
Level	WH	-2.387325	-2.379855	1.275578
1 st difference	DWH	-7.995400*	-8.116174*	-7.810250*
Level	TQ	-0.37005	-2.319846	-3.054749
1 st difference	DTQ	-8.84805*	-8.769396*	-7.810250*
Level	HHY	-2.35569	-3.149068	0.09480
1 st difference	DHHY	-7.76169*	-7.703096*	-7.816250*
Level	FR	-0.007686	-4.02007**	-5.955217*
1 st difference	DFR	-11.57264*	-11.51620	-7.810250*
Level	HV	-6.07761*	-4.11.044*	1.803995
1 st difference	DHV	-8.557635	-14.18925	7.810250*
2 nd difference	D(DHV)	-3.538362	-4.110440	-2.602185

1%	Critical values	-2.908420	-3.482763	-1.946072
5%		-2.591799	-3.169372	-1.613448
10%		-2.35569	-3.149068	-1.613448

Source: Eviews

* represents Stationarity at 1% of significance, ** represents Stationarity at 5% of significance and *** represents Stationarity at 10% of significance, L represents Logarithms of variables and D represents that the variable has been differenced.

Table 5.2 shows that the Phillip- Perron (PP) test showed that all the variables were stationary at first level which is a bit contrast to the results obtained by the Augmented Dickey- Fuller (ADG) test. This may be due to the robustness in the calculation in the PP test. However both formal test of stationarity showed that all the variables are stationery, this suggest that the time series model will not give spurious results.

5.2 The regression results

According to Gujarati (2004:18), a regression analysis is concerned with the study of the relationship between one variable, called the dependent (or explained) variable, and one or more other variables, called independent (or explanatory) variables. The object of a regression analysis is to estimate the *mean*, or *average*, value of the dependent variable, given the values of the independent variables. The ordinary least squares method (OLS), a technique for fitting the best straight line to the sample of XY observations, is used in this analysis. Using a least squares regression, the aim of this analysis is to investigate the relationship between the female labour force participation rate as a dependent variable and the explanatory variables. The participation rate as a measure of women's involvement in economic activities is assumed to be affected by the following variables: Young women(X_1), Adult women (X_2), Single women (X_3), married women (X_4), Black women (X_5), White women (X_6), Tertiary qualification (X_7), Household Income(X_8), and Fertility rate (X_9), HIV/AIDS (X_{10}).

The results of a regression model are presented in table 5.1 below.

Table 5.3: OLS regression results

Variable	Coefficient	Std. Error	t-Statistic	P-value
D(YW)	0.013556	0.002062	6.574068	0.0000
D(AW)	0.066026	0.019249	3.430050	0.0012
D(SN)	-0.368043	0.132506	-2.777561	0.0076
D(MR)	0.087405	0.158347	4.905146	0.0000
D(BL)	-0.128056	0.138154	-0.926908	0.0005
D(WH)	-0.108621	0.204173	-0.532006	0.0073
D(TQ)	0.007805	0.005696	5.593337	0.0000
D(HHY)	-0.192547	0.067788	-2.840435	0.0064
D(FR)	10.12037	7.746946	1.486563	0.0140
D(DHV)	-1.113507	0.292033	-3.812947	0.0004
R-squared	0.924724			
F-statistic	58.07203			
Prob(F-statistic)	0.000000			

Source: Eviews

5.2.1 The OLS model

Substituting the values of the coefficients, the estimated model is given by;

$$PR = -26.71553 + 0.013556YW + 0.066026AW - 0.368043SN + 0.087405MR - 0.128056BL - 0.108621WH + 0.031860TQ - 0.192547HHY + 10.12037FR - 1.113507HV$$

..... 5.1

From the model, it can be seen that the female labour force participation rate model is given by a negative slope regression line. The line is reflected by the intercept (-26.71553). The intercept gives an average effect on participation rate when all the variables are excluded from the model. Thus, the average value of participation rate when all the explanatory variables are set to zero (X_i

= 0, $Y_i = -26.71553$). The values of the coefficients shows the effect of change on PR when each variable changes with others held constant.

