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Working Paper

Defining unemployment in developing countries: The case of Trinidad and Tobago

CREDIT Research Paper, No. 01/09

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Suggested Citation: Byrne, David; Strobl, Eric (2001) : Defining unemployment in developing countries: The case of Trinidad and Tobago, CREDIT Research Paper, No. 01/09, The University of Nottingham, Centre for Research in Economic Development and International Trade (CREDIT), Nottingham

This Version is available at:

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Defining Unemployment in Developing Countries: The Case of Trinidad and Tobago

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David Byrne and Eric Strobl

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Acknowledgements

Thanks are due to Peter Pariaj and the Trinidad and Tobago CSO for assistance with and provision of data. We are also grateful to Kevin Denny, Holger Goerg, and Frank Walsh for comments on an earlier draft and to Ralph Hussmanns and Constance Sorrentino for advice on various aspects. All remaining errors are, of course, our own.

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Abstract

The International Labour Organisation (ILO) argues for relaxing the standard definition of unemployment in developing countries where labour markets are not as efficient as those in the developed world. We examine whether such an extension of the standard definition is appropriate in the case of Trinidad and Tobago. Specifically, we use individual behaviour to classify persons into labour market states, rather than a priori criteria like job search. The Trinidad and Tobago Continuous Survey Sample of Population provides data uniquely suited to this purpose. Our results indicate that in Trinidad and Tobago males, who under the standard criteria would be considered out of the labour force because they report willingness to work but are not currently searching for a job, are appropriately classified as unemployed. Further evidence suggests that this may be because job search may not be as meaningful in rural as it is in urban areas.

Outline

1. Introduction
2. ILO Definition of Unemployment
3. T&T Definition of Unemployment
4. Empirical Framework
5. Unconditional Transition Probabilities
6. Econometric Analysis
7. Conclusion

I. INTRODUCTION

The unemployment rate is the most widely used indicator of the well-being of a labour market and an important measure of the state of an economy in general. While the unemployment rate is in theory straightforward, classifying working age persons as either employed, unemployed, or out of the labour force is difficult in practice. To facilitate comparisons of unemployment rates over time and across countries, the International Labour Organisation (ILO) has since 1954 set forth guidelines for categorising individuals into these labour market states.¹ These have now been adopted, at least in some form, by most developed and a large number of developing countries, which has allowed the ILO to compile a sizeable number of roughly comparable labour market statistical series across countries and over time.

According to the ILO guidelines, a person is unemployed if the person is (a) not working, (b) currently available for work and (c) seeking work. Practical implementation of these guidelines is, however, generally difficult. While employed persons are relatively easily classified in most countries, the issue of classifying non-employed persons as either unemployed or out of the labour force, especially according to criteria (c) is not uncontroversial; see, for instance, OECD (1987, 1995). For instance, the requirement of job search is attractive because it requires active demonstration of attachment to the labour force, but it also classifies a large number of non-searchers as out of the labour force. Some economists would argue that availability and willingness to work are sufficient to distinguish workers in the labour force from the non-attached. Moreover, while the requirement of active job search may be meaningful in industrialised countries where the bulk of the population engages in paid employment and where there are clear channels for the exchange of labour market information. This may not be the case in many developing countries where search may be more costly and job search behavior is less meaningful, especially in large rural sectors.²

In view of this in 1982 the ILO Thirteenth International Conference of Labour Statisticians revised its definition of unemployment in the sense of introducing certain

¹ See the proceedings of the Eight International Convention of Labour Statisticians (1954).

² See Hussmanns (1994).

amplifications concerning, amongst other things, the criteria of seeking work and the statistical treatment of people currently available for work but not actively seeking work. These amplifications, allowing for more broader definitions of unemployment, were specifically “aimed to make it possible to measure unemployment more accurately and more meaningfully both in developed and developing countries alike” (ILO, 1998, p. 52).

Ultimately the question of how to best define unemployment boils down to which categories of non-employed people should be considered part of the labour force. The most obvious way to determine this is to take sub-groups of the non-employed, say those not searching but willing to work, and compare their transition probabilities into employment and/or some other labour market state to those of a benchmark group, for example the searching non-employed. This approach is, of course, not new to the economics literature, although the evidence has been mixed and almost exclusively focused on the US and Canada; see, for instance, Hall (1970), Clark and Summers (1979), Clark and Summers (1982), Flinn and Heckman (1983), Gonül (1992) and, more recently, Jones and Riddell (1999).

Although job search as a prerequisite for being considered unemployed may arguably not be appropriate in developing countries, a similar line of research in a developing country context has, except for Kingdon and Knight (2000), however, remained unexplored. Limited to only cross-sectional data on the unemployed in South Africa, Kingdon and Knight (2000) are not able to directly test whether unemployed searchers and non-searchers in a developing country are behaviourally distinct in terms of their labour market state transitions, but instead explore the determinants of job search among the non-employed and estimate local wage-unemployment relationships. The authors find that the non-searching are more deprived than the searching unemployed and that many unemployed do not search because they are discouraged, suggesting that financial constraints rather than tastes cause the non-employed not to search. Moreover, they present evidence showing that local wage determination takes non-searchers into account as genuine labour force participants. Both of these factors are taken as evidence in support of adopting a definition of unemployment in South Africa that includes the non-searching non-employed.

In this paper we address the problem of defining unemployment in a developing country context by studying the definition of unemployment employed in Trinidad and Tobago (T&T). T&T serves as an ideal case study in that since the early 1960s it has used a more flexible definition of unemployment than that prescribed by the original stringent ILO criteria because it was felt that the latter was not appropriate for the underdeveloped T&T labour market. Specifically, non-employed working age persons in T&T are considered to be unemployed not only if they are currently actively seeking jobs, but also if they are willing and able to work and are currently not seeking, but have looked for work some time in the last three months prior to the interview - a group which we refer to as the 'marginally attached'.³ In T&T, as in other developing countries⁴, such marginally attached are a non-negligible group - for instance, in 1998 their exclusion from the unemployed would have lowered the official unemployment rates for males and females by over three and five percentage points, respectively.

To investigate whether the marginally attached behave more like non-employed active job seekers or those out of the labour force, we employ the methodology of Jones and Riddell (1999). Accordingly, we follow persons categorised in these groups over time to see whether their transition rates to other labour market states are similar in magnitude and in the effect of covariates on the transitions. The groups which are behaviourally similar in outcome could arguably be grouped together into the same labor force state. For this task we have access to three years of the T&T Continuous Sample Survey of Population data which allows us to construct a panel of individuals' labour market state transitions over time.

The paper is organised as follows. In Section II we outline and discuss more extensively the ILO definition of unemployment and its application to labour markets of developing countries. Section III provides a description and analysis of the definition of unemployment utilised in T&T. The subsequent section outlines the framework developed by Jones and Ridder (1999) used to determine behavioural equivalence among labour market states. Our analysis, using this framework, of the unconditional transition

³ The term 'marginally attached' is also used by the ILO and by Jones and Riddell (1999), although in both cases its use is somewhat different from here.

⁴ Kingdon and Knight (2000) find for South Africa that including all non-searchers that are willing to work increases the total unemployment rate by 15 percentage points in 1997.

probabilities across labour market states of males and females in T&T using three years of panel data from the T&T Continuous Sample Survey of Population is contained in Section IV. An econometric investigation of the conditional transition probabilities is found in Section V. Finally, concluding remarks are given in the last section.

