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The Gender Dimensions of Social Networks, Unemployment and Underemployment: What Time Use Data Reveal

Abstract

Utilizing time use data for exploring the issue of employment (or lack thereof) – a critical pathway for increased incomes for the poor - has received little attention in economic analysis. Using data from the 2000 South African national time use survey, this paper examines the value of time use data in policy discussions related to understanding people's employment status and job search. In particular, we argue that an understanding of how individuals organize their daily life can help identify productive work and workers in a more comprehensive way than conventional labor force surveys and can provide an useful assessment of the effects of employment conditions on coping strategies like job search. We assess whether labor force surveys provide a good estimation of participation in productive activities by exploring the time use patterns of 10, 465 women and men aged 16-64 years, particularly the unemployed, underemployed and employed respondents. The results show that 26.7 and 17.5 percent of unemployed men and women respectively actually engaged in SNA productive activities, spending more time than underemployed men and women. We also examine individuals' responses to jobless growth that affect their labor force participation and time use. Building and developing social networks serves as an important coping strategy not only for enhancing social insurance but also for improving job prospects. Using an instrumental variable tobit model, we examine whether or not an unemployed person is likely to spend more time in social networking compared to other respondents. The findings, which are found to be robust, confirm the hypothesis. The results also show significant gender differences, with women spending less time in social networking than men. Women carry the burden of housework, which limits their time in developing social networks and in improving their employment prospects.

Keywords: South Africa, time allocation, gender, unemployment, underemployment, social network

JEL Codes: J22 Time Allocation and Labor Supply, J64 Unemployment: Models, Duration, Incidence, and Job Search

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I. Introduction:

In recent years, there has been an intense debate in post-apartheid South Africa on the extent of employment and unemployment. Much of this debate is related to the impact of government policies such as the old-aged pensions, child support grants and those pertaining to labor markets, especially labour market regulations. South African authorities are often criticized by neoclassical economists for not reforming the so-called inflexible labor regime, which is deemed as the key factor explaining South Africa's high levels of unemployment - currently estimated at 39%. Critics from the left, however, have argued that the neo-liberal economic policies pursued by the ANC government since the political transition in 1994 have exacerbated the already high levels of unemployment. Although there has been some attention paid to the welfare aspects of social capital (Maluccio et al, 2000), to the best of our knowledge, there has been no work linking social capital to outcomes in the labor market.

There are several issues germane to this debate. There are growing concerns regarding the reliability of South Africa labor force survey data and the associated estimates of employment and unemployment levels and trends. There is also a need to better understand the manner of employment search, in particular the use of social networks to obtain information about job opportunities. As our study shows, time spent in social networking have implications for the dynamics of employment. Women's unpaid work activities such as fuel gathering, domestic chores and care work in the household are critical, and often neglected, elements of this debate.

We argue in this paper that an understanding of how individuals organize their daily life can provide a better estimation of employment and unemployment, and a better assessment of the effects of employment conditions on individual well-being. Individuals' and households' responses to jobless growth involve coping mechanisms that affect their labor force participation and time use. This may include undertaking poor quality jobs, searching for additional sources of income, no matter how temporary they may be, and developing social networks. These coping strategies and social networking affect not only individuals' use of time, but also their ability to find work. One implication of this is that individuals who are constrained by gender-assigned roles of performing household maintenance and care work may find their employment prospects to be persistently below that of other groups, and are therefore likely to face higher unemployment rates.

The objectives of this paper are two-fold. One is to examine the time use patterns of 10, 465 adult respondents, women and men aged 16-64 years, as a means of assessing the reliability or otherwise of the labor force surveys. We explore whether or not the South Africa's Labor

Force Surveys provide a good estimation of people's participation in economic activities by examining dimensions of time use patterns of women and men. In particular, we study the time use patterns disaggregated by their labor force status, giving attention to the unemployed and underemployed. We propose that way people spend their time could provide a better measure of people's participation in economic activities than the Labor Force Surveys. Second, this paper examines whether individuals who are unemployed or underemployed are more likely to invest time in building social networks as a way of job search, or improving their employment conditions. The importance of social networks in labor markets especially in employment search and development of customers is now widely acknowledged. In addition, social networks provide varied forms of support, ranging from credit and social insurance to promoting social cohesion.

We begin by providing an overview of the time use survey in South Africa and of labor market developments in South Africa in the last decade. We examine how women and men's time use patterns differ in South African households, depending on the employment status. The paper differs from previous labor force or employment studies in several respects. First, time use patterns of individuals disaggregated by labor force status are analyzed. The economic activities performed by persons not in the labor force, unemployed and underemployed suggest a blurring of the boundaries between employment, unemployment and inactivity. On the basis of the participation and mean time spent in SNA primary production and labor market activities, we find that the individuals not in the labor force and unemployed are partly indistinguishable from the underemployed workers. Second, we explore how women and men allocate their time in social networking, job search and household work. Their time use patterns reveal that underemployed and unemployed men extensively use their time in social networking; more so than underemployed and unemployed women. Using a Tobit model with instrumental variable estimation, we examine the link between time spent in social networking and labor force status, controlling for economic, social and demographic factors. The significance of this approach will be justified in the body of the paper.

The paper is organized as follows: Section II gives an overview of the literature on social networking and employment. Section III discusses the data used in our empirical analysis, and the method of classifying the individuals' labor force status. Section IV examines the time use patterns of men and women by their labor force categories. An Instrumental Variable Tobit model is presented to assess the incidence of social networking in Section V. A summary of the main points and policy considerations concludes the paper.

II. Understanding the Link between Social Networks and Employment

There is now a growing recognition in the economics literature of the importance of social interactions in the context of joblessness, job search, and success of business endeavor. These studies build on the work of sociologists such as Bart (1992), Coleman (1988) and Reingold (1999) who argued that individuals do not make economic decisions in isolation, but rather, as part of networks of friends, relatives and neighbors that jointly provide economic opportunities, information flows, social sanctions, etc. These social contacts are perceived to be an advantage in labor markets since network members can potentially broker job openings and job seekers. Labor economists argue that social networks tend to coexist with formal labor market hiring mechanisms because of information asymmetries. Holzer (1988) and Montgomery (1991) developed adverse-selection and job search analytical models to explain why workers prefer to conduct job search through informal ties and thus fare better than poorly-connected ones. They also explain why firms using informal employee referrals tend to earn higher profits.

Of particular interest is the role of social networks among low wage and unskilled workers. This is because limited employment opportunities and a large supply of job seekers characterize the labor market in which they operate. Under such conditions, it is more likely that employers will search for workers using an informal referral method, instead of the more costly formal recruitment methods such as advertising. Corcoran, Datcher and Duncan (1980) for example, provide evidence about the importance of informal channels in finding jobs among low-skilled jobs and among less educated workers in the United States.[1] The findings of Johnson, Bienenstock and Farrell (1999) in their study of female labor force participation in the poor areas of Los Angeles show the likelihood of employment to be significantly affected by the presence of social networks. Topa (2001) presents a labor market model that explores the manner in which agents exchange information about job openings within their social networks. Using Census tract data for Chicago, his empirical investigation shows not only the significance of social interactions, but also the importance of these in areas with less educated workers. A similar conclusion is reached by Addison and Portugal (2002) in Portugal.

