

**South African labour
market transitions during
the global financial and
economic crisis:**

Micro-level evidence from
the NIDS panel and matched
QLFS cross-sections

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December 2013

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ABSTRACT

This paper studies individual-level labour market transitions and their determinants in South Africa during the zenith and aftermath of the global financial and economic crisis using 2008–2010/11 panel data from the National Income Dynamics Study (NIDS) and matched cross-sections of the Quarterly Labour Force Survey (QLFS) over 2008Q1–2012Q4. We uncover considerable movement in South African labour markets over the crisis period. Chances of continued employment significantly vary along gender, age and education levels and between different sorts of occupations and sectors of employment. Although we do find time variation in the economic significance of some of these explanatory variables, it remains difficult to link this variation directly to the evolution of South Africa’s economy over the course of the crisis.

JEL classifications: F61; G01; J64

Keywords: global financial crisis; labour markets; employment; survey data; South Africa

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1. INTRODUCTION

The last few years have seen a multitude of studies documenting the transmission of the global financial and economic crisis from developed country financial systems and economies to developing and emerging countries, through channels such as reduced private capital flows, shrinking trade and lower international remittances (e.g., World Bank, 2009; IMF, 2009, 2010; ODI, 2010; for a summary, see Essers, 2013). These external, macro-level shocks and the policy responses to them have been shown to have important micro-level impacts, on developing country households and individuals (see, e.g., recent overviews by Harper et al., 2011; Heltberg et al., 2012).

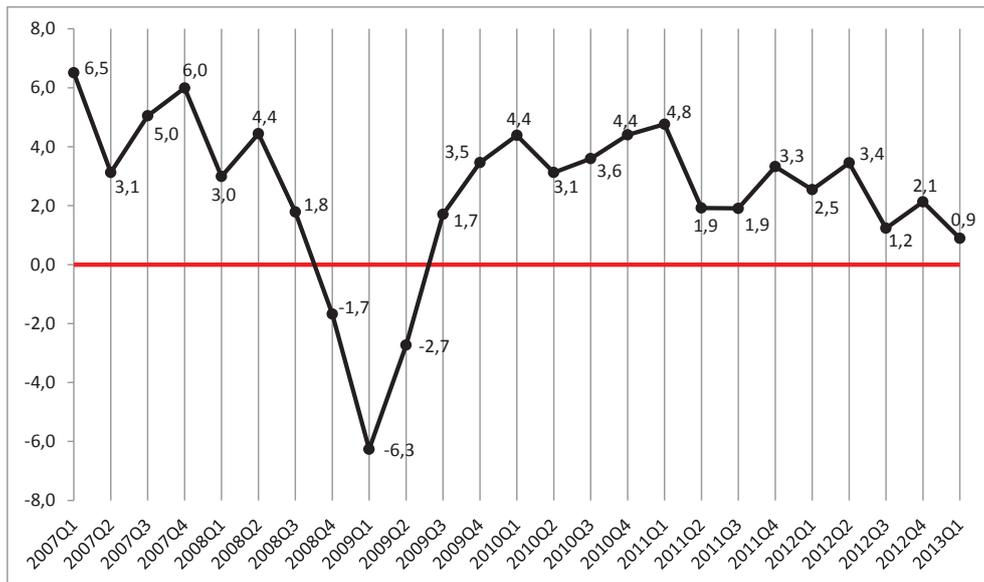
Because of its integration in the world economy, South Africa also did not escape the trembles of the crisis, which started to spread globally from end 2008 onwards (following the collapse of Lehman Brothers). Figure 1 shows that South Africa entered recession in 2008Q4, for the first time since the demise of apartheid. The slump in economic activity was driven to a large extent by a fall in manufacturing output, next to contractions in the mining sector, wholesale and retail trade, and financial, real estate and business services.¹ After three quarters of negative growth, the South African economy in 2009Q3 picked up again. However, despite an ambitious government action plan including monetary policy easing and new public investment, economic revival has been anaemic. South African growth seems to have been punctuated by renewed global slowdown, at least partly due to lingering problems in the eurozone and a disappointing recovery in the US, both important trade and investment partners.