Considering the explanatory variables, the empirical findings indicate that there is a positive relationship between female labour force participation rate and YW, AW, MR, TQ, and FR at 1% level. The following variables were found to be negatively related to female labour force participation rate: SN, BL, WH, HHY and HV. However, BL, WH and FR are statistically insignificant. This study found that single women are more likely to participate in the labour force than married women. The coefficient of SN suggests that a percentage increase in the number of single women would reduce labour force participation rate by 36.8%. Similar results with previous works are obtained on a positive relationship between marriage for women and labour force participation (Lee, 2005, Mutedi, 2002). A coefficient for MR suggests that a percentage increase in married woman is likely to increase female labour force participation rate by approximately 8.7%.

With respect to race, the results show that both BL and WH are statistically insignificant and negatively related to female labour force participation rate. This finding suggests that race has no significant impact on labour force participation of women in the new South Africa.

Women with a higher education were found to have more chances of participation in the labour market. The regression results show a statistically significant positive relationship between TQ and PR. This finding is in line with the work of Mlatsheni and Leibrandt (2001:21) who found that higher qualification enhances the likelihood of participation in the labour force.

The relationship between HHY (household income) and PR is negative meaning that an increase in the total household income is likely to reduce female labour force participation by approximately 19%. This finding is in line with the household production theory discussed in chapter two of this dissertation. In accordance with household production theory, when the household income is higher than what the labour market offers, women would rather spend their time in home production than in the labour market.

Fertility rate is positively related to female labour force participation rate. The coefficients estimate shows 10.12037 at the p-value of 0.0140. Contrary to the findings in most of the previous works on female labour supply such as Ntuli (2007), Winter (1999), fertility rate was found to have no significant impact on the labour force participation of women though it was found to positively influence labour force participation rate of women during the period under review. Mlatsheni and Leibbrandt (2001) found similar results on African women.

The results also show a statistically significant but a negative relationship between HIV/Aids and labour force participation rate. A coefficient of HV in the model suggests that a percentage increase in the rate of HIV/AIDS infection, would lead to approximately 1.11% decrease in female labour force participation.

Generally, the results of the regression as shown above are in line with a priori expectations except for race (black and white) and fertility rate. On the whole the model explains 92% of variation in the dependent variable (R^2 is about 0.924724). The model chosen for explaining labour force participation rate of women in South Africa is a good fit for the data. The F-statistic is 58.07203 with a p-value of 0.0000 (Eviews).

5.2.2 Diagnostic checks

The crucial step in any linear regression is to perform robust checks to determine whether any of classical linear regression model (CLRM) assumptions have not been violated and to prove the stability of the model used. And these tests include:

- A heteroscedasticity test
- A normality test
- A serial correlation

5.2.2.1 Heteroscedasticity test

Heteroscedasticity tests were run to determine whether the variance of the error terms is constant. The test results showed a chi-squared of 50.67218 for p-value of 0.000. The chi-square value is too high meaning that there is a problem of heteroscedasticity. As a result, the null hypothesis of heteroscedasticity cannot be rejected, therefore, it can be conclude that there is heteroscedasticity in the data (see table 5.2).

5.2.2.2 Normality test

The Jarque-Bera test results for non-normality showed an insignificant p-value of 0.506 with the test statistic of 1.360105 (see table 5.2). This result suggest that a null hypothesis of no normal distribution cannot be rejected and conclude that the data is normally distributed.

5.2.2.3 Serial correlation

Test for serial correlation shows the d statistic of 2.044668 (see table 5.2). The d statistic is above two meaning that there is no serial correlation in the error terms. Therefore, the null hypothesis of serial correlation is rejected and it can be concluded that there is no serial correlation in the residuals.

Table 5.4: Results from the diagnostics error tests

Test	t-statistic	p-value	Conclusion
Breusch-Pagan	50.67218	0.000	There is a problem of heteroskedasticity
Jarque-Bera (JB)	1.360105	0.506	There is normal distribution
Durbin-Watson (DW)	2.044668		There is no serial correlation

Source: Eviews

In order to correct for heteroscedasticity (discussed in chapter 4) a generalized least squares regression was run. The results of generalized least squares model are presented in table 5.3 below.