The specific characteristics of social networks and their impact on job information gathering are further explored by Calvo-Armengol and Jackson (2004). They argue that the unemployed make use of the network for job opportunities, while the employed (especially underemployed and part-time) gather information on more attractive jobs.[2] Social networks play a crucial role among self-employed. Aldrich and Zimmer (1986) develop the ”network approach to entrepreneurship” perspective, which argues that network resources and activities are heavily

used to establish new firms and that those with broad and diverse social network are likely to have more successful enterprises. This prediction is supported by Bruderl and Preisendorfer (1998) in their study of German new business entrepreneurs and by Allen's (2000) study of entrepreneurial climate in Wisconsin. Allen (2000) shows that, to the extent that social networks are a source of capital funds, initial customer information and psychological support, individuals with more effective social networks have a greater incentive to attempt self-employment. This effectiveness is associated with larger networks and more frequent contacts as well as social network composition.

Social networks can have other advantages as well. In addition to satisfaction that such networking activities yield, they can provide informal insurance mechanisms to help households cope with economic shocks. Studies in behavioral medicine and psychology such as Billings and Moos (1981) and Cattell (2001) demonstrate its importance in dealing stressful life events including job loss. This is particularly true for people in poor communities. Carter and Maluccio's (2003) study of social capital as a coping mechanism shows that households in South Africa are better able to diversify away from idiosyncratic risk in communities where there is more social capital.

There are important distributional issues associated with the role of social networks that merit attention. Montgomery (1991) points out that an increase in the density of social ties can generate greater wage inequality. Allen's (2000) study of potential entrepreneurs in Wisconsin also shows that women receive less influential social support for entrepreneurial activity than men, a plausible reason for gender differences in self-employment likelihood.

There is some evidence that social networks may be very important for the unemployed to access jobs. Lund and Ardington (2006), in a survey in Kwamsane, a district in one South African province show that particularly for work not in the formal sector (where formal avenues of job search dominate) and for low-skilled workers, informal networks were critical for job searching.

Building on the above studies on social networks and employment, we argue in this paper that to the extent that social ties benefit those workers with higher network density, workers in search of jobs or additional work are more likely to find employment by spending more time in social networking. Moreover, if the strength or density of social ties is positively correlated with time spent in social networking activities, then women, constrained by their gender-based responsibilities at home, may have lower network densities.

Using time use data, our study empirically investigates whether individuals who are unemployed or underemployed are likely to invest time in building or maintaining these social

networks, if indeed social networks function as important sources of employment information. This suggest that individuals who want to improve their job prospects may end up choosing between taking an existing job, or building on social networks to improve the likelihood of getting jobs. Moreover, if individuals are constrained by socially assigned roles such as household chores and fuel gathering activities, then their job prospects are likely to be worse than those who are not. This may help explain the higher unemployment rate of those who are able to spend less time in building their social network ties.

III. Empirical Analysis

1. Data Description and Sample Characteristics

The sub-sample used in this paper involves 10, 465 respondents, aged 16 to 64 years of age, taken from 6,752 households with completed time use diaries. The data is part of the 2000 South Africa National Time Use Survey of approximately 8564 households that was administered by Statistics South Africa.[3] The survey was conducted over three periods namely, February, June and October 2000.[4] Household, demographic and employment information of the respondents were collected alongside the varied activities performed by each respondent over a 24-hour period of the day preceding the interview. More than a third of the households have young children ages 0-6 years of age and nearly 65% and 85% have access to piped water and school and hospital respectively (see Appendix A). Almost half, or 48% of the households earn monthly income of R 700 (about $91 equivalent) or less, while over 7.3% earn at least R 5000 (or $651).[5] Slightly over half (52%) of the respondents are women, about 45 percent of whom are likely to be married, compared to 49% among men (Appendix B). The mean ages of men and women in the sample are similar, about 34.5 and 34.8 years respectively. Men have slightly higher mean years of schooling compared to women; almost 11% of women are illiterate compared to about 9% of men.

2. Labor Force Status Classification Method

For our study purposes, the individual respondents are classified according to their labor force status namely: 1) not in the labor force; 2) unemployed; 3) underemployed; and 4) employed (fully employed or part-time). We utilize the standard ILO definition in defining these categories. The employment definition follows that used by the government of South Africa (Stats SA 2001). A person is employed if s/he performed any of the following activities in the week prior to the time-use survey: a) run any kind of business for yourself; b) help a family

business, without payment; c) do any kind of work on a household plot, food garden, or animal husbandry; d) catch any fish or wild animals for food or sale; e) do any domestic work for another household for payment in cash, or in kind; or f) do any other work for wage, salary, piecework pay, commission or payment in kind. A person is also classified as employed if s/he did not work in the last seven days, but has a job to return to, or did not look for work because the respondent is satisfied with the current work.

The employed persons are sub-divided into categories "fully employed, or part-time" and "underemployed". An underemployed person is one that is: a) employed according to the employment definition, but worked less than 4.4 hours on the day the time-use survey was conducted; and b) looked for work in the last four weeks, or is available to start work in the next seven days.[6] This follows closely the ILO definition of underemployment, which specifies that an underemployed person is one who is: a) willing to work more hours; b) available to work more hours; and c) worked less than a threshold (ILO 1998).[7]

On the other hand, a person is unemployed if s/he did not perform any above-mentioned activities in the last week, but is available to start work in a week. This definition follows the "expanded definition" of unemployment (or broad definition) specified in South Africa's Labor Force Survey, which includes respondents who did not actively searched for work in the past four weeks (Stats SA 2001).[8] We use the expanded definition because of its advantage over the official unemployment definition; it includes discouraged workers, namely those that did not look for work because they had given up hope of finding work. Kingdon and Knight (2005) argue that there is an indication that the unemployed who did not look for work may be worse off than the unemployed who looked for work. They explain that the non-searching unemployed did not look for work because there were high costs associated with a job search and because of prevalent unemployment rates.

A summary of the employment status of the respondents is presented in Table 1a. More than 24 percent of the sample is 'not in the labor force', while 17.3 percent of the respondents are classified as unemployed. Table 1a also shows that women are over-represented in these two categories; about 30% are not in the labor force compared to only 18.3 percent of men. They also face a higher unemployment rate in 2000, 20.6 percent compared to men's unemployment rate of 13.6 percent. About 6.4 percent of the sample is underemployed. Slightly over half of the sample is either fully or part-time employed.

[Table 1a about here.]

The unemployment rate, using the time use survey, is estimated to be 22.8 percent. This is significantly lower than the broad unemployment rate calculated by Banerjee et al (2007).[9] The difference in unemployment rates could arise from the fact that the time use survey sampling method selects two people from the randomly selected households, regardless of the household size. If larger households were more likely to have unemployed, or those not in the labor force, then selecting two members would create a downward bias in the number of unemployed.[10] It is worth noting that Banerjee, et al (2007) acknowledge that the reported unemployment rates calculated from labor force surveys could be overestimated because earlier surveys had excluded certain types of workers (such as mine workers in hostels) and informal sector workers.