Evidently, this adverse economic course has not been without consequences for South Africa's citizens (see e.g., Mabugu et al., 2010; Ngandu et al., 2010; Kucera et al., 2012). In this paper we focus on changes in individuals' labour market status, a critical determinant of their own and their households' well-being (World Bank, 2012; see Leibbrandt et al., 2012 on South Africa specifically). Described as its 'Achilles' heel', South Africa's extraordinarily high, structural unemployment and segmented labour markets (along dimensions of race, gender, formality, urban/rural divisions, etc.) have been the subject of an enormous literature (Hofmeyr, 2000; Kingdon and Knight, 2004, 2006, 2009; Bhorat and Kanbur, 2006; Banerjee et al., 2008; Heintz and Posel, 2008; Rodrik, 2008; Leibbrandt et al., 2010 are among the key references).² We aim to examine in greater detail how this troublesome labour market situation further evolved during the global economic crisis. As is well-documented for both previous and the most recent crisis episode, recessions tend to have heterogeneous impacts across workers with different demographic backgrounds and employed in different sectors and sorts of occupations (e.g., Clark and Summers, 1981; Kydland, 1984; Verick, 2011; Hoynes et al., 2012; Cho and Newhouse, 2013).

[1] Manufacturing alone contributed approximately -2.9, -3.8 and -1.5 percentage points to the -1.7%, -6.3% and -2.7% quarter-on-quarter growth in 2008Q4, 2009Q1 and 2009Q2, respectively, according to industry-level data (Statistics South Africa, 2013a).

[2] For a recent, extensive review and meta-analysis of this body of literature and its different discourses, see Fourie (2012).

Figure 1: Annualised growth of (seasonally adjusted) quarterly GDP at constant prices, 2007Q1-2013Q1 (%)



Source: Statistics South Africa (2013a).

According to the Quarterly Labour Force Survey (QLFS), total employment, defined as the number of people aged 15-64 that are engaged in market production activities, decreased from a peak of about 14 million individuals in 2008Q4 to a trough of just under 13 million in 2010Q4 (Statistics South Africa 2013b), reversing the (modest) gains made during the preceding economic boom. As with economic growth, the recovery has been sluggish; in 2013Q1 total employment stood at 13.6 million. Conversely, the ranks of the unemployed swelled from 3.9 million in 2008Q4 to 4.6 million people in 2013Q1. Table 1 gives the 2008-2012 evolution of South African unemployment rates, disaggregated by gender, race, age group, geography type and province. It shows that the official, narrowly defined unemployment rate increased only marginally over this five-year period, from 22.8% to 25.1%, whereas the rise in the broad unemployment rate, which also includes discouraged individuals that would prefer to work but have given up job search, was more substantial. Moreover, the upward trend in narrow and broad unemployment rates varies significantly across population segments and geographically. Limiting ourselves to the broad unemployment rates, increases were most spectacular for men, Black and Coloured South Africans, youth and in rural areas. In terms of provinces, Mpumalanga, Gauteng and Northern Cape saw the largest jumps in unemployment rates in the 2008-2010 period; over 2010-2012 the greatest increases were observed in Free State, North West Province and again Mpumalanga.