II ILO DEFINITION OF UNEMPLOYMENT

Although the earliest efforts to establish international statistical standards of the measurement of unemployment can be traced back to 1895, the definition of unemployment currently recommended by the ILO has its roots in a resolution by the Eighth International Conference of Labour Statisticians (ICLS), convened by the ILO in Geneva in 1954. The ILO approach to defining unemployment rests on what can be termed the ‘labour force framework’, which at any point in time classifies the working age population into three mutually exclusive and exhaustive categories according to a specific set of rules: employed, unemployed, and out of the labour force - where the former two categories constitute the labour force, i.e., essentially a measure of the supply of labour at any given time.⁵

Although the definition of unemployment has since 1954 been periodically revised its basic criteria remains intact. Accordingly, a person is to be considered unemployed if he/she during the reference period simultaneously satisfies being:

- (a) ‘without work’, i.e., were not in paid employment or self-employment as specified by the international definition
- (b) ‘currently available for work’, i.e., were available for paid employment or self-employment during the reference period; and
- (c) ‘seeking work’, i.e., had taken specific steps in a specified recent period to seek paid employment or self-employment.

The ‘without work’ condition serves to distinguish between the employed and the unemployed, and thus guarantees that these are mutually exclusive categories of the

⁵ This set of rules is characterised by three features: (a) a reference period, (b) an activity status which allows the categorisation of the working age population into the aforementioned three categories on the basis of activities performed during the reference period, and (c) a set of priority regulations to ensure that persons can only be classified into one of these three categories.

working age population, whereas the latter two criteria separate the non-employed into the unemployed and the out of labour force. The purpose of the availability for work condition is to exclude those individuals who are seeking work to start at a later date, and thus is a test of current readiness. The intention of the seeking work criterion is, on the other hand, to ensure that a person will have taken certain 'active' steps to be classified as unemployed.

The ILO itself notes that its labour force framework used to define unemployment is best suited to "situations where the dominant type of employment is regular full-time paid employment...(and that in) practice, however, the employment situation in a given country...will to a greater or lesser degree differ from this pattern" (ILO, 1994). Moreover, the Thirteenth ICLS resolution provided a number of amplifications with regard to the measurement of unemployment that were specifically, as noted earlier, aimed to make it possible to measure unemployment more accurately and more meaningfully both in developed and developing countries alike. The one that is of particular interest here is the provision to allow for a relaxation of the search criteria which states that in "situations where the conventional means of seeking work are of limited scope, where labour absorption is, at the time, inadequate, or where the labour force is largely self-employed, the standard definition of unemployment...may be applied by relaxing the criterion of seeking work" (ILO, 1983, p. xi). In particular, Hussmanns *et al* (1990) note that "seeking work is essentially a process of search for information on the labour market...(and) in this sense, it is particularly meaningful as a defining criterion in situations where the bulk of the working population is oriented towards paid employment and where channels for the exchange of labour market information exist and are widely used.....this may not be the case in developing countries" (p. 105).⁶

Table 1: Reference Period and *Unemployment Job Search Period* for Developed and Developing Countries

DEVELOPED COUNTRIES
<p>Australia (1 week - 4 weeks), Austria (1 week - 4 weeks), Bahamas (1 week - 4 weeks), Belgium (1 week - 4 weeks), Caiman Islands (1 week - 1 week), Canada (1 week - 4 weeks), Cyprus (1 week - 1 month), Denmark (1 week - 4 weeks), Finland (1 week - 4 weeks), France (1 week - 1 month), Germany (1 week - 4 weeks), Greece (1 week - 4 weeks), Guam (1 week - 4 weeks), Hong Kong (1 week - 1 month), Ireland (1 week - 1 week), Israel (1 week - 1 week), Italy (1 week - 4 weeks), Japan (1 week - 1 week), Luxembourg (1 week - 1 week), Netherlands (1 week - 4 weeks), Netherlands Antilles (1 week - 4 weeks), New Zealand (1 week - 4 weeks), Norway (1 week - 4 weeks), Portugal (1 week - 1 month), Singapore (1 week - 4 weeks), Slovenia (1 week - 1 week), Spain (1 week - 4 weeks), Sweden (1 week - 4 weeks), United Kingdom (1 week - 4 weeks), United States (1 week - 4 weeks);</p>
DEVELOPING COUNTRIES
<p>Armenia (1 week - 1 week), Barbados (1 week - 4 weeks), Bolivia (1 week - 1 week), Botswana (1 week - 1 week), Brazil (1 week - 1 week), Bulgaria (1 week - 1 month), Chile (1 week - 2 months), Columbia (1 week - 1 week), Costa Rica (1 week - 5 weeks), Cuba (1 week - 4 weeks), Czech Republic (1 week - 1 week), Ecuador (1 week - 5 weeks), Egypt (1 week - 1 week), Estonia (2.5 years - 1 week), Ethopia (1 week - Non-Searchers included), French Guiana (1 week - 1 month), Guadeloupe (1 week - 1 month), Guatemala (1 week - 5 weeks), Honduras (1 week - 5 weeks), Hungary (1 week - 1 month), India (1 week - 1 week), Indionesia (1 week - 1 week), Jamaica (1 week - Non-Searchers included), Kenya (1 day - 1 week), Korea (1 week - 1 week), Latvia (1 week - 1 month), Lithuania (1 week - 1 week), Macedonia (1 week - 1 week), Malawi (1 week - Non-Searchers included), Malaysia (1 week - 3 months), Martinique (1 week - 1 month), Maritius (1 week - 8 weeks), Nigeria (1 week - 1 week), Pakistan (1 week - Non-Searchers included), Panama (1 week - Non-Searchers included), Paraguay (1 week - 1 week), Peru (1 week - Non-Searchers included), Philippines (1 week - Non-Searchers included), Poland (1 week - 1 week), Puerto Rico (1 week - 1 week), Romania (1 week - 1 week), Russian Federation (1 week - 1 week), Slovakia (1 week - 1 month), Slovenia (1 week - 1 week), South Africa (1 week - 4 weeks), Sri Lanka (1 week - Non-Searchers included), Syrian Arab Republic (1 week - 1 week), Thailand (1 week - Non-Searchers included), Trinidad and Tobago (1 week - 3 months), Tunisia (1 week - Non-Searchers included), Turkey (1 week - 6 months), Ukraine (1 week - 1 week), Uruguay (1 week - 1 week), Venezuela (1 week - Non-Searchers included);</p>

Notes:

1. Source: ILO (1990) and various issues of the Bulletin of Labour Statistics (ILO).
2. The first period in the parentheses is the reference period, while the second is the unemployment job search period required for inclusion among the unemployed.

6 For instance, in T&T there is neither an unemployment compensation system nor any well developed employment exchange system. Such features clearly make the job search process different to that found in developed countries.

The relaxation of the search criteria may entail a full relaxation or a partial one in the sense of including, “in addition to persons satisfying the standard definition, certain groups of persons without work who are currently available for work but who are not seeking work for particular reasons” (Husmanns *et al*, 1990, p. 106). One way to ensure that persons, who are not currently seeking work but are willing and able to work, have at least in the past demonstrated some attachment to the labour force is to, as in the case of Trinidad and Tobago, require these to have sought work in some prior specified period. In Table 1 we have compiled information on the reference period and the period of job search of the household surveys of various countries used to define the unemployed. As can be seen from the countries listed in this table, many countries, both developing and developed, do indeed extend their job search beyond the reference period of their household survey. For those developed countries that do use a longer job search period than the reference period, the period used for job search does not exceed one month. This lies in contrast to a number of developing countries whose job search period reaches up to 12 months, and/or whose unemployed include also all those that do not search at all but are willing and able to work.