Table 1b and 1c disaggregate unemployment rates by age and race. The figures show that younger people and Africans are much more likely to be unemployed than other groups; a continuing legacy of the apartheid period. African women face the highest unemployment rate at 33.1 percent. The Colored and Indian groups face worse labor market outcomes than Whites, especially among men. In terms of types of employment, we find that men are nearly twice more likely to hold jobs in the formal sector than women in Table 4d. This gender difference in employment patterns is similar to those found in other labor markets in the world. A number of studies have shown women to be more likely to work in informal sector activities (Meagher 1995, ILO 2002, Chen, Vanek and Carr 2004, Valodia, Skinner and Devey 2004).

[Tables 1b-d about here]

IV. Time Use Patterns of Men and Women by Labor Force Status

The information for the national time use survey was primarily obtained through interviews. Within each household, two people, aged ten years and above, were asked what activities they had performed on the previous day. The study used a 24-hour diary, in which respondents were asked an open-ended question pertaining to 30 minutes slots. Respondents were able to report three activities per time-slot, and were asked whether these activities were conducted sequentially or simultaneously. Thus, the survey provides information regarding the occurrence of multiple activities, whether sequential or simultaneous. Each of these activities was classified using the United Nations Statistical Division System of National Accounts (SNA) activity classification system (Statistics South Africa 2001, pp. 18-22).

In the following analysis, we consider the main activity reported during the time slot as well as other activities that are performed either simultaneously with or sequentially after the

primary activity.[11] We also use a modified System of National Accounts (SNA)-based activity classification. First, we reclassified the 'collecting fuel and water' activity as part of non-SNA production activities, namely household maintenance and care work, instead of classifying it as part of SNA production activities namely: wage employment, primary production, home-based and domestic services. Secondly, we identified those social and cultural activities that are typically associated with social networking in South Africa as such. Hence, the following activity classification is used: a) labor market work (SNA production activities excluding fuel and water collecting); b) household work including fuel and water gathering, domestic chores, childcare and shopping; c) volunteer work; d) social networking activities; e) leisure activities, including active and passive leisure; and f) personal care and other activities including sleep, personal hygiene, learning and doing nothing.

There are some limitations of the survey data that need to be acknowledged. First, actual wage earnings are not reported in the survey. Instead, respondents were asked to report gross monthly income (from all sources). This information is provided only in terms of income range categories. Secondly, educational attainment categories include only up to Grade 12. Therefore, we are unable to distinguish between respondents who have completed high school and those with college, university or higher degrees. Thirdly, information on the relationship of the respondent to the household head is not available and hence, we are unable to examine intra-household division of labor, nor to compare time use between household members. Finally, there are likely to be problems of misreporting on time spent in different activities, given that not everyone has a watch. This suggests that time spent on a particular activity may be influenced by the respondent's perception or notion of time itself. Moreover, some respondents, women in particular, may have been acculturated into and/or have adopted the performance of two or more activities simultaneously without being conscious of it. These factors are likely to result in the underestimation of multiple activities.

We now explore the time use patterns of men and women, taking into account their labor force status. In particular, we examine whether or not there are any discernable gendered differences in the use of time and, their participation in different activities under each employment category. Table 2 presents an overview of time use for all men and women, aged 16-64 years, in the survey by: a) the main activity; and b) the combined or multiple activities each respondent performed. Taking into account the time allocated to the main activities only, Table 2 shows a work pattern consistent with other time use studies. Men spent about 294 minutes per day on average in labor market work, which is 132 minutes (or 2.2 hours) more per day than women. Women, on the other hand spent nearly 250 minutes (or 4.2 hours) on average per day

performing household maintenance, fuel gathering and care work, about 153 minutes (or 2.6 hours) more than men. With respect to volunteer work and community service activities, women and men seemed to allocate very small amount of time (about 5-6 minutes per day). Men spent a longer time, 112 minutes on average, in social networking compared to women (82 minutes on average). For primary leisure activities, women and men allocated roughly the same proportion of their time to these activities.

[Table 2 about here.]

When time use analysis takes into account the presence of multiple activities, several interesting results emerge. Table 2 shows the average time spent by women and men when sequential or overlapped activities are included. Here we used the method of giving the main and overlapped or sequential activities equal weight.[12] Household work, especially domestic chores and care work are activities that are often combined with other activities. Taking both primary and secondary domestic and care work activities into account, the average time of 249 minutes spent by women increases to 299 minutes, an increase of 20 percent. Men's average total domestic and care work time also increased by 22 percent from 96 to 117 minutes. Leisure activities that are carried out with other activities increase men and women's overall leisure time by 58 percent (from an average of 161 to 254 minutes). Interestingly, the average time spent by men on social networking increased significantly when secondary networking activities are taken into account. Women and men who performed main social networking activities reported an average of 82 and 112 minutes per day respectively. The total average time spent on these activities increased substantially when secondary social networking activities are included, especially for men (179 minutes) compared to women (122 minutes).

Table 3 presents the participation rates and daily time spent by women and men in various labor force categories on primary activities (conditional on participation). The participation rate is calculated as the percentage of respondents who performed at least 30 minutes of the activity in the twenty-four hour period. It shows that women engaged in labor market activities to a lesser extent than men, both in terms of participation rate and average time spent, conditional on participation, in that particular activity. Participating men on average spent 513 minutes per day in labor market work, compared to participating women's average of 427 minutes. The majority of both men (70 percent) and women (95 percent) performed some household chores; not surprisingly however, women spent more than twice the amount of time in these activities than men.[13]

[Table 3 about here]

The time use pattern of non-labor force and unemployed men and women yields some striking observations. First, 11 percent and 16 percent of women and men who are classified as "not in the labor force" spent an average of 167 and 267 minutes per day respectively, in wage and salaried employment for establishments, primary production activities (e.g. hunting, fishing, tending animals, gardening, etc) and other income-generating informal activities (such as petty trading, preparing and selling food, etc). Second, an even greater proportion of unemployed women (12 percent) and men (27 percent) respectively spent about 178 and 347 minutes in the same activities. The minutes spent in SNA economic activities (conditional on participation) by the unemployed are greater than the underemployed workers (i.e. those currently employed but are seeking additional work or more hours of work). Third, Table 3 shows that unemployed men are just as likely to participate in labor force activities as underemployed men. Further, on average, unemployed men spend 92 minutes in market work, which is greater than underemployed men's time (36 minutes).

These findings suggest that standard labor force surveys may not adequately capture the true economic participation and contributions of men and women. Moreover, the social construction of what is considered 'employment' can lead to underreporting or misreporting of labor force status. For example, work in some sectors such as the subsistence sector, informal sector or home-based work are atypical, irregular and 'difficult to measure'; they are also unlikely to be considered "economically meaningful". Because of these characteristics, a person may report that he or she did not do any "work" in the past seven days, and are therefore classified as unemployed or not in the labor force. During periods of low growth of formal sector employment, some people could have withdrawn from the organized or formal labor market and took up atypical activities within the SNA boundary. A decline in labor force participation, or an increase in unemployment could therefore be due to increased participation of men and women in these 'atypical' SNA economic activities including producing food for both home consumption and sale in the market, fishing, etc. The results in Table 3 suggest that the time use survey technique may be able to identify work and workers in a more comprehensive way than the conventional surveys.