Table 1: Evolution of unemployment rates (QLFS), 2008-2012 (%)

	Narrow unemployment rate					Broad unemployment rate				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Overall	22.8	23.9	24.9	24.9	25.1	27.4	29.9	32.6	33.3	33.5
Male	19.8	22.0	22.8	22.5	22.9	23.4	26.9	29.3	29.7	30.0
Female	26.4	26.2	27.5	27.8	27.8	32.1	33.5	36.6	37.5	37.6
Black/African	27.0	28.1	29.2	28.9	28.8	32.4	35.3	38.3	38.7	38.6
Coloured	18.8	20.2	22.0	22.6	24.0	20.6	22.2	24.9	26.1	26.9
Asian/Indian	12.0	12.0	9.0	10.5	10.9	12.7	14.3	11.4	12.8	13.2
White	4.2	4.7	5.8	5.8	5.8	4.7	5.4	7.0	7.0	6.9
Age 15-25	43.4	45.6	48.3	47.6	49.1	49.2	53.6	58.0	58.7	59.7
Age 26-35	24.3	26.4	27.3	27.8	27.6	28.7	32.1	34.7	35.6	35.5
Age 36-45	15.1	15.6	16.5	17.1	17.3	18.5	20.2	22.3	23.5	23.6
Age 46-55	9.4	10.3	11.3	11.7	12.1	12.9	14.5	16.8	17.4	18.0
Age 56-64	6.8	5.8	7.0	5.6	6.4	9.8	9.0	11.4	9.9	11.1
Urban	21.2	22.8	24.0	24.1	24.3	24.0	26.3	28.5	28.7	28.8
Rural	27.9	27.3	27.9	27.5	28.0	37.0	40.1	44.1	46.1	46.2
Western Cape	18.3	20.5	21.8	22.2	23.8	19.6	21.7	23.2	23.3	24.8
Eastern Cape	26.4	27.6	27.4	27.5	28.9	35.2	38.3	39.8	39.9	42.1
Northern Cape	23.1	26.8	26.8	28.7	28.4	28.2	32.0	33.9	34.7	33.5
Free State	24.0	26.4	27.9	27.7	32.6	28.4	32.1	33.3	33.5	37.2
KwaZulu-Natal	22.0	20.0	19.9	19.8	21.0	26.4	29.5	31.7	32.2	33.2
North West	24.2	27.3	26.6	26.4	25.2	31.3	34.4	36.4	40.7	39.3
Gauteng	21.6	23.8	26.8	27.0	25.0	24.0	26.4	30.4	30.5	28.6
Mpumalanga	23.5	25.7	28.4	29.5	29.9	29.1	32.0	37.8	39.5	40.5
Limpopo	30.2	26.4	22.9	20.0	21.0	38.0	37.4	39.0	40.5	38.8

Source: Own calculations using 2008Q1-2012Q4 QLFS data.

Notes: Sample includes only people of working age (15-64). All figures are averaged over four quarters and population-weighted. Narrow unemployment rate is calculated as $(unemployed\ searching)/(unemployed\ searching + employed)$; broad unemployment rate as $(unemployed\ searching\ and\ discouraged)/(unemployed\ searching\ and\ discouraged + employed)$.

Most of these trends have already been documented in earlier work on South African labour markets during the global crisis (see Verick, 2012). However, overviews such as in Table 1, based on repeated cross-sections, only provide us with a netted-out picture. Cross-sectional data do not allow one to evaluate gross changes in labour market participation, with individuals entering and exiting particular labour market states, or to determine the identity of those that move from one state to another. Such transitions are exactly what this paper seeks to study.³ Our main research question is the following: which individual, household-level and

[3] In this paper we do not study changes in wage earnings or the number of hours worked by the employed, two other potentially important channels of labour market adjustment. QLFS data however show a remarkable stability in the average number of hours worked in South Africa over 2008-2011 (Statistics South Africa, 2012). Coverage of monthly wage earnings data is very patchy in the datasets used for this paper.

job-specific characteristics are associated with staying employed, or not, in South Africa during the height and aftermath of the global crisis? In attempting to answer that question we make use of two South African datasets. The first is a hitherto still relatively unexplored nation-wide panel dataset: the National Income Dynamics Study (NIDS), whose first two waves cover the 2008-2010/11 period. In second instance, we employ an algorithm developed by Ranchod and Dinkelman (2008) to create a matched, individual-level panel dataset from the 2008Q1-2012Q4 rounds of the QLFS. We believe that an analysis of these two longitudinal datasets offers a valuable complement to existing studies.