III T&T DEFINITION OF UNEMPLOYMENT

The Central Statistics Office (CSO) in T&T has been carrying out a labour force survey, known as the Continuous Sample Survey of Population (CSSP), since 1963 and which has served as T&T’s primary source of providing up-to-date data on the labour force characteristics of residents of T&T, particular the incidence of unemployment.⁷ As noted earlier, the definition of unemployment adopted in T&T is broader than that employed in almost all developed countries and some developing countries. Specifically, the CSO defines the unemployed as not only those non-employed that are currently job seekers, but also includes those non-active job seekers that *looked for work*

⁷ The CSSP is a household survey based on a stratified clustering design, and, while originally conducted semi-annually, has since 1987 been carried out on a quarterly basis.

during the three month period preceding the interview and who at the time of interview did not have a job but still wanted work.^{8, 9}

This expanded definition of unemployment was recommended by a committee set up to advise the CSO “on the labour force concepts and definitions most meaningful for Trinidad and Tobago” (CSO, p. 180) prior to the commencement of the CSSP in 1963. In particular it was “...felt that in a developing country where jobs are scarce and where there is not a well recognised system of unemployment registration, a week is too short of a reference period as regards ‘looking for work’, while reliance on respondents volunteering information that they wanted to work although they did not seek work might result in loss of some persons who should be included” (CSO, p. 180). One should thus note that this definition and its justification substantially precede the official modifications of the more stringent ILO definition by the ILO itself in 1982.

Using the aggregate results on the T&T labour force derived from the CSSP and published by the CSO we were able to calculate the male and female unemployment rates since the start of the survey. Fortunately, the CSO has continuously disaggregated the unemployed into the active job seekers and marginally attached, which then allows us to derive a series of the unemployment rate also under the more stringent ILO definition.¹⁰ The unemployment rates for males and females are given in Figures 1 and 2, respectively.

For males the unemployment rate in T&T, which is a petroleum based economy, had risen from around 11 per cent in the early 1960s to 15 per cent by the early 1970s, until the two oil shocks during that decade caused its fall to as low as eight per cent in 1980. The deep economic crisis in the mid-1980s, caused by the fall in oil prices as well as a

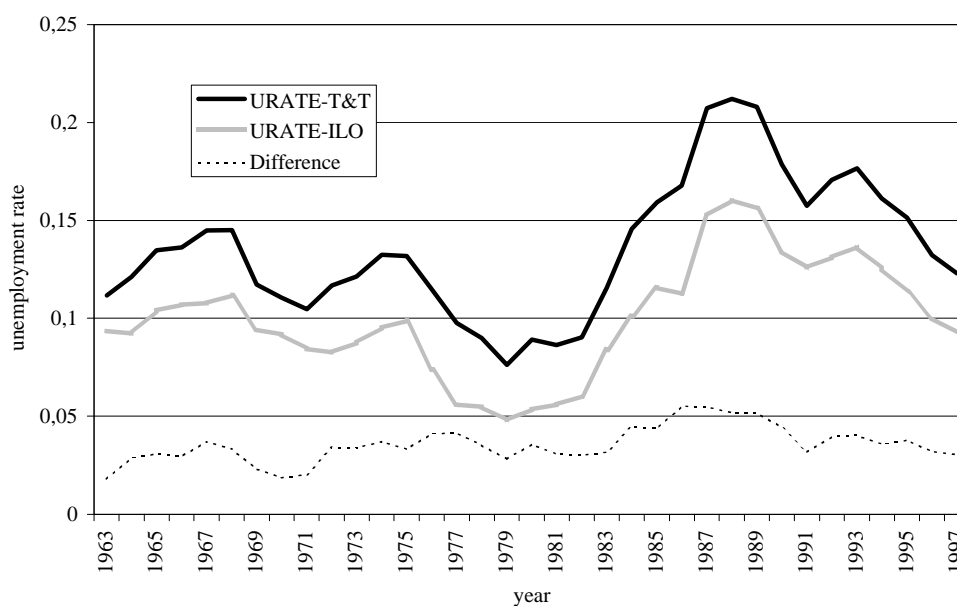
8 One should note that any type of job search is considered legitimate. For a discussion of the distinction of active and passive job search see Sorrentino (2000).

9 Individuals are categorised as unwilling or unable to work, and hence as out of the labour force, if in response to the question of why they did not search for a job during the reference week they answered that they were (a) at school, (b) housekeeping, (c) retired, or (d) did not want to work. The reasons which are deemed to demonstrate a person’s willingness and ability to work are (a) temporary illness, (b) awaiting results of application, (c) knew of no vacancy, (d) discouraged, and (e) some other (than the choices provided) reason for not seeking work.

10 The CSSP publication labels those here referred to as marginally attached as ‘other unemployed’ and those unemployed under the ILO definition as ‘unemployed seeking work’.

depletion in oil reserves, took a deep toll on the T&T male labour market, however, and the male rate of unemployment peaked at nearly 22 per cent of the labour force during this time. Since then the unemployment rate has again, in part due to fairly radical policy changes, been consistently falling and now stands at a slightly higher level than that found in the 1960s.

Figure 1: Male Unemployment Rate 1963-97

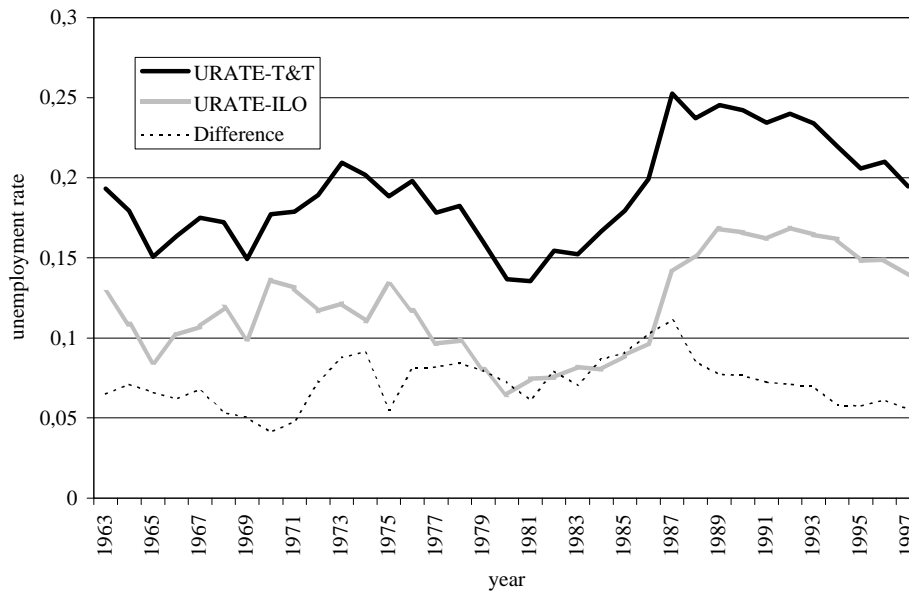


As is also shown, the male unemployment rate defined according to the more stringent ILO criteria follows a virtually identical cyclical pattern as the one just described. Its level is, however, considerably lower than that derived under the T&T definition, on average about 3.6 percentage points. Moreover, a closer look reveals that the difference between the two series is positively related to their levels. The probable explanation for this positive correlation is, of course, intuitive – during bad times the probability of finding a job is substantially lower and hence more non-employed persons are discouraged from searching.