Interestingly, a greater proportion of unemployed and underemployed men seemed to spend more time, 253 and 231 minutes respectively, in social networking activities (conditional on participation) compared to unemployed and underemployed women (183 and 180 minutes

respectively) as shown in Table 4. These figures are 157 and 145 minutes for employed men and women. Table 7 shows the participation rates and daily time spent (conditional on participation) by women and men in both primary and secondary social networking activities. Secondary activities tend to contribute an additional 23% and 35% of social networking time of women and men respectively. The magnitude of the increase in additional minutes by including secondary activities for men (63 minutes per day on average) is twice as large as for women (additional 37 minutes per day on average). This indicates that men are more likely to spend time in social networking together with other activities. The differences among Africans and Coloureds in social networking are less striking however. Social networking activities performed by African and Coloured men are 253 and 230 minutes per day when secondary activities are taken into account. The figures for African and Coloured women are 200 and 209 minutes respectively. This indicates the vital role of social networking as a coping strategy, social ties-building and as mechanism for job search in certain social groups. With respect to the latter, the time use patterns suggest that social networks can provide, among others, information flows and economic opportunities for those who are looking for work, additional jobs, or better work opportunities.

[Table 4 about here.]

If the strength and density of social ties are positively correlated with time spent in social networking, then women may have weaker or less effective networks than men. One possible reason for this is that women are constrained by their gender-based responsibilities in household maintenance and care work. Similar to the time allocation patterns in other countries, South African women, regardless of their labor force status, spent twice the time spent by men in household work, care work and fuel collection activities (conditional on participation), 263 and 137 minutes on average respectively. We also find that underemployed and unemployed women and men seemed to allocate more time in these activities than their employed counterparts. In the section that follows, we empirically explore the influence of gender and labor force status of adult respondents on social networks.

V. Social Networks and Employment Status: An Empirical Analysis

In this section, we explore the impact of employment status on the incidence of social networking using a sub-sample of individuals in the labor force, totaling 7,926 individuals (3,794 women and 4,132 men). In particular, as discussed in section III, we investigate whether or not

the unemployed or underemployed are likely to spend more time in social networking than other groups as a way of improving their job prospects. The sub-sample excludes those respondents who are unable to account at least 2 hours of their total time in a given day.

The extent to which an individual is likely to spend time in social networking activities depends on a variety of economic, demographic and household factors. These include labor force status, sex, race, marital status, household lifecycle and composition, and area characteristics. Living in a rural or less developed areas make informal job search even more prevalent. To the extent that unemployed and underemployed make use of social networks for job information gathering and developing potential job contacts, we expect that the worse (better) the employment status, the more (less) likely that the person will invest time in social networking activities. Prevailing social and gender norms—"men are breadwinners", "women are responsible for the children", etc—influence the household division of labor. Although the labor force participation of women has increased significantly worldwide—including South Africa—over the last decade, market work is still perceived to be the primary role of men, and household maintenance and childcare to be women's principal work domain. These distinct social constructs have a number of implications. First, they influence the sexual division of labor within the household, creating time pressure for many women regardless of their labor force status. This likely constrains them from engaging in social networking activities Second, there may be labor market patterns of occupational segregation and/or discrimination (on the demand side) that reduces women's likelihood of finding work, causing them to give up looking for work, or be discouraged.

Demographic factors also influence the time spent in social networking. Persons in the ascendant phase of the household life cycle and those who belong in single-adult headed households tend to experience greater pressure to find labor market work and work longer hours, and may therefore need social networks for job search. At the same time, persons may have less time available for social networks, given the demands of caring for the dependents. Household composition, particularly the presence of young children, plays an important role. Given the intensive nature of childcare, demands on parents' time are high, increasing the likelihood to reduce market work, or to choose not to be in the labor force. The age of children in the household also sets the parameters by which parents can perform other tasks. Pre-school aged children place a higher demand on adults' primary time than do older children, increasing the conflict between time spent in employment, social networking and childcare. As one moves into a later stage (e.g. older children, retirement, etc), time pressure is expected to decline.

The importance of cultural norms and social coherence in social networks cannot be underestimated. Social networks in some cultures not only provide informal channels of finding

jobs, but also help build community or kinship solidarity that serves as a survival mechanism, especially in dealing with idiosyncratic shocks. This is vital in communities or areas subject to multitude of risks, such as rural areas and areas without access to safe water. Therefore, we may find that social networking time are likely to be higher in some cultures compared to others.

The demand for time spent in social networking (measured in minutes per day), S_i* by individual *i* is estimated using the equation below:

$$S_i^* = E_i\alpha + X_i\beta + u_i \qquad (1)$$

Where

$$S_i = \begin{cases} S_i^* \text{ if } S_i^* > 0 \\ 0 \text{ otherwise} \end{cases} \qquad (2)$$

S_i is the observed time in social networking, and X_i is a *1x k* matrix of variables (such as demographic and household factors) uncorrelated with an error term, u_i. E_i is a dummy variable which is equal to one if the individual is unemployed, or underemployed, and zero otherwise. Since S_i is censored, a Tobit model is used to estimate equation (1).

However, the unobserved characteristics (u_i) that affect the demand for time spent in social networking are likely to be correlated with whether a person is unemployed or underemployed (E_i). For example, a person who is outgoing, all else equal, may be more likely to spend time in social networking. But this person may be less likely to be unemployed since s/he spends more time in social networking. The endogeneity of being unemployed, or underemployed causes biased estimation of α. Therefore, an instrumental variable estimation is utilized to predict the probability of being unemployed or underemployed in order to overcome the endogeneity problem. The probability of being unemployed or underemployed is predicted using a linear probability model in equation (3).

$$E_i = X_i\Pi_1 + educ_i\,\Pi_2 + fridge_i\,\Pi_3 + hhremit_i\,\Pi_4 + v_i \qquad (3)$$

The instruments used are years of schooling ($educ_i$), a dummy variable for having a fridge ($fridge_i$), and a dummy variable indicating whether the household receives remittance as their main source of income ($hhremit_i$). Educational attainment, proxied by years of schooling variable, is likely to increase the probability of being fully employed, but it does not independently affect the time they spend in social networking. Household assets such as having a

fridge, or the household receiving remittances as the main source of income are likely to affect the likelihood of being employed, but they do not independently affect the time spent in social networking. The results of estimation of equation (3) are shown in Table 5. The predicted values of E_i are used in estimating social networking in equation (1).

[Table 5 about here.]