The nature of the current paper is mostly exploratory and some of its findings will need to undergo further scrutiny and additional robustness testing. That said, at this stage several results stand out. First of all, we find that there is considerable mobility in South African labour markets, both in the medium and short run, with many individuals moving in and out of employment as well as between different employment and non-employment states over the crisis period. Second, our econometric models suggest that the chances of retaining employment during the crisis significantly varied along gender, age and education levels and between different sorts of occupations and sectors of employment. Third, next to a slight, gradual decline of labour market mobility over the 2008-2012 period, we find that the strength of some of the determinants of continued employment varies over time. However, it remains difficult to link this variation directly to South Africa's economic trajectory.

The remainder of the paper is structured as follows. Section 2 briefly summarises the findings of three closely related studies and the remaining knowledge gaps. Section 3 first describes the NIDS dataset and employs it to construct transition matrices and decomposable measures of labour market mobility. Second, we explain the set-up of our empirical model to analyse the determinants of individual labour market transitions. A third subsection discusses the model estimates based on NIDS data. Section 4 introduces the matched QLFS dataset and uses it to put the results extracted from NIDS into perspective, by studying the evolution of labour market transitions over time. Section 5 concludes.

2. RELATED LITERATURE

A first study related to the current paper is by Leung et al. (2009). To evaluate the effect of different individual characteristics on the likelihood of employment, they pool six rounds of the QLFS over 2008-2009 and regress an employment dummy on gender, race, years of schooling and professional experience as well as an interaction of these variables with the deviation of GDP growth from its long-term trend. They conclude that human capital, both education and work experience, significantly reduced the negative impact of the crisis on employment. Female workers were also found to be less affected than men. Race, on the other hand, while in itself highly significant in determining labour market outcomes, did not further compound crisis effects. Leung et al. (2009) acknowledge that their approach does not allow to control for job-specific variables or to study individual labour market transitions.

Second, with the same QLFS data Verick (2010) constructs multinomial logit models where the outcome variable exists of five distinct labour market statuses: formal sector employment, informal sector employment, unemployment, discouragement and outside the labour force. Including as regressors age, education, marital status, household size, race and province dummies, he estimates, separately for men and women, three cross-sectional models for 2008Q2, 2009Q2 and 2009Q3 and then compares between quarters the resulting average predicted probabilities for unemployment, discouragement and informal sector employment. The results for women suggest little change in the likelihood of having a certain labour market status over the period under consideration. For African men and males with below-tertiary education, however, the estimates show a significant increase in the probability of discouragement.

In a third study Verick (2012) expands on his earlier analysis. Updated multinomial logit models, now pooled over four 'pre-crisis' quarters (2008Q1-2008Q4) and eight 'crisis' quarters (2009Q1-2010Q4) of the QLFS, corroborate the main result of Verick (2010): rising discouragement, particularly among poorly educated African men. In addition, and inspired by Ranchod and Dinkelman (2008), Verick uses matching on observable characteristics to create a QLFS panel, allowing him to observe quarter-to-quarter transition rates between labour market statuses. He finds that mobility between statuses was higher in 2008 than in 2009. The low matching rate of his newly constructed panel (around 48.7%) is said to limit more in-depth analysis of the determinants of labour market transitions. For that, one would need a better-matched panel, Verick (2012) notes.

The following section shows how the NIDS, a large, detailed panel dataset, can be used to mitigate some of the limitations of the just-described papers. In Section 4 we come back to the approach of matching different rounds of the QLFS to construct a panel.