The overall trends of the female unemployment rate are, except for the 1970s, similar to that of males. What is strikingly different, however, is the difference in the rate of unemployment as defined by the ILO and the T&T criteria. On average, the T&T definition is 7.2 percentage points higher and has ranged from between 4.1 and 10.3

percentage points. Moreover, simple examination of the series does not suggest any correlation between their levels and difference.

Figure 2: Female Unemployment Rate 1963-97



Clearly, the marginally attached are a sizeable number in the T&T labour force and their inclusion significantly raises the unemployment rate for both males and females. In order to gain some insight into how these may differ from the unemployed that are actively seeking jobs, we estimated a simple probit model of the probability of being a current non-searcher conditional on being classified as unemployed according to the T&T criteria for the male and female samples separately.¹¹ As explanatory variables we included a person's age (allowing for non-linearity), whether that person resided in an urban area, their marital status, educational dummy variables for the person's highest education attainment in terms of either primary education, secondary education O levels, secondary education A levels, or university education¹², and whether any elderly, defined as persons over the age of 65, or children below the age of 6 reside in the same household.¹³ The latter two variables were included to account for the fact that in T&T,

11 We chose to use a binary probit rather than a binary logit model in order to be able to calculate marginal effects. It should be noted, however, that for all specifications logit estimation gave us qualitatively and quantitatively similar results for all explanatory variables.

12 The base category is thus education at a level lower than primary education.

13 All estimations also include year and seasonal dummies, although the results are not reported.

like in many developing countries, many households additionally house extended family members.¹⁴ These may have an impact on a person's choice of labour market status given that the social security system in T&T is fairly undeveloped so that the extended and immediate family often play an important role in providing for the elderly and children of their own and those of other family members residing in the household.¹⁵ The results of the probit estimation, the coefficients of which are reported as marginal effects, are given in Table 2.¹⁶

Table 2: Determinants of the Probability of being Marginally Attached Relative to the Unemployed (Job Seeking) and those Out of the Labour Force - Probit Estimates

	Unemployed		Out of the Labour Force	
	Male	Female	Male	Female
Urban	-0.178*** (0.029)	-0.251*** (0.028)	-0.057*** (0.012)	-0.034*** (0.008)
Marital Status	-0.019 (0.046)	0.045 (0.037)	-0.065*** (0.016)	-0.109*** (0.008)
Age	-0.031*** (0.006)	-0.041*** (0.007)	0.049*** (0.002)	0.013*** (0.001)
Age ²	4.38e-04*** (8.13e-05)	5.39e-04*** (1.02e-04)	-6.23e-04*** (2.93e-05)	-1.75e-04*** (1.40e-05)
Primary Ed.	-0.071* (0.037)	-0.022 (0.040)	-0.068*** (0.018)	-0.010 (0.010)
Sec. Ed. (O)	-0.060 (0.048)	-0.087** (0.044)	-0.072*** (0.014)	-0.081*** (0.016)
Sec. Ed. (A)	0.124 (0.133)	0.053 (0.105)	-0.097*** (0.012)	0.043 (0.037)
Univ. Ed.	-0.295 (0.144)	-0.028 (0.125)	-0.117*** (0.089)	-0.027 (0.041)
Children	0.010 (0.035)	0.004 (0.031)	0.047*** (0.019)	0.004 (0.008)
Elderly	0.010 (0.038)	0.082* (0.042)	0.065*** (0.019)	0.009 (0.011)
nobs.	1249	1333	2628	5518
X ² (11)	90.96***	127.90***	879.48***	513.93***
Ps. R ²	0.05	0.07	0.31	0.12

1: ***, **, and * signify one, five, and ten per cent significance levels, respectively.

2: Coefficients are reported as marginal effects.

3: All regressions include year and seasonal dummies.

4: Robust std. errors in parentheses.

14 Both are defined as zero-one type dummies.

15 For example, the average household in our data set consisted of seven members and the standard deviation of its size was four.

16 For all estimations we only included non-disabled individuals older than 14 years.

Accordingly, in terms of personal and household characteristics the job seeking males do not appear to be substantially different from those that are marginally attached. We find that rural residents are 17.8 per cent more likely to be marginally attached than urban residents. The younger unemployed are also more likely to be marginally attached, although this effect occurs at a decreasing rate. However, in terms of educational levels only primary education has a significant effect on the probability of being marginally attached. Higher levels of education, marital status and the presence of elderly or small children in the household, in contrast, cannot serve to accurately predict whether a male unemployed is currently job seeking or not. For females, in contrast, the composition of the household, at least in terms of whether elderly are present, is differently distributed across the two categories of unemployed. Those with elderly persons living in their household are more likely to be marginally attached. Differences in individual characteristics are similar to those found for males, except that it is secondary education O levels as the highest educational attainment that matters for females.

We also, using a similar specification, investigated how the marginally attached differ from those not in the labour force since they, if the standard ILO criteria would be applied, would be classified as such; the results for the male and female samples are also given in Table 3. As can be seen, for men all individual and household characteristics appear to matter. Rural residents are more likely to be marginally attached, as are married and older males, although this latter effect occurs at a decreasing rate. This age effect may not be surprising given that the out of the labour force category captures a large amount of students and retirees. Additionally, relative to those that have less than primary education, the males are more likely to be classified as out of the labour force if they either have primary, secondary (O or A levels), or university as their highest level of education. Moreover, the presence of elderly persons and small children in the same household significantly increases the probability of a male being marginally attached. Given that males in the fairly traditional T&T society are likely to be the breadwinners in the household and that the presence of elderly and/or children are likely to exert greater financial strain, it seems intuitive that these household composition variables are linked to labour force attachment. In contrast to males, the presence of elderly persons and small children in the household does not help to predict whether a woman is marginally attached compared to those out of the labour force. Moreover, not all individual

characteristics that we control for appear to be important. In terms of highest educational level, it is only secondary O levels that can help predict whether a female is marginally attached rather than out of the labour force, namely that the later is more likely. Age, marital status and area of residence have a similar effect as for males.

IV EMPIRICAL FRAMEWORK

Following Jones and Riddell (1999), we use a Markov transition model with four states – employed (E), unemployed (U), marginally attached (M), and out of the labor force (O) – to test whether the groups are behaviorally distinct. The unemployed here consist of those who would be classified as unemployed under the ILO definition. The distinguishing characteristic between U and M is evidence of active job search during the reference week. Persons who do not search in the reference week but have searched in the last three months and are willing and able to work are classified as M.

Within this Markov model labour market dynamics are given by a 4x4 transition matrix P where each element p_{ij} represents the probability of a person in state i becoming moving (or remaining in) state j by the following period:

$$P = \begin{pmatrix} p_{EE} & p_{EU} & p_{EM} & p_{EN} \\ p_{UE} & p_{UU} & p_{UM} & p_{UN} \\ p_{ME} & p_{MU} & p_{MM} & p_{MN} \\ p_{NE} & p_{NU} & p_{NM} & p_{NN} \end{pmatrix} \quad (1)$$

As Jones and Ridder (1999) note, necessary and sufficient conditions for individuals in M and U to be behaviourally equal states are that the probability of transiting from M to E equals that of transiting from U to E and the probability of moving from M to N is identical with that of moving from U to N:

$$p_{UE} = p_{ME} \quad (2)$$

$$p_{UN} = p_{MN} \quad (3)$$

If these conditions hold, individuals that searched within the reference week and those who searched at some time in the previous months exhibit the same transition behavior.