Demographic variables such as the number of children below age seven, or being married reduces men's probability to be unemployed or underemployed, while they do not impact on women. This confirms the expectation that men be the "breadwinners". These instruments are significant for the total sample with the expected signs: an individual who has a fridge is less likely to be unemployed or underemployed and an individual whose household receives remittance as main source of income is more likely to be unemployed. Disaggregating the sample into women and men exhibit some gender differences. Having a fridge does not affect men's probability of being unemployed or underemployed, while education does not affect women's.

The Instrumental Variable Tobit regressions for exploring the determinants of social networking and estimating equation (1) are presented in Tables 6a and 6b. Table 6a gives the coefficient estimates from the regressions using time spent by all labor force respondents and by men and women only in the main or primary social networking activities, while Table 6b includes time spent in both main and secondary social networking activities. Table 6a shows that underemployed or unemployed individuals spent significantly more time (additional 154 minutes) than the employed. The differences are more striking among men (additional 199 minutes) compared to women (124 minutes). When secondary activities are included in the dependent variable, the differences are greater for men and less for women. Table 6b shows that unemployed or underemployed men and women respectively spent on average 206 and 96 minutes more in social networking compared to the employed. These results are confirmed by the negative and statistically significant female dummy coefficient estimate, which indicates that women, regardless of employment status, spent on average 75 minutes (for main activity only) and 98 minutes (for combined main and secondary activities) less than men in social networking.

[Tables 6a and 6b about here.]

A person is likely to spend less time social networking, the older his age (significant only for men), if she is not married (significant only for women) and/or if she has fewer or no young

children (significant only for women). These results confirm that women are more likely to be constrained by gender assigned roles of shouldering the bulk of housework, which inhibits their ability to network. Being an African or Coloured increases the time spent in social networking, particularly among men. Not surprisingly, we also find that living in rural areas or having access to safe water increases the amount spent in social networking.

VII Concluding Remarks

The objectives of our paper are to examine whether or not labor force survey data provides a good estimation of individuals' participation in economic activities, and to investigate whether unemployed or underemployed were more likely to spend time in building social networks in order to improve their job prospects, using the 2001 South Africa time use survey data. The resulting time use patterns show that unemployed men were just as likely to perform SNA primary production and labor market activities as underemployed men. Further, conditional on participating in labor market work, the average time spent by unemployed men and women was larger than the underemployed. In fact, the average time spent in market work by unemployed men was greater than that of underemployed men. These results indicate that the standard labor force surveys may not adequately capture the true economic participation and contributions of men and women. The reasons for this could be that work in some sectors such as the subsistence sector, informal sector and home-based work are irregular and atypical. Hence, a person may report that they did not perform any "work" in the past seven days, and are classified as being unemployed or not in the labor force. The time use survey may be able to identify work and workers in a more comprehensive way than conventional labor force surveys.

The time use analysis also shows that the unemployed or underemployed were more likely to invest time in building social networks, which support our hypothesis. The findings also demonstrate that there are important gender differences in that women spend much less time than men in these activities. Disaggregating by sex, the Instrumental Variable Tobit model shows that women's time in social networking were constrained by family characteristics such as being married or having young children, while these do not affect men. Race is a factor that affects men's time in social networking, but this does not affect women. The results indicate that women carry the burden of housework, which limit their ability to spend time in building or enhancing their social networks. To the extent that social networks are important in employment search, this is likely to lower their capacity to gather employment-related information, develop clientele crucial for self-employment, and improve their overall job prospects.

The importance of these results lies in the fact that time use data are now receiving greater attention among policymakers and researchers world-wide concerned with measurement and analysis of policy impacts, as well as with formulation of economic and social policies. Unfortunately, in the South African case, the time use survey has not been sufficiently exploited to inform economic and social policy options. We hope that this paper can contribute toward remedying this. A more informed understanding of how individuals organize their daily life can provide a better assessment of the effects of economic and social policies on employment opportunities and individual well-being. This requires, however, inter-temporal comparisons of time use that are beyond the scope of this study. As the South African economy continues to undergo structural change, it will be interesting to pursue in future research the likely effect of policy regime changes on the employment characteristics in later time use surveys.

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Table 1a

Selected Employment Status of Individual Respondents

	All Respondents		Women		Men	
Work Status	**Number**	**Percent of total**	**Number**	**Percent of total**	**Number**	**Percent of total**
Not in Labor Force	2,539	24.26	1,614	29.84	925	18.29
Unemployed1	1,807	17.27	1,117	20.65	690	13.64
Underemployed	674	6.44	319	5.9	355	7.02
Employed2	5,445	52.03	2,358	43.6	3,087	61.04
Total	10,465	100	5,408	100	5,057	100

Table 1b

Unemployment rates by age group

Unemployment by Age groups	Unemployment Rate
16-19	43.8
20-24	40.5
25-34	23.5
35-44	17.4
45-59	14.4
60+	14.0
Total	22.8

1 The broad definition of unemployment, which includes those that did not look for work in the last four weeks.
2 The employed includes part-time workers.

Table 1c
Unemployment Rates by Race

	Total	Women	Men
Race	**Unemployment rate**	**Unemployment rate**	**Unemployment rate**
African	25.9	33.1	19.2
Indian	10.7	17.3	6.3
Coloured	20.0	25.5	14.5
White	5.0	7.4	2.8
Other	33.3	100	14.3
Total	22.8	29.4	16.7

Table 1d

Employment Status, by Type of Sector

	Total		Women		Men	
Type of Sector	**No.**	**Percent of Total**	**No.**	**Percent of Total**	**No.**	**Percent of Total**
Formal						
Under employed	265	2.53	109	2.02	156	3.08
Employed3	3,822	36.52	1,411	26.09	2,411	47.68
Subtotal	4,087	39.05	1520	28.11	2,567	50.76
Informal						
Under employed	367	3.51	186	3.44	181	3.58
Employed4	1,623	15.51	947	17.51	676	13.37
Subtotal	1,990	19.02	1133	20.95	857	16.95

3 This includes fully employed and part-time.
4 This includes fully employed and part-time.

Table 2
Mean Time Spent by Women and Men on Primary and Overlapping Activities
(in minutes per day)

	Total		Women		Men	
	Primary Activities only	Primary and Secondary Combined	Primary Activities only	Primary and Secondary Combined	Primary Activities only	Primary and Secondary Combined
I. Labor market work[5]	225.89	239.59	161.78	173.36	294.45	310.42
II Household Work	175.17	211.15	249.48	299.26	95.70	116.93
Firewood and water collection, stone cutting	7.44	8.24	10.41	11.47	4.26	4.80
Domestic chores, care work, etc [6]	167.73	202.91	239.07	287.80	91.44	112.13
III. Volunteer Work[7]	4.90	5.56	5.11	6.00	4.67	5.08
IV.Social Networking[8]	96.40	149.74	81.94	122.29	111.87	179.09
V.Leisure	160.96	253.95	154.08	256.15	168.32	251.60
Active leisure[9]	57.11	104.82	55.83	108.78	58.48	100.59
Passive leisure[10]	103.85	149.13	98.25	147.37	109.84	151.01
VI.Personal Care, Self-Maintenance and learning	840.77	840.77	774.71	844.18	764.00	837.13
Learning	48.69	48.69	45.28	48.26	46.65	49.16
Personal care	752.43	752.43	690.27	754.48	682.07	750.23
Doing nothing	39.65	39.65	39.16	41.44	35.29	37.74

[5.] This includes wage and salary work, homebased work, unpaid family work, domestic and personal service, self-employed work, employment search, farming, animal husbandary, fishing, food processing and seelling, textile, leather and other craftmaking, construction, petty trading, tools and machinery making, other personal services and travel related to above activities.