3. EVIDENCE FROM THE NATIONAL INCOME DYNAMICS STUDY (NIDS)

3.1. Structure of the dataset and descriptives

Modelled partly on the long-standing Panel Study of Income Dynamics (PSID) of American households, the National Income Dynamics Study (NIDS) is South Africa's first nation-wide, representative panel data survey.⁴ It is conducted by researchers from the Southern Africa Labour and Development Research Unit (SALDRU) at the University of Cape Town, who started a first round of data collection in January 2008. The sampling of households took a clustered, two-stage design⁵: first, from a master sample 400 geographically defined primary sampling units (PSUs) were drawn at random; then, in a second stage, 24 (or, in some cases, 48) dwellings were randomly selected and all households living in these dwellings were visited for interviews. Between January and December 2008 a total baseline of 7,301 households, representing 28,247 resident individuals, was interviewed. Approximately two years later, from May 2010 to September 2011, a second wave of inquiries was organised; this time 28,641 individuals from 6,814 households were successfully interviewed. The result is a panel dataset of 21,098 individuals who appear in both waves.⁶ Leaving out those that died or moved outside South Africa in between waves, the overall attrition rate is an acceptable 19% (see Brown et al., 2012). At the moment of writing, a third wave had been conducted in the field but was not yet available for analysis. Combining household- and individual-level interviews, NIDS collects detailed information on, among other topics, household expenditure and consumption, demographics, education, health, well-being and social cohesion, personal asset ownership and debt, various income sources, intra-household decision-making, and essential for this paper's purposes, on individual labour market participation.

There are several reasons why NIDS qualifies as a useful instrument to gauge labour market transitions during the global crisis. First and foremost, the timing of the two waves of interviews matches reasonably well with that of the most intense phase of the crisis: wave 1 contains information from around the time the banking crises in the US and Europe took a turn for the worse and before the South African economy entered recession⁷; wave 2 was undertaken when economic recovery had already set in, but only timidly so (cf. Figure 1). South African labour markets had not yet fully recovered from the economic downturn by 2011 (cf. Table 1). A second important trait of NIDS is its longitudinal character, making an analysis thereof a natural complement to the studies reviewed in Section 2.⁸ Third, NIDS' multipurpose design allows individual labour market information to be combined with numerous other individual and household-level characteristics, including subjective measures of well-being.

One problem with NIDS, however, is that cross-sectional analysis reveals a large reduction in the number of unemployed and a large increase in the number of individuals outside

[4] For a more elaborate overview, consult the NIDS wave 1 fieldwork manual and wave 2 user manual (Brown et al., 2012). Other documentation as well as the questionnaires are available from <http://www.nids.uct.ac.za>. The NIDS datasets can be downloaded, after registration, from DataFirst's data portal: <http://www.datafirst.uct.ac.za>. This paper uses version 4.1 of wave 1 and version 1.0 of wave 2 datasets.

[5] See Wittenberg (2009) on the NIDS sampling design and the construction of weights.

[6] Unlike the QLFS (see Section 4), NIDS is a panel of individuals and *not* of households; household identifiers are only meaningful within (and not between) waves. In fact, one of the purposes for which NIDS was originally conceived is to enable longitudinal study of new household formation, splitting and (re)grouping.

[7] More than 90% of all wave 1 interviews were conducted over February-June 2008, before Lehman Brothers' failure mid-September.

[8] Other studies modelling labour market transitions in South Africa have mostly relied on one particular, geographically focused panel dataset, that of the KwaZulu-Natal Income Dynamics Study (KIDS), which combines surveys conducted in 1993, 1998 and 2004 (see e.g., Dinkelman, 2004; Cichello et al., 2005).

the labour force between waves 1 and 2, which does not fully correspond with trends observed in the QLFS (see Cichello et al., 2012). Elsewhere it is suggested that some of the individuals that were in reality actively searching for employment at the time of the NIDS wave 2 have been incorrectly classified by fieldworkers (see SALDRU, 2012). We will keep this limitation in mind when specifying our empirical model. Another point worth noting is that between-wave attrition rates in NIDS are particularly high for better-off White South Africans (SALDRU, 2012). Although we use panel weights supplied by NIDS that are meant to correct for this attrition bias, estimates for this group of individuals may not be very accurate.