It may also be the case that among the non-searching non-employed the marginally attached are not behaviourally distinct from those deemed to be out of the labour force. For this to be true the following must hold:

$$p_{ME} = p_{NE} \quad (4)$$

$$p_{MU} = p_{NU} \quad (5)$$

One should note that those classified as N consist of both individuals that are willing to work and those that are not, and by grouping these together at this point it is assumed that they are a homogenous group, although we do additionally investigate whether this assumption affects our analysis. Also, implicitly under the T&T definition among the current non-searchers willingness to work and previous job search (within the last three months) are together evidence of attachment to the labour force. Equations (4) and (5) constitute a test of this.

V UNCONDITIONAL TRANSITION PROBABILITIES

One feature of the CSSP that is of particular interest here is that households are surveyed on a rotating basis, where each unit is interviewed three times: one year after the first interview and then one quarter subsequent to the second interview. Rotation of the sub-samples is done by replacing two thirds each quarter. This allows one to create short panels of individuals and their labour market behaviour over time. In order to construct unconditional transition probabilities of those in (1) we took advantage of this panel aspect of the CSSP for the years for which it was available to us at the micro-level, 1996-98. Specifically, we linked individuals across quarterly surveys over time using the method proposed for the US Current Population Survey by Madrian and Lefgren (1999).¹⁷ Responses for non-disabled individuals over 14 years old were linked between their second and third interview where the elapsed time is three months. This provides us with linked observations of subsequent labour market status on 9,920 females and 9,648 males. We construct the transition probabilities in (1) using these observations.

¹⁷ The only difference between the identifiers that we use to match individuals and those utilised by Madrian and Lefgren (1999) is a race variable; this information was not available to us.

The unconditional transition probabilities for males and females are given in Tables 3 and 4, respectively.¹⁸ Accordingly, E and N are the most stationary of states, while individuals who were classified as either U or M were relatively less unlikely to remain so, particularly in the case of individuals originating in M. This latter effect is more pronounced for males.

Table 3: Male Unconditional Transition Rates

P_{ij}	E	U	M	N
E	0.911	0.042	0.014	0.033
U	0.440	0.327	0.172	0.060
M	0.492	0.239	0.139	0.130
N	0.117	0.039	0.018	0.826

Table 4: Female Unconditional Transition Rates

P_{ij}	E	U	M	N
E	0.854	0.027	0.016	0.103
U	0.234	0.354	0.168	0.244
M	0.217	0.157	0.227	0.400
N	0.074	0.032	0.022	0.865

Table 4 also reveals that for females p_{UE} are p_{ME} fairly similar in magnitude, only about 1.7 percentage points. There appears to be a somewhat larger difference in terms of the unconditional transitional probabilities to N from these two states. Using quarterly transition probabilities, a t-test of the null hypothesis of no difference in the means, however, cannot be rejected for either (2) and (3) at any standard statistically significant level, as shown in Table 5. Thus, the unconditional probabilities provide at least

preliminary evidence that marginally attached females may be similar in behaviour to those classified as unemployed.

In investigating how the data supports (4) and (5) for females we find that pME is substantially higher than pNE and that pMU is noticeably higher than pNU; 14.3 and 12.5 percentage points, respectively. These apparent inequalities are confirmed by a t-test of the differences in means using quarterly transition rates. We also experimented with excluding from N those that are unwilling to work (about 23.4 per cent), but found similar results.¹⁹ Hence, there is some evidence that females who are not searching for a job now but are willing to work and have searched in the last three months are behaviourally distinct from those in N.

Table 5: T-Test Statistic of Equality of Means of Quarterly Transition Rates

	Males	Females
pUE = pME	-1.57	0.80
pUN = pMN	1.04	-1.23
pME = pNE	-16.75***	-4.68**
pMU = pNU	-12.53***	-22.26**

Notes: ***, **, and * signify one, five, and ten per cent significance levels, respectively.

Table 3 shows that the differences in the unconditional transition probabilities from M to either E or U compared to those originating from N are even more pronounced for males, 37.5 percentage points for the former and 20 percentage points for the latter. Again this is confirmed by the simple t-test on the quarterly transition rates. As with the females, this result was not altered by excluding those not willing to work from N.

In examining whether the male M and U are behaviourally similar, we firstly find that the transition rates to N only differ by 7.0 percentage points; this is reinforced by the t-

18 We also calculated quarterly transition probabilities, but there was little to no variability over time - results are available from the authors upon request.

19 Those deemed not willing to work were those that either specifically stated so in response to why they were not actively searching for work or if they stated they were retired.

test statistic given in Table 5. In contrast to our female sample, we find that the unconditional probability of becoming employed is higher for the male M relative to that arising from U, although only by 5.2 percentage points. In other words, the proportion of men who are M who get a job a quarter later is larger than those that are U (and thus actively searching). Nevertheless, the large differences in the transition rates to E and U between men coming from states M and N seem to certainly suggest that the men in M are much more like those in U than those in N. This is substantiated by the appropriate t-test statistic in Table 5.

VI ECONOMETRIC ANALYSIS

Conclusions drawn from unconditional probabilities must be treated with some caution. As was clear from the probit results given in Section III, the male and female M differ in a number of aspects from their U and N counterparts. Thus our unconditional results may be due to the different distribution of these characteristics across groups if these affect the transitions of individuals. To draw more general conclusions regarding behaviour similarities and differences between the states, we now condition on observables.

As in Jones and Riddell (2000) our approach is to estimate a multinomial model of the determinants of the transition probabilities from M and test whether one can pool the individuals originating from M with those from U or with those from N. This is done as follows. We first estimate restricted multinomial models, using the same covariates as in our probit models, of individuals either remaining in their origin state, which is either M or U, transiting to E, or transiting to N by pooling individuals originating from M and U. Subsequently we estimate an unrestricted model which includes a dummy variable for those originating in M and with covariates with this dummy variable.²⁰ The unrestricted model thus allows for a different intercept and different impacts of the covariates on the transitions for the two origin states in question. To determine the equivalence of the two origin states using this approach we employ a likelihood ratio test of the restricted versus the unrestricted model. This allows us to test (3) and (4). A similar approach is then used to test whether we can pool M and N in terms of their transition probabilities into the appropriate three destination states. Of course, one of the problems with using the

²⁰ In all specifications the dummy variable takes on the value of one for the marginally attached and zero otherwise.

multinomial logit model to test for equivalence in the context here is its strong underlying assumption that there is independence between the possible outcomes (independence of irrelevant alternatives). As a robustness check we thus, as Jones and Riddell (1999), for each equivalence test also test the restrictions (2) and (3) and (4) and (5) separately using binary logit models.²¹

A. Total Sample

The results of our multinomial logit models for (2) and (3) and (4) and (5), unrestricted and restricted, for males and females are provided in Appendix A, however, given that our main focus is on the equivalence tests we will not discuss these in any detail here but instead direct attention to the likelihood ratio tests of equivalence. The p-values associated with these likelihood ratio tests of the equivalence of M and U and M and N for the total male and female samples are given in Table 6.²² Accordingly, as indicated by the p values of the likelihood ratio tests of the multinomial models, for males one cannot reject the null of equivalence between M and U, but can reject the null when one compares the behavioural outcome of those in M to those in N. While this result may be contingent on the assumptions underlying the multinomial logit model, the p-values of the likelihood tests of the binary logit models for each of the restrictions (2) through to (4), also given in Table 6, only confirm our original results. In terms of comparing U and N, we also investigated whether it is the inclusion of many individuals in N who are not willing to work that is driving the rejection of equivalence of these two states, but found that this did not change our earlier conclusion.²³ Thus, we find evidence for males suggesting that including non-active seekers who are marginally attached, in the sense of being willing to work and having looked for work within the last three months, in the unemployment pool is indeed appropriate for Trinidad and Tobago in that they are not behaviourally different from those classified as unemployed under the standard ILO criteria but are different from those considered not to be part of the labour force.