[6]. This includes food preparation and clean up, laundry, ironing, clothes care and other housework; pet/animal care, and home maintenance and repair; household management, transporting household members, and travel associated with any of the above activities. Also includes physical care and minding of own and other children, care for sick or disabled child, teaching own and other children, playing with own and other children, and travel associated with child care, shopping and accessing government services.

[7]. This refers to all unpaid community work including civic responsibilities, helping or caring for disabled adults, unpaid services for children (i.e.: Boy or Girl Scouts troop leader), and travel connected with this work.

[8.] This includes participating in cultural activities, weddings, funerals, religious activities, socializing with non-family members, and travel related to these activities.

[9]. This includes socializing with family, spending time in arts, hobbies, sports, games and being a spectator to sports, museums, cinema and other performances and events
[10]. This includes reading, watching TV, listening to music, or other mass media use, being on the computer, and visiting a library.

Table 3 Participation Rate[11] and Mean Time [12] (Conditional on Participation) on Primary Activities, by Sex and Labor Force Status

	Total		Women		Men	
	Participation Rate (Percent)	Mean Time (min per day)	Participation Rate (Percent)	Mean Time (min per day)	Participation Rate (Percent)	Mean Time (min per day)
I. Labor market work						
Not in LF	12.80	212.03	11.09	166.59	15.78	267.74
Unemployed	17.49	276.27	11.82	178.18	26.67	346.63
Underemployed	23.74	138.19	22.88	128.63	24.51	146.21
Employed	76.31	526.02	70.70	487.20	80.60	552.03
Subtotal	47.36	476.99	37.93	426.57	57.45	512.58
II. Household Work and, Fuel Collection[13]						
Not in LF	87.63	232.04	94.73	273.28	75.24	141.47
Unemployed	89.65	280.30	96.51	333.78	78.55	173.91
Underemployed	89.91	271.19	97.49	345.72	83.10	192.61
Employed	77.01	166.56	93.04	211.49	64.76	117.25
Subtotal	82.60	212.07	94.53	263.93	69.84	137.01
III. Volunteer Work						
Not in LF	2.99	131.45	2.66	133.26	3.57	129.09
Unemployed	3.38	168.69	2.86	182.81	4.20	153.10
Underemployed	5.19	200.57	5.96	227.37	4.51	168.75
Employed	2.74	161.07	3.31	150.77	2.30	172.39
Subtotal	3.07	159.81	3.18	160.81	2.95	158.66
IV.Social Networking						
Not in LF	61.21	166.85	55.45	160.73	71.24	175.17
Unemployed	61.98	203.41	54.43	180.00	74.20	231.21
Underemployed	68.99	225.94	56.43	182.83	80.28	253.16
Employed	50.17	152.51	45.84	145.17	53.48	157.32
Subtotal	56.10	171.83	51.11	160.32	61.44	182.08
V.Leisure						
Not in LF	87.79	221.27	86.62	207.88	89.84	243.79
Unemployed	84.73	234.83	85.59	213.89	83.33	269.63

Underemployed	84.72	232.28	83.70	200.56	85.63	260.13
Employed	77.96	164.69	77.69	155.37	78.17	171.77
Subtotal	81.95	196.42	82.34	187.13	81.53	206.45
VI. Learning						
Not in LF	36.59	398.82	31.10	391.37	46.16	407.56
Unemployed	6.25	326.28	5.82	311.08	6.96	346.88
Underemployed	5.34	240.00	6.90	177.27	3.94	338.57
Employed	5.12	232.04	5.30	194.16	4.99	262.79
Subtotal	12.97	354.27	13.20	342.94	12.72	366.86
VII.Personal Care and Self-Maintenance						
Not in LF	100.00	901.97	100.00	878.83	100.00	942.36
Unemployed	100.00	797.05	100.00	790.82	100.00	807.13
Underemployed	100.00	792.91	100.00	774.64	100.00	809.32
Employed	100.00	695.75	100.00	695.81	100.00	695.70
Subtotal	100.00	769.53	100.00	774.71	100.00	764.00

[11.] The percentage of women and men in the total sample who have performed at least 30 minutes of the activity in the twenty-four hour period.
[12.] The mean time spent by individuals who performed at least 30 minutes of the activity in the twenty-four hour period.
[13]. This category also includes other domestic chores such as shopping and access to government services.

Table 4. Participation Rate and Mean Time (Conditional on Participation) In Social Networking Activities by Gender and Race (in percent and minutes per day)

	Women Primary Activity		Women Primary and Secondary		Men Primary Activity		Men Primary and Secondary	
Social Networking	Participation Rate (Percent)	Mean Time (minutes per day)	Participation Rate (Percent)	Mean Time (minutes per day)	Participation Rate (Percent)	Mean Time (minutes per day)	Participation Rate (Percent)	Mean Time (minutes per day)
African	50.59	160.15	61.40	200.20	63.59	183.52	74.38	253.48
Indian	44.68	114.76	56.03	141.27	50.76	147.76	65.15	210.70
Coloured	54.96	180.43	64.72	208.91	61.08	192.59	74.95	230.82
White	52.04	146.48	64.07	176.62	48.34	163.91	64.52	193.78
Other	75.00	190.00	75.00	240.00	55.56	162.00	66.67	220.00
Total	51.11	160.32	61.93	197.48	61.44	182.08	73.19	244.71

Table 5
Linear Probability Model Predicting Probability of Being Unemployed or Underemployed
(E=1, if unemployed, or underemployed, E=0 otherwise), (robust standard errors in parentheses)

	All Respondents	Women	Men
Woman	0.09***		
	(0.01)		
Age	-0.01***	-0.01***	0.00***
	(0.00)	(0.00)	(0.00)
Age squared	-0.04***	-0.05***	-0.03***
	(0.01)	(0.02)	(0.02)
Married, or living together	-0.06***	0.00	-0.15***
	(0.01)	(0.02)	(0.02)
Number of children under 7 years old living in Household	-0.02***	0.02	-0.04***
	(0.01)	(0.01)	(0.01)
Single-head	-0.10***	-0.13***	-0.10***
	(0.02)	(0.02)	(0.02)
Household size	0.02***	0.01***	0.02***
	(0.00)	(0.00)	(0.00)
African	0.19***	0.21***	0.17***
	(0.02)	(0.02)	(0.02)
Coloured	0.10***	0.11***	0.10***
	(0.02)	(0.03)	(0.02)
Indian	0.02	0.01	0.03
	(0.03)	(0.04)	(0.03)
Rural	0.01	-0.02	0.03
	(0.02)	(0.02)	(0.02)
Water	0.01	0.00	0.01
	(0.01)	(0.02)	(0.02)
Gautung	0.04***	0.03*	0.05***
	(0.01)	(0.02)	(0.02)
Typical	-0.03***	-0.03	-0.04*