5.3 Generalized least squares regression

In view of rejecting the null hypothesis of non-heteroskedasticity, the GLS was employed and the following are the results,

Table 5.5: Generalized least model

Variable	Coefficient	Std. Error	z-Statistic	P-value.
D(YW)	0.013556	0.002062	6.574068	0.0000
D(AW)	0.066026	0.019249	3.430050	0.0006
D(SN)	-0.368043	0.132506	-2.777561	0.0055
D(MR)	0.087405	0.158347	4.905146	0.0000
D(BL)	-0.128056	0.138154	-0.926908	0.3540
D(WH)	-0.108621	0.204173	-0.532006	0.5947
D(TQ)	0.031860	0.005696	5.593337	0.0000
D(HHY)	-0.192547	0.067788	-2.840435	0.0045
D(FR)	10.12037	7.746946	1.486563	0.0110
D(DHV)	-1.113507	0.292033	-3.812947	0.0001
C	-26.71553	7.062802	-3.782569	0.0002
LR statistic	638.7923	Prob(LR statistic)	0.000000	

Source: Eviews

The GLS results show similar results in terms of the signs of the coefficients but there has been a change in the standard errors. For an example, this shows that there have been some improvements in the model. Based on the results we concluded that the model estimated is the best fit for the data.

5.3.1 Implications of the findings

Since the advent of the new democratic South Africa, the government has taken a number of strides to open more opportunities for women in South Africa. However, although more opportunities are open for women in the labour market, female labour force participation is still lagging behind that of men (Ntuli, 2007:2). It is therefore important to assess the factors which determine female labour force participation in the South African labour market. All the variables used in the regression model in this study except race and fertility rate are statistically significant in explaining the determinants of female labour force participation in South Africa. The factors which were found to positively influence women to participate in the labour market were age, marital status, and tertiary qualification. Thus, women of working age, irrespective of race, are afforded equal access to the labour market. Contrary to traditional belief that married women are keepers at home, married women are likely to participate in the labour force. However, at a lower rate compared to women who are single.

Similar results with the work of Lee (2005) were obtained with respect to the relationship between marriage and labour force participation of women. For women, the results suggest that women both married and single have reached the time when they realize the need for economic independence in order to maintain a better living, if not for the survival. The relationship established between these two variables, single and married, is that the reduction in being single means increase in marriage, therefore, labour force participation increases as a results of this transition.

Tertiary education is also an important determinant of female labour force participation (Yakubu, 2010:86). Highly educated women are more likely to participate in the labour force. The results on fertility rate implies that for example, having more children in a household, rather influences a woman to find a job in order to provide for the family needs. In line with the findings in the works of Williams (2007:22), Mlatsheni and Leibrandt (2001:21) our findings suggest that fertility rate is statistically not significant in explaining labour force participation rate of women. The implication of this finding is that fertility rate or the availability of children, especially the young children in the household, can no longer be a justification for a South African woman to

or not to participate in the labour market. Thus, women would participate regardless of the number or ages of the children. The transformation in the labour market through the labour relations Act and other pieces of legislation such as Basic Employment Conditions Act and Equity Act have been effective in ensuring that more women participate in the labour force (Leibrandt et al, 2010:14). A benefit such as maternity leave allows a number of women to keep their jobs whilst at the same time taking care of childbirth. In addition, the availability of child care, public and informal child care enables women to find employment.

Although, the model suggests that race does not have a significant impact on labour force participation, being both black and white have a negative relationship with labour force participation of women. The negative impact of both variables might imply that all women regardless of the racial group are still on the periphery of the labour market. Another interesting feature of this finding is that the magnitude of the negative impact of being a black woman on labour force participation is slightly more than the white women participants. While this finding implies that white women are more likely to participate than black women, it could also mean the negative attitude black women have on labour force participation. This finding confirms the findings of the previous studies (Department of Labour Report, 2005:9, Naude & Serumaga-Zake, 2001:266) that black women participation in the labour market still lags behind that of white women. Lastly, both negative coefficients for black and white give an implication of a positive impact of the effectiveness of the policies implemented in addressing issues regarding racial discriminatory practices in the in South African labour market.