²¹ Roughly one can view the binary logit models as assuming the opposite extreme, i.e., complete dependence.

²² The full estimation results for all models not reported here are available from the authors upon request.

Table 6: Probability Values for Likelihood Ratio Tests of Equivalence

TEST:	<i>Multinomial Logit Tests</i>		<i>Binary Logit Tests</i>			
	$p_{UE=pME}$ $p_{UN=pMN}$	$p_{ME=pNE}$ $p_{MU=pNU}$	$p_{UE=pME}$	$p_{UN=pMN}$	$p_{ME=pNE}$	$p_{MU=pNU}$
	Total Sample					
<i>Male</i>	0.274	0.000	0.118	0.349	0.000	0.000
<i>Female</i>	0.068	0.000	0.360	0.009	0.000	0.000
	Short-Term Non-Employed (Less than 12 Months)					
<i>Male</i>	0.227	0.000	0.158	0.120	0.001	0.017
<i>Female</i>	0.001	0.000	0.689	0.060	0.004	0.111
	Urban					
<i>Male</i>	0.045	0.000	0.293	0.014	0.000	0.012
<i>Female</i>	0.004	0.005	0.046	0.010	0.002	0.061
	Rural					
<i>Male</i>	0.520	0.000	0.549	0.652	0.000	0.000
<i>Female</i>	0.026	0.000	0.251	0.041	0.000	0.000

In line with the results for males, the likelihood ratio tests derived from the multinomial logit and binary logit models for the female sample in Table 6 similarly imply that females originating in M are behaviourally distinct to those originating in N.²⁴ In contrast to our male sample and to our unconditional female transition probabilities, however, we discover that the female M are also behaviourally distinct from those in U, as shown by the significance of our multinomial logit likelihood ratio test statistic. This does not seem to rest on the assumptions inherent in using multinomial models, as the binary logit results suggest that at least (3) can be rejected. Therefore one may argue that the female working age population may be best classified into four rather than three separate categories.²⁵

²³ Results available from the authors.

²⁴ Again, excluding those from N not willing to work did not alter these results.

²⁵ One should note, however, that this does not necessarily mean that once women cease to search their attachment to the labour force is weaker than that of men. It may be the case that the method and intensity of

B. Duration Dependence

One of the problems with the above approach is that one is not taking account of the duration of the non-employment spell of individuals in the different labour market states.²⁶ If there is, however, duration dependence in the conditional probabilities of exiting non-employment, then it is likely to affect both the initial labour market state as well as the transition probabilities. In the most extreme case, the labour market states above, defined by search behaviour, may simply be proxies for the duration of non-employment experienced by the individual and thus have no independent effect on transition probabilities. For example, the average non-employment duration of those males in U, M and N are 12.1, 27.2, and 105.4 months, respectively, while the corresponding numbers for females are 19.9, 31.1, and 130.7 months. Moreover, if there is positive duration dependence, the transition rates are likely to underestimate the exit rates for newly unemployed persons as the long spell individuals are oversampled.

In order to examine whether duration dependence may be driving our results, we reduced our sample to those whose non-employment spell was less 12 months, i.e., we exclude all the long-term unemployed, and repeated the exercise undertaken for the total male and female samples.²⁷ One should note that we are thus implicitly assuming that there is no significant duration dependence effect as long as the last time the individual worked was within the last year. Our multinomial and binary logit results for these sub-samples are given in Table 6. Accordingly, we still find for males that those in M, while behaviourally distinct from those in N, are behaviourally similar to those classified as U. In terms of females, we find that in terms of the multinomial model the overall result still holds, i.e., females in M are behaviourally distinct from those in U and N. Thus, we find evidence that duration dependence is unlikely to be driving the results of the overall sample.²⁸

job search differs across gender and/or that a woman's subjective judgement as to what constitutes job search is different.

²⁶ This argument was first made by Lemieux (1998).

²⁷ One should note that this entails excluding all those with no work experience.

C. Rural Residence

As argued by Hussmanns *et al* (1990), one of the reasons why the job search criteria of unemployment may not be as meaningful in developing as it is in developed countries is that channels for the exchange of labour market information in the latter may not exist, may not be widely used, or may be limited to certain urban sectors. Moreover, in developing countries in “rural areas and in agriculture, most workers have more or less complete knowledge of the work opportunities in their areas at particular periods of the year, making it often unnecessary to take active steps to seek work” (Hussmanns *et al*, 1990, p. 105). In contrast, urban areas in developing countries, especially in the face of institutional rigidities, have developed large informal sectors for which job search are likely to be more meaningful than in rural areas, and T&T is no exception to such a development.²⁹ Moreover, as argued by Kingdon and Knight (2000) for South Africa, search may be more costly due to the remoteness and the higher rate of unemployment in many rural areas. To investigate this we divided our male and female samples into those individuals residing in urban and rural areas in Trinidad and Tobago.³⁰ The results of applying our econometric equivalence tests for these sub-samples are also given in Table 6.

Accordingly, we find for females that distinguishing between women that reside in urban or rural areas does not alter the result we found for the overall sample. Both multinomial and binary logit tests confirm that non-employed female non-searchers that searched within the last three months are behaviourally different from those in U and those in N. For males one discovers that search may indeed be more meaningful in urban areas - for this group one can reject the equivalence test both on the basis of the multinomial as well as the binomial logit tests. In contrast, one cannot reject the null of equivalence for males residing in rural areas. Thus, our evidence lends some credence to the argument that search may not be as meaningful in rural areas; however, only for males. Given this it is noteworthy to recall that the probit estimates in Section III showed that rural unemployed persons are more likely to be marginally attached than urban unemployed persons.

28 Another possibility is to run estimate and compare hazard rate models for the relevant origin states. This will be a focus of future work.

29 See Rambarran (1998).

30 The urban/rural classification is that used by the T&T CSO.

VII CONCLUSION

Since the early 1960s unemployment in T&T has been defined by broader criteria than the standard guidelines set forth by the ILO. In particular, in T&T even if a non-employed person is not currently searching he/she may still be considered to be unemployed if he/she is willing to work and has searched at some point in time in the last three months. In this paper we used the recent methodology pioneered by Jones and Riddell (1999) to investigate whether the extended definition of unemployment used in T&T meaningfully groups individuals into the state of unemployment in the sense that additional individuals classified as unemployed are behaviourally similar in their labour market status outcome to the standard unemployed and behaviourally distinct from those out of the labour force.

Our results indicate that males that are currently not searching but are willing to work and have searched in the last three months, here called the 'marginally attached' for convenience sake, are indeed not behaviourally different from those unemployed that are currently searching for a job, but are different from those considered in T&T to be out of the labour force. Breaking our male sample into those that live in rural and those that live in urban areas, we find that behavioural similarity to the unemployed can only be upheld for those living in rural areas. This suggests that for the non-employed job search may not be as meaningful or important for men residing in rural areas as it is for those that reside in urban areas. There may be a number of reasons for this, including the seasonality of work, the higher cost of job search, the higher unemployment rate and the remoteness of rural areas.