Following Cichello et al. (2012) we restrict ourselves to adults aged 20-55 in 2008 that were successfully interviewed in both waves of NIDS. The official working age in South Africa is 15-64, but we want to make sure our analysis of labour market transitions is not unduly influenced by school leavers, first-time employees, pensioners and/or people preparing for retirement. This leaves us with 8,371 panel members. We also stay as close as possible to the broader literature on South Africa's labour markets, which generally categorises individuals into four mutually exclusive groups. First, 'employed' are those that are engaged in productive activity, generally for the purpose of earning money; within NIDS this category comprises people in regular wage employment, the self-employed, casual workers, and those active in subsistence agriculture or that assist others with their business activities (see further). Second, 'searching unemployed' are those that are not employed but have actively searched for work in the four weeks prior to interview. They can be distinguished from the third group, the 'discouraged unemployed', who would have liked to work but did not actively look for a job. Fourth and last, the 'not economically active (NEA)' are not interested in finding employment, as they are, for example, full-time students, sick or disabled, fulfil unpaid domestic duties or consider themselves too old. This last group is per definition outside the labour force.

The simplest way to get an understanding of labour market transitions in a panel dataset such as NIDS is to construct transition matrices, which detail for each possible initial status in period 1 what percentage of individuals finds itself again in the same status (or in other statuses) by period 2. Table 2 represents such a transition matrix for the four, just-described primary labour market categories, augmented on its borders with the overall proportion of individuals belonging to the different categories in each of both periods (cf. Cichello et al., 2012).

It is clear from this matrix that there is considerable individual movement across labour market statuses. This observation is in line with other studies adopting longitudinal views on South African labour markets (Cichello et al., 2005; Banerjee et al., 2008; Ranchod and Dinkelman, 2008). Almost 30% of those employed in 2008 were no longer employed in 2010/11. Over 40% of the NEA in 2008 were in the labour force by 2010/11, most of them in employment. Among those who were (searching or discouraged) unemployed in the first period mobility is even greater (keeping in mind possible misclassification; see above). It can be calculated from Table 2 that, overall, almost 45% of all individuals switched labour market status from wave 1 to wave 2 (see further), and that after limiting the analysis to those aged 20-55 in 2008. To be sure, this is only a lower-bound estimate of mobility, as most probably some individuals changed status in between both waves but had returned to their original 2008 status by 2010/11.

Table 2: Transition matrix for labour market status (NIDS), 2008-2010/11: row proportions (%)

		Labour market status in 2010/11				
		50.6	12.0	5.0	32.4	
Labour market status in 2008		Employed	Unemployed, searching	Unemployed, discouraged	NEA	
	53.0	Employed	71.6	6.7	3.2	18.5
	18.5	Unemployed, searching	32.3	21.6	6.5	39.7
	6.3	Unemployed, discouraged	28.0	18.1	10.8	43.1
	22.1	NEA	22.1	15.0	6.1	56.8

Source: Own calculations using NIDS data.

Notes: Sample includes only panel members aged 20-55 in 2008. All figures have been weighted using panel survey weights that account for between-wave attrition. Outer left column (top row) gives the overall proportions of each category in 2008 (2010/11).

Tables A1 and A2 in Appendix reproduce the Table 2 transition matrix for male and female adults separately. Most notably, many more men (nearly 78%) than women (just over 65%) that were initially employed remained so in period 2. Conversely, NEA was a more stable state for women than it was for men. Overall mobility was greater for women than for men (49.9% versus 37.5% changed status).