The obvious implication of the negative impact of non-labour income on female labour force participation is aligned with the attitude women have towards the labour market especially when women live within the wealthier households (Lawason, 2008:14). While the grant, inheritance, UIF, and family business can also discourage working in the labour market. For example, in accordance with theory, the income not worked for is higher than the expected wage from the labour market.

With respect to HIV/AIDS, it could be that women who are indirectly affected by HIV/AIDS, for instance, living with an infected family member, women are the ones to bear the responsibility of

taking care of the infected. That means that women have to juggle work with care giving. This arrangement is not an easy thing because the formal work does not often allow flexibility of hours to allow special cases of this nature. This leads to a complete withdrawal, especially if the wages women earn cannot afford extra help together with household expenditure. On the other hand, when women are the ones infected with the virus, their labour market productivity is negatively affected, which leads to withdrawal or dismissal from the labour market. The results in this regard agree with the UNAIDS reports (2009). The parameter estimate of 1.113507 shows that the labour force participation of women reacts sensitively to changes in the HIV/AIDS pandemic. Therefore, the variable becomes a real threat in the labour market of women.

5.4 Concluding remarks

The purpose of this chapter was to present the empirical findings. The chapter examined the role played by young and adult women, single and married women, black and white women, tertiary qualification, household income, fertility rate and HIV/AIDS on labour force participation rate. Except for black, white and fertility rate, these results are all once again statistically significant and are largely in line with a prior expectation. Most importantly, the regression analysis confirmed that fertility, HIV/Aids, marital status and education played an important role in determining female participation in the labour market. The rest of the variables are consistent with previous works.

The diagnostic checks were performed and the tests detected the presence of heteroscedasticity. The GLS was applied to correct for the problem of heteroscedasticity. Similar results were obtained with reduced standard errors. The GLS regression proved the model to be suitable for estimation of the relations under consideration. No serial correlation and misspecification was found to exist in the model, making the results of the model to be valid and reliable. Following from this chapter is the summary of all the chapters, the conclusion and policy recommendations, in chapter 6.

Chapter 6

Summary, Conclusions and Recommendations

6.1 Introduction

The main objective of this study was to find the main factors that influence women to participate in the labour market, as well as to identify the recent trend in the labour force participation rate of women especially in the second decade of democracy. The study is sought to find out which essential factors encourage or impede the participation of women in the labour market of South Africa.

This chapter provides a summary of the main findings in this dissertation. The chapter begins by providing the main highlights in each chapter. This is followed by a presentation of conclusions. The last part of the chapter presents recommendations.

6.2 Summary

This study began by providing an introduction and background in chapter one. A problem statement and the objectives of the study were presented in chapter one. Chapter one essentially set the scene for the chapters that were to follow.

In order to provide for a conceptual framework of the study, a theoretical foundation was provided through a literature review in chapter two. Both the theories and empirical literature were explored in chapter two. Three theories, namely, the labour-leisure choice model, household production model and allocation of time model by Becker were outlined. These theories suggested a number of critical factors determining labour participation decision making process. These factors include the wage rate, reservation rate, spousal income, household's total income and hours of work. In addition to the view of theories, a number of empirical studies on labour force participation of women were reviewed to supplement the predictions of theory. A number of determinants were derived from the analysis of empirical literature, namely, age,

marital status, availability of children in the household, women's education, and sometimes the spouse's education, location, the type of work, employment conditions, individual preferences and race or ethnic groups. Through the analysis of the data presented from these sources, some light was shed as to the dynamics in the labour force of women.

A review of the labour force participation trends in chapter three showed evidence of the rapid increase of the labour force of women with little fluctuations in the second half of the first decade. One of the important outcomes of this study from the review of the labour force participation trends is that while the LFPR of women remain persistently lower compared to that of their male counterparts, there is a declining trend with an average decline of 1.2% each year between 2006 and 2010.

Chapter 4 provided an analysis of the research methodology used in the analysis of data. The ordinary least squares method (OLS), a technique for fitting the best straight line to the sample of XY observations, was used in this analysis. The aim of using a least squares regression was to investigate the relationship between female labour force participation rate as a dependent variable and the explanatory variables. The hypotheses tested were that higher education enhances the probability of women's participation in economic activities and that fertility rate positively influences participation in the work market. The findings of this study confirm the hypotheses.