In the case of females we can reject the hypothesis that those non-searching non-employed that are willing to work and have searched for a job in the last three months are behaviourally similar to those out of the labour force and the job searching non-employed. This result holds regardless over whether we only consider women living in rural areas or those residing in urban areas. One possible explanation for this may be that for many females non-market work may play a more important role in the decision to search regardless of area of residence. For instance, we find that the marginally attached females are more likely to live in households in which there are elderly persons relative to the non-employed job seekers. Regardless, overall our results for females

suggest that the ‘marginally attached’ females should perhaps best be classified as a separate, fourth labour market state group.

On a more general level, our results imply that developing countries should, as has already been recognised by the ILO, be careful in strictly applying the standard ILO definition of unemployment to calculate unemployment rates. Persons who are not searching for a job, but want and are willing to work, are likely to be of substantial numbers and may, in many cases, not be that different in behaviour from the standard unemployed. Excluding these may then result in substantially underestimating the true degree of labour market slack in a developing country. Thus, while comparability of unemployment rates across countries certainly requires adoption of standards, if these standards are stringently applied there may be some trade-off in terms of applicability. The optimal definition of unemployment in developing countries should instead be evaluated on a case by case basis.

REFERENCES

- Clark, K. and Summers, L. H. (1979). "Labor Market Dynamics and Unemployment: A Reconsideration", *Brookings Papers on Economic Activity*, 1979: 1, pp. 13-60.
- Clark, K. and Summers, L. H. (1982). "The Dynamics of Youth Unemployment", in *The Youth Labour Market Problem: Its Nature, Causes and Consequences*, ed. R. Freeman and D. Wise, pp. 199-234. University of Chicago Press: Chicago.
- CSO (various issues). *CSSP: Labour Force Report*, Republic of Trinidad and Tobago Ministry of Planning and Development Central Statistics Office: Port of Spain.
- Flinn, C. J. and Heckmann, J. J. (1983). "Are Unemployment and Out of the Labor Force Behaviourally Distinct Labor Market States?", *Journal of Labor Economics*, 1, pp. 28-42.
- Gonul, F. (1992). "New Evidence on Whether Unemployment and Out of the Labor Force are Distinct States", *Journal of Human Resources*, 27, pp. 329-361.
- Hall, R. E. (1970). "Why is the Unemployment Rate So High at Full Employment?", *Brookings Papers on Economic Activity*, 1970: 3, pp. 369-402.
- Husmanns, R., Mehran, F. and Verma, V. (1990). *Surveys of Economically Active Population, Employment, Unemployment and Underemployment: An ILO Manual on Concepts and Methods*, ILO: Geneva.
- Husmanns, R. (1994). "International Standards on the Measurement of Economic Activity, Employment, Unemployment and Underemployment", *Bulletin of Labour Statistics*, ILO, Geneva, 1994-4, pp. .
- ILO (1983). "Thirteenth International Conference of Labour Statisticians, Resolution Concerning Statistics of the Economically Active Population, Employment, Unemployment and Underemployment", *Bulletin of Labour Statistics*, ILO, Geneva, 1983-3, pp. xi-xv.
- ILO (1990). *Statistical Sources and Methods*. Vol. 3, Economically Active Population, Employment, Hours of Work (Household Surveys), Geneva.
- ILO (1998). "Unemployment", *Bulletin of Labour Statistics*, ILO, Geneva, 1998-3, pp. 52-54

- Jones, S. R. G. and Riddell, W. C. (1998). "Unemployment and Labour Force Attachment: A Multistate Analysis of Nonemployment", in *Labor Statistics Measurement Issues*, eds. Haltiwanger, J. and Marylin, E., pp. 123-152, University of Chicago Press: Chicago.
- Jones, S. R. G. and Riddell, W. C. (1999). "The Measurement of Unemployment: An Empirical Approach", *Econometrica*, 67, pp. 147-162.
- Jones, S. R. G. and Riddell, W. C. (2000). "The Dynamics of US Labor Force Attachment", mimeograph.
- Kingdon, G. and Knight, J. (2000). "Are Searching and Non-Searching Unemployment Distinct States when Unemployment is High? The Case of South Africa", The Centre of African Economies Working Paper Series, 2000/2.
- Lemieux, T. (1998). "Comment", in *Labor Statistics Measurement Issues*, eds. Haltiwanger, J. and Marylin, E., pp. 152-155, University of Chicago Press: Chicago.
- Madrian, B. C. and Lefgren, L. J. (1999). "A Note on Longitudinally Matching Current Population Survey (CPS) Respondents", NBER Technical Working Paper 247.
- OECD (1987). "On the Margin of the Labour Force: An Analysis of Discouraged Workers and other Non-Participation", *Employment Outlook*, September, pp. 142-170.
- OECD (1995). "Supplementary Measures of Labour Market Slack", *Employment Outlook*, July, pp. 43-97.
- Rambarran, A. (1998). "Labor Market Adjustment in an Oil-Based Economy: The Experience of Trinidad and Tobago", in *Economic Liberalisation and Labour Markets*, eds. P. Dabir-Alai, P. and Odekon, M., pp. 197-223; Greenwood Press.
- Sorrentino, C. (2000). "International Unemployment Rates: How Comparable are They?", *Monthly Labour Review*, 2000, November, pp. 1-20.

APPENDIX

Table A1: Conditional Transition Probabilities of Male M and U to N and E - Unrestricted and Restricted Multinomial Logit Estimates

	N	E	N	E
Urban	0.442 (0.378)	-0.469*** (0.172)	0.602* (0.342)	-0.420*** (0.147)
Primary	0.032 (0.500)	0.258 (0.232)	0.015 (0.471)	0.235 (0.197)
Secondary(O)	-0.151 (0.671)	-0.034 (0.293)	0.125 (0.572)	-0.068 (0.244)
Secondary(A)	0.566 (1.257)	-0.756 (1.141)	0.958 (1.28)	0.240 (0.815)
University	1.465 (1.095)	0.521 (0.954)	1.654 (1.081)	0.734 (0.846)
Married	0.068 (0.772)	0.665** (0.262)	0.374 (0.693)	0.577** (0.227)
Age	-0.298*** (0.087)	0.075 (0.058)	-0.339*** (0.083)	0.049 (0.042)
Age ²	0.004*** (0.001)	-0.001 (0.001)	0.004*** (0.001)	-0.001 (0.001)
Child	-0.408 (0.569)	0.037 (0.207)	-0.528 (0.533)	0.014 (0.176)
Elderly	0.124 (0.463)	0.041 (0.229)	0.324 (0.413)	-0.176 (0.193)
M	5.878 (3.896)	0.895 (1.436)	---	---
Urban*M	0.595 (0.920)	0.313 (0.355)	---	---
Primary*M	-0.411 (1.385)	-0.022 (0.444)	---	---
Secondary(O)*M	1.284 (1.417)	-0.076 (0.550)	---	---
Secondary(A)*M	1.267 (1.794)	33.112*** (1.401)	---	---
University*M	0.944 (2.187)	32.074*** (1.483)	---	---
Married*M	3.388* (2.054)	-0.272 (0.542)	---	---
Age*M	-0.484* (0.265)	-0.072* (0.090)	---	---
Age ² *M	0.006* (0.003)	0.001 (0.001)	---	---
Child*M	-1.037 (1.662)	-0.150 (0.415)	---	---
Elderly*M	1.632 (1.063)	-0.729 (0.488)	---	---
Constant	3.284** (1.576)	1.393 (0.931)	3.495 (1.370)	-0.812 (0.693)
Nobs	871		871	
X ² (51)	3204.78***		80.85***	
Pseudo R ²	0.075		0.059	
Log Likelihood	-699.06		-711.26	

Notes: Robust std. errors in parentheses.