		(0.02	
	(0.01)	)	(0.02)
Years of Education	0.00***	0.00	0.00***
		(0.00	
	(0.00)	)	(0.00)
Fridge	-0.03***	-0.05***	-0.01
		(0.02	
	(0.01)	)	(0.02)
Household receives remittance as main source of income	0.40***	0.36***	0.43***
		(0.03	
	(0.02)	)	(0.03)
Constant	0.31***	0.51***	0.18***
		(0.06	
	(0.04)	)	(0.05)

Table 6a Coefficient Estimates from Tobit regression with Instrumental Variables
Primary Social Networking Activities
(in minutes, robust standard errors in parentheses)

	Total	**Women**	**Men**
Predicted probability of being underemployed, or unemployed	153.91***	124.00***	199.41***
	(25.29)	(35.38)	(36.09)
Woman	-74.63***		
	(6.18)		
Age	-0.70***	0.31	-1.74***
	(0.34)	(0.55)	(0.41)
Age squared	-8.83	-15.78*	-1.78
	(6.25)	(9.18)	(8.46)
Married, or living together	-23.41***	-20.26***	-9.89
	(6.30)	(8.26)	(10.79)
Number of children under 7 years old living in Household	-13.39***	-15.13***	-5.43
	(4.52)	(6.28)	(6.74)
Single-head	5.11	3.68	14.12
	(8.53)	(13.26)	(11.37)
Household size	-2.24	-4.78***	-0.40
	(1.69)	(2.35)	(2.45)
African	4.40	-20.96	26.72*
	(10.82)	(15.43)	(14.98)
Coloured	30.36***	19.91	38.44***
	(11.96)	(16.64)	(16.78)
Indian	-25.17	-26.10	-16.94
	(18.77)	(28.27)	(24.36)
Rural	24.27***	17.21	29.11***
	(9.00)	(11.92)	(13.35)
Water	18.28***	18.51**	17.65***
	(6.29)	(9.28)	(8.51)
Gautung	-34.90***	-37.76***	-34.92***
	(7.83)	(11.57)	(10.58)
Typical	-42.71***	-37.72***	-45.25***
	(7.72)	(10.74)	(11.00)
Constant	79.19***	12.75	65.53***
	(20.05)	(32.28)	(26.33)
Number of Observations	7926	3794	4132
Wald Statistics	387.07***	79***	260.46***
Wald Exogeneity	6.05***	2.92*	4.18***
Log-Likelihood	-36254	-16218	-19895

Using the Wald Exogeneity test shows that we can reject the null hypothesis of no endogeneity. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6b Coefficient Estimates from Tobit Regression with Instrumental Variables
Primary and Secondary Social Networking Activities
(in minutes, robust standard errors in parentheses)

	Total	Women	Men
Predicted probability of being underemployed, or unemployed	141.80***	96.37***	206.20***
	(29.79)	(39.38)	(45.71)
Woman dummy	-98.48***		
	(7.01)		
Age	-1.21***	-0.18	-2.47***
	(0.38)	(0.60)	(0.47)
Age squared	-2.81	-6.87	1.83
	(7.13)	(9.86)	(10.08)
Married, or living together	-18.42***	-22.21***	5.94
	(7.12)	(8.81)	(12.98)
Number of children under 7 years old living in Household	-11.40***	-13.96***	-2.50
	(4.95)	(6.56)	(7.73)
Single-head	4.48	6.66	12.38
	(9.99)	(14.76)	(13.86)
Household size	-6.45***	-8.35***	-5.18*
	(1.90)	(2.51)	(2.85)
African	22.58*	-6.28	49.24***
	(12.28)	(16.78)	(17.43)
Coloured	27.58***	15.88	37.12**
	(12.94)	(17.45)	(18.51)
Indian	-11.98	-27.51	6.74
	(21.21)	(31.45)	(27.79)
Rural	10.70	-7.31	26.29*
	(10.06)	(12.59)	(15.64)
Water	23.59***	13.91	30.73***
	(7.13)	(9.89)	(10.09)
Gautung	-65.73***	-61.17***	-72.49***
	(8.61)	(12.02)	(12.11)
Typical	-29.32***	-23.29**	-32.86***
	(8.88)	(11.73)	(13.09)
Constant	177.64***	104.22***	154.51***
	(22.48)	(34.90)	(30.29
Number of Observations	7926	3794	4132
Wald Statistics	438.42	86.06	224.65***
Wald Exogeneity	7.67	3.23	5.24***
Log-Likelihood	-43368.75	-19447.5	-23770.1

Using the Wald Exogeneity test shows that we can reject the null hypothesis of no endogeneity. * significant at 10%; ** significant at 5%; *** significant at 1%

APPENDIX A
Selected Characteristics of Households, South Africa

Household Type	*Number of Households*	*Percent of Total*
By Dependency		
Households with children 0 – 6 years old	2,452	36.32
Households with children 7- 17 years old	3,305	48.95
By Headship		
Single-headed [14]	1,547	22.91
By Access to Services		
Households with access to water (in dwelling or water on site)	4,373	64.77
With easy access to public transport[15]	5,782	85.63
With easy access to school or clinic [16]	5,697	84.38
Geographic Location		
Urban formal	2,780	41.17
Urban informal	1,676	24.82
Rural	1,018	15.08
Commercial Farming	1,278	18.93
Total	6,752	100.00
Monthly Household Income		
0-R399	1,540	22.81
R400-799	1,694	25.09
R800-1199	970	14.37
R1200-R1799	755	11.18
R1800-2499	426	6.31
R2500-4999	540	8.00
R5000-9999	342	5.07
R10,000	142	2.10
No answer, in-kind	343	5.08
Total	6,752	100.00
Ethnicity		
African	5,243	77.65
Indian	168	2.49
Coloured	693	10.26
White	641	9.49
Other	7	0.10

Total	6,752	100.00
Main source of HH income		
Wage/salaries	4,282	63.42
Earnings from own business	683	10.12
State grants (old age pension, child support, disability)	635	9.40
Private pension	108	1.60
Unemployment Insurance Fund	43	0.64
Investment	24	0.36
Remittances from people outside the HH	769	11.39
Private maintenance from ex-spouse or father of child	49	0.73
Other, or no answer	159	2.35
Total	6,752	100.00

[14.] Single-headed defined as having no 2nd respondent, and no other eligible person (aged over 10 years old) in the household.
[15.] Transport by bus, taxi or train within a 30 minutes walk (2 km).
[16.] Primary, secondary school, clinic or hospital within a 30 minutes walk (2km).