Chapter 5 provided the analysis of the results. The findings of the study suggest that age, marital status, tertiary education, household incomes, fertility rates and HIV/Aids are the main determinants of female labour force participation.

6.3 Conclusions

The main conclusions that can be drawn from this study are that although the new democratic government has made some strides in creating an environment conducive for women to participate in the labour force in South Africa, this still proves not to be sufficient. The enhancement of and liberation of women from the ills of inequality and poverty necessitates for

government to go beyond just a mere labour legislation into addressing the factors that inhibit women's labour force participation despite the favourable legislation. This calls for addressing issues of access to higher education by women and fighting HIV/Aids pandemic. Whilst more women are being attracted towards labour force participation, the process of equalizing men and women in the labour force is slow. Labour market trends show that men are still in the majority in senior management and professional positions at the workplace. A lot is yet to be done in ensuring that women are recognized on equal terms with men in the labour market. Addressing factors which determine women's participation in the labour force in South Africa will go a long way in enhancing women's status in the labour force.

6.4 Recommendations

Economic participation of women in the work force is critical not only in lowering the disproportionate levels of poverty among women but also as an important step towards raising household income and encouraging economic development of a country as a whole. Since the new South Africa, the government had re-structured systems to accommodate the common needs of all South Africans. In compliance with MDG's policies, women had been the focus for improvement.

To complement the South African Schools Act no. 84 of 1996 that enforces maximum age limits for each school grade (Leibrandt et al, 2010:7), it is recommended that government should create a law enforcement making it compulsory for young South Africans (at least those of 15-24 years) not to be out of school at least until matric is passed. In doing so, the number of dropouts reduces while it enhances post secondary learning, education attainment increases even further as well as labour force participation. Programs that increase young girls' knowledge of the world of work, informative learning about the requirements for market entry, and programs that built young women's self-esteem should be enhanced and implemented. In this instance programs such as 'bring a girl child to work', for example in the year 2012, the programs' theme was to provide an opportunity for girl children to "stop, think and evaluate the choices they make. This initiative was done to encourage the young women and girls around South Africa to believe in themselves and utilize the opportunities around them (Cell C, Company Guide, 2012). But the question one

would ask which needs further attention is whether programs like the one mentioned benefit the group intended for equally. It should not just be the children of the rich and the well off that gain access to this program but even children from the poor households should be afforded an opportunity to gain exposure to the real world working experience. However, such programs should be taken seriously and enhanced. This could be achieved through schools arranging school visits to work places for young girls. Learnership programs should be enhanced and monitored to ensure that young girls who just completed without the necessary work experience are afforded the opportunity to gain work experience through learnership programs.

Furthermore, the provision of maternal leave only allows women a free time during the early motherly periods. There is a need for companies to consider the facilities for nursery or day care within the company premises to necessitate participation, and reduce women employee turnover. Mobile clinics should be encouraged to visit these child care centers so that working mothers do not have to take time off from work to take children to clinics.

The pressing issue is the HIV/AIDS pandemic. Although the rates of infections seemed to be declining gradually, women are still directly and indirectly affected by the virus. This means that the HIV and AIDS awareness programmes should be enhanced to reach all areas including the rural areas until societies accept the existence of the pandemic and its impact.

6.5 Limitations of the study

This study analysed a quarterly time series data using OLS regression. The researcher acknowledges that a survey would give a more accurate result especially on the analysis of the demographic factors. However, that does not make the results of this study invalid and inaccurate. Carrying out a survey is relatively costly and time consuming. Therefore, due to time constraints and related costs, a survey or other means of data gathering could not be used. Secondly, the secondary data used in this analysis was taken from the works of many other researchers on the labour force of South Africa, most of which used their own calculations to compensate the shortcomings of the Labour Force Survey. As a result, a certain degree of biasness in this study cannot be completely ruled out. Lastly, the study limited its focus to

identifying the main determinants of female labour force participation based on the review of literature not the inter-relations among the explanatory variable. Therefore, causal effects of variables and simultaneous estimations were omitted in this study.

6.6 Recommendations for future research

A longitudinal study based on primary data collection, surveys and interviews should be conducted in order to assess the variations in the determinants of female labour force participation in particular households over a long period of time.

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