Table A2: Conditional Transition Probabilities of Female M and U to N and E - Unrestricted and Restricted Multinomial Logit Estimates

	N	E	N	E
Urban	-0.482** (0.212)	0.285 (0.172)	-0.246* (0.173)	0.249*** (0.174)
Primary	-0.319 (0.287)	0.156 (0.315)	-0.132 (0.228)	0.497* (0.263)
Secondary(O)	-0.606* (0.324)	0.384 (0.348)	-0.510** (0.257)	0.739*** (0.288)
Secondary(A)	-0.872 (1.190)	1.422** (0.659)	-0.248 (0.832)	1.960*** (0.602)
University	0.531 (0.954)	1.770** (0.848)	-0.192 (0.886)	1.906*** (0.632)
Married	1.284*** (0.256)	0.219 (0.294)	1.229*** (0.206)	0.028** (0.244)
Age	-0.272*** (0.059)	-0.054 (0.066)	-0.228*** (0.045)	-0.039 (0.050)
Age ²	0.004*** (0.001)	0.001 (0.001)	0.003*** (0.001)	-0.001 (0.001)
Child	0.623*** (0.221)	0.097 (0.232)	0.451*** (0.179)	0.331* (0.184)
Elderly	0.049 (0.332)	-0.406 (0.340)	-0.469 (0.288)	-0.328 (0.255)
M	-1.626 (1.644)	-0.342 (0.419)	---	---
Urban*M	0.605 (0.407)	1.235** (0.620)	---	---
Primary*M	0.490 (0.490)	1.251* (0.674)	---	---
Secondary(O)*M	0.197 (0.547)	-0.076 (0.550)	---	---
Secondary(A)*M	2.224 (2.004)	2.005 (1.551)	---	---
University*M	-34.564*** (1.426)	0.598 (1.424)	---	---
Married*M	0.011 (0.449)	-0.608 (0.548)	---	---
Age*M	0.057 (0.098)	0.062 (0.106)	---	---
Age ² *M	-4.06e-04 (0.001)	-4.22e-04 (0.002)	---	---
Child*M	-0.583 (0.377)	0.703* (0.395)	---	---
Elderly*M	-2.019*** (0.743)	0.256 (0.518)	---	---
Constant	3.729** (0.743)	-0.372 (1.118)	2.903*** (0.795)	-0.774 (0.892)
Nobs	925		925	
X ² (51)	3265.65***		107.40***	
Pseudo R ²	0.077		0.060	
Log Likelihood	-871.37		-887.73	

Notes: Robust std. errors in parentheses.

Table A3: Conditional Transition Probabilities of Male M and N to U and E - Unrestricted and Restricted Multinomial Logit Estimates

	U	E	U	E
Urban	0.672** (0.298)	0.011 (0.419)	0.048 (0.209)	-0.308** (0.140)
Primary	-0.461 (0.576)	-0.560** (0.272)	-0.050 (0.392)	-0.304 (0.209)
Secondary(O)	0.148 (0.552)	0.017 (0.309)	0.269 (0.413)	-0.123 (0.249)
Secondary(A)	-0.745 (0.885)	-0.636 (0.580)	-1.207 (0.817)	-0.812* (0.487)
University	---	---	---	---
Married	0.228 (0.686)	-0.224 (0.263)	-0.772* (0.422)	-0.376** (0.217)
Age	0.208*** (0.071)	0.134*** (0.048)	0.419*** (0.051)	0.293*** (0.042)
Age ²	-0.003*** (0.001)	-0.002*** (0.001)	-0.006*** (0.001)	-0.003*** (0.001)
Child	0.222 (0.387)	0.456** (0.215)	0.131 (0.275)	0.328* (0.176)
Elderly	0.756** (0.358)	0.061 (0.253)	0.624** (0.265)	-0.157 (0.180)
M	1.999 (1.898)	1.600 (1.419)	---	---
Urban*M	-0.940* (0.525)	-0.347 (0.411)	---	---
Primary*M	1.224 (0.837)	1.009** (0.513)	---	---
Secondary(O)*M	0.833 (0.889)	0.089 (0.610)	---	---
Secondary(A)*M	-1.225 (1.110)	31.178*** (1.022)	---	---
University*M	---	---	---	---
Married*M	-1.443 (0.986)	-0.048 (0.606)	---	---
Age*M	-0.025 (0.108)	-0.021 (0.083)	---	---
Age ² *M	0.001 (0.001)	4.23e-04 (0.001)	---	---
Child*M	-0.404 (0.611)	-0.585 (0.464)	---	---
Elderly*M	-0.791 (0.600)	-0.873* (0.495)	---	---
Constant	-5.582*** (1.184)	-3.515*** (0.759)	-8.182*** (0.872)	-5.521*** (0.638)
Nobs	2230		2230	
X ² (51)	2508.24***		140.29***	
Pseudo R ²	0.235		0.151	
Log Likelihood	-956.668		-1065.05	

Notes: Robust std. errors in parentheses.

Table A4: Conditional Transition Probabilities of Female M and N to U and E- Unrestricted and Restricted Multinomial Logit Estimates

	U	E	U	E
Urban	0.727*** (0.180)	0.225* (0.123)	0.509*** (0.156)	0.145 (0.114)
Primary	-0.061 (0.238)	-0.029 (0.149)	0.005 (0.206)	0.066 (0.139)
Secondary(O)	0.479* (0.255)	0.357** (0.173)	0.563** (0.220)	0.554*** (0.157)
Secondary(A)	0.121 (0.652)	0.426 (0.447)	-0.095 (0.640)	0.620 (0.400)
University	---	---	---	---
Married	-1.224*** (0.215)	-0.244* (0.140)	-1.324*** (0.192)	-0.441*** (0.129)
Age	0.354*** (0.043)	0.149*** (0.023)	0.384*** (0.043)	0.159*** (0.021)
Age ²	-0.005*** (0.001)	-0.002*** (0.000)	-0.006*** (0.001)	-0.002*** (0.000)
Child	0.195 (0.186)	0.252** (0.127)	0.091 (0.162)	0.338*** (0.115)
Elderly	-0.434 (0.297)	0.005 (0.167)	-0.141 (0.233)	0.067 (0.152)
M	2.170 (1.657)	-0.055 (0.375)	---	---
Urban*M	-0.453 (0.421)	-0.055 (0.375)	---	---
Primary*M	0.149 (0.507)	0.963** (0.481)	---	---
Secondary(O)*M	-0.239 (0.547)	0.990* (0.543)	---	---
Secondary(A)*M	-34.584*** (0.994)	1.936 (1.272)	---	---
University*M	---	---	---	---
Married*M	0.278 (0.500)	-0.758 (0.466)	---	---
Age*M	-0.012 (0.106)	-0.053 (0.078)	---	---
Age ² *M	-3.57e-04 (0.001)	0.001 (0.001)	---	---
Child*M	-0.304 (0.399)	0.480 (0.347)	---	---
Elderly*M	1.003* (0.536)	0.283 (0.438)	---	---
Constant	-8.316*** (0.747)	-5.049*** (0.439)	-8.397*** (0.683)	-5.111*** (0.409)
Nobs	5110		5100	
X ² (51)	5001.90***		240.48***	
Pseudo R ²	0.115		0.091	
Log Likelihood	-1910.11		-1962.33	

Notes: 1. (1) ***, **, and * signify one, five, and ten per cent significance levels, respectively. (2) for table A3 and A4 the university education dummy was dropped due to perfect prediction.

2. Robust std. errors in parentheses.

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