Appendix B

Selected Characteristics of Individual Respondents

	Men		Women	
Age	**Number**	**Percent Of Total**	**Number**	**Percent Of Total**
16-19	489	9.67	512	9.47
20-24	832	16.45	892	16.49
25-34	1,405	27.78	1,494	27.63
35-44	1,123	22.21	1,196	22.12
45-59	1,022	20.21	1,072	19.82
60-64	186	3.68	242	4.47
Total	5,057	100	5,408	100
Average age	34.5		34.8	

Educational Attainment	**Number**	**Percent Of Total**	**Number**	**Percent Of Total**
No qualification[17]	446	8.82	582	10.76
1-7 years of schooling	1,528	30.22	1,538	28.44
Primary school completion	1,872	37.02	1,969	36.41
Secondary school or higher	1,211	23.95	1,319	24.39
Total	5,057	100	5,408	100

Marital Status	**Number**	**Percent Of Total**	**Number**	**Percent Of Total**
Never married	2,314	45.76	2,303	42.59
Married or living together	2,466	48.76	2,448	45.27
Widowed	77	1.52	341	6.31
Divorced or separated	185	3.66	302	5.58
Not indicated	15	0.3	14	0.26
Total	5,057	100	5,408	100

[17.] This group includes those who have not received qualifications in any of the above categories.

APPENDIX C
Variable Definitions

Variable	Definition
Age	Age of the respondent
Woman	A dummy variable. A value of 1 is given if the respondent is a woman, 0 otherwise.
In Labor force	1) If the respondent performed any activities in the last seven days: a) business for yourself; b) help /unpaid in family business; c) do any work on a household plot; d) catch any fish; e) do domestic work for another household for payment; f) do any other work paid: or **2) Did not work in the ref week, but is available to start work in a week: or** **3) The respondent has a job to return to, or is did not look for work because they are satisfied with current job.**
Not in Labor force	If respondent is not "in labor force" defined above.
Unemployed	Did not work in the reference week, but is available to start work in a week
Underemployed	1) If they worked in the ref week, or they have a job that they will return to; and 2) They looked for work in the last 4 weeks, or they are available to start work in a week; and 3) They worked less than 4.4 hours in the day of the time use survey (approx 22 hours a week)
Employed	*Those employed but not underemployed. They include part-time workers.*
Years of education	Highest education attainment in years.
Married	Dummy variable. 1 if person is married, or living together as husband and wife
Children under 7 in household	Number of children under 7 years old living in the household.
Single-headed	Dummy variable. 1 if there is no 2nd respondent, and no other eligible person (aged over 10 years old) in the household.
Size of household	Number of people over age 10 living in the household.
Household receives remittance as main source	Dummy variable. 1 if household receives remittance as main source of household income. 0 otherwise.
African	Dummy variable. 1 if respondent is African.
Coloured	Dummy variable. 1 if respondent is Coloured.
Indian	Dummy variable. 1 if respondent is Indian.
Rural	Dummy variable. 1 if dwelling is in a rural area. Excludes commercial farming.
Access to Water	Dummy variable. 1 if the piped water in dwelling, on site, or in yard is household's main source of water.
Typical day	Dummy variable. 1 if the reported day is a typical day, or there was a funeral, wedding or bereavement. 0 otherwise.
Gautung Province	Dummy variable. 1 if the respondent lives in Gautang, 0 if elsewhere.
Fridge	Dummy variable. 1 if respondent has a fridge, 0 otherwise.

Appendix D
Summary Statistics of Variables

Variable	*Observations*	*Mean*	*Std. Dev.*	*Min*	*Max*
Age	10465	34.67	12.73	16	64
Woman	10465	0.52	0.50	0	1
Not in laborforce	10465	0.24	0.43	0	1
Unemployed	10465	0.17	0.38	0	1
Underemployed	10465	0.06	0.25	0	1
Employed	10465	0.36	0.48	0	1
Education	10465	7.90	3.82	0	12
Married	10465	0.47	0.50	0	1
Children under 7 in household	10465	0.53	0.80	0	7
Singleheaded	10465	0.15	0.35	0	1
Number of people over age 10 living in the household	10465	4.03	2.43	1	24
Household receives remittance	10465	0.10	0.31	0	1
African	10465	0.76	0.43	0	1
Coloured	10465	0.11	0.31	0	1
Indian	10465	0.03	0.16	0	1
Rural	10465	0.15	0.36	0	1
Water	10465	0.66	0.47	0	1
Gautung	10465	0.14	0.35	0	1
Typical day	10465	0.86	0.35	0	1
Fridge	10465	0.53	0.50	0	1

[1] The study showed that more than half of all new jobs are found through informal social networks rather than through formal means.

[2] They show in a theoretical model that the better the employment status of one's connections, the more likely person will obtain information about job openings, or more attractive jobs. Furthermore, they point out that the probability of finding a job decreases inversely to the length of time a person has been unemployed. On the other hand, the wider the breadth of existing social ties, the more diversified the sources of information.

[3] The sample frame uses the 1996 population census enumerator areas (EAs) and the number of households (Statistics South Africa 2001). The EAs were stratified by province, which were then divided into four areas: formal urban, informal urban, ex-homeland and commercial farming area. Primary Sampling Unit (PSU) is an EA of at least 100 dwelling units. The numbers of PSUs were selected in proportion to the number of dwelling units in a PSU.

[4] This is to ensure that any seasonal variations are captured in the survey. Two respondents – aged ten years or above – were selected in each sampled household.

[5] This is at R7.67 =$1.00 exchange rate, as of October 2000.

[6] The government specifies part-time work to be those working less than 22 hours a week. The 4.4 hours a day is calculated based on the assumption of a five-day work week.

[7] The South Africa Labor Force Survey has two additional criteria for underemployment, which are those: a) who work less hours than the normal hours worked in a specific activity; and b) have no choice to work less hours (Stats SA 2001). However, this information is not available in the time-use survey.
[8] The official definition of unemployment has an additional criteria that the respondent actively looked for work in the past four weeks (Stats SA 2001).
[9] Banerjee, et al (2007) calculate the broad unemployment rate to be 39.9 percent in 1999 and 42.5 percent in 2001.
[10] We thank Debbie Budlender for the insight. It is not clear how the two members from each household were selected, and whether there was a tendency to select those that were employed.
[11] Stats South Africa used two different methods of assigning minutes to multiple activities. When there were two or three activities in a half hour that were performed sequentially, then each activity was assigned 10 or 15 minutes. However, when two or more activities were performed simultaneously, then it assigned 30 minutes to each of the three activities in order to show a more accurate duration of a particular activity.
[12] Stats South Africa used two different methods of assigning minutes to multiple activities. When there were two or three activities in a half hour were performed sequentially, one after the other, each activity was assigned 10 or 15 minutes. However when two or more activities were performed simultaneously, it assigned 30 minutes to each of the two activities. This shows the truer duration of a particular activity. (Statistics South Africa, 2001, p. 23.)
[13] Another study which examines the 1992 National Time Use Survey of Australia shows that "men provide practically 80% of the time devoted to home maintenance and car care" (Bittman 1996, p. 9). That is roughly 50 minutes per day, or 49% of the total men's time in domestic activities (101 minutes per day). Women's domestic activities largely include cleaning, cooking, laundry and other indoor activities. Shopping, gardening and playing with children are the activities where women and men spent equal amount of time (p. 12).