It is also possible to examine in greater detail the different types of employment in which individuals were involved, in one or both waves. As indicated above, an individual is defined as employed in NIDS if he/she is paid a wage or salary to work on a regular basis for an employer, whether full- or part-time ('regular wage employment'); works for himself/herself, including in partnership with others ('self-employment'); works for an employer on an irregular and short-term basis ('casual employment'); works on the household's own plot or food garden ('subsistence agriculture'); or assists other people, such as family and friends, with their business activities ('assistance with others' business'). Table 3 gives a 2008-2010/11 transition matrix which takes into account transitions between these different employment types. We pool with casual employment the categories of subsistence agriculture and assistance with others' business, as there were reportedly some problems in the field with adequately capturing engagement in these activities during wave 2 of NIDS (Cichello et al., 2012).⁹

One directly observes from Table 3 that regular wage employment is a relatively stable state compared to self- or casual and other employment. Just over 3% of adults with regular wage employment in 2008 moved to self-employment, and another 3% to casual or other work in 2010/11, much less than the flow into non-employment states. In contrast, for those employed in both waves there was a clear trend away from self-employment and, especially, casual employment into regular wage jobs. This limited inflow into and considerable flow out of self-employment and casual work may partly reflect the relatively limited size of South Africa's informal sector, which traditionally has not absorbed those outside (formal) wage employment.¹⁰

[9] Since the latter two activities only account for a minor share of overall employment in 2008, the transition matrix of Table 3 looks very similar when excluding them altogether.

[10] Note that NIDS does not allow for an unambiguous division between formal and informal sector employment, unlike the QLFS (see Section 4). The small size of South Africa's informal sector is often ascribed to legacies of the apartheid regime, which repressed and disempowered the informal activities of the Black majority of South Africans, and to inadequate government support to small entrepreneurs (Kingdon and Knight, 2004).

With 51.4% of individuals changing status, overall mobility in Table 3 is significantly greater than in Table 2, which does not consider transitions between different employment types.

Table 3: Transition matrix for detailed labour market status (NIDS), 2008-2010/11: row proportions (%)

		Labour market status in 2010/11						
		39.8	6.0	4.7	12.0	5.0	32.5	
		Regular wage employ.	Self-employ.	Casual and other employ.	Unemploy. searching	Unemploy. disc.	NEA	
Labour market status in 2008	37.1	Regular wage employment	76.4	3.2	3.2	5.3	2.7	9.3
	7.4	Self-employment	16.6	34.0	5.3	7.8	2.6	33.8
	8.6	Casual and other employment	24.1	6.4	6.1	12.1	6.1	45.3
	18.5	Unemployed, searching	21.7	3.9	6.5	21.6	6.5	39.8
	6.3	Unemployed, discouraged	18.0	3.2	6.8	18.1	10.8	43.1
	22.2	NEA	14.0	3.8	4.4	15.0	6.1	56.8

Source: Own calculations using NIDS data.

Notes: Sample includes only panel members aged 20-55 in 2008. All figures have been weighted using panel survey weights that account for between-wave attrition. Outer left column (top row) gives the overall proportions of each category in 2008 (2010/11).

Again there are noticeable differences between men and women. Tables A3-A4 in Appendix show that regular wage jobs and casual work are more stable states for men than for women. The opposite is true for self-employment. As in Tables A1-A2, women are more mobile than men (54.3% versus 47.1% switched status).

Another interesting exercise is to more formally decompose overall labour market mobility, i.e., the percentage of individuals changing labour market status, into 'upward', 'downward' and 'within' mobility components. Note that when restricting ourselves to the four main labour market statuses, total mobility can be written as:

$$m_{\text{total}} = \sum_{i=1}^4 \sum_{j=1}^4 s_i t_{ij} | i \neq j$$

where s_i is the i^{th} element of the 4×1 vector S containing the proportions of each labour market category for wave 1, and t_{ij} is the element on the i^{th} row and in the j^{th} column of the 4×4 transition matrix T between waves as depicted in Table 2.

This expression can be easily decomposed as follows:

$$\begin{aligned}
 m_{\text{total}} &= \sum_{i=2}^4 s_i t_{i1} + \sum_{j=2}^4 s_1 t_{1j} + \sum_{i=2}^4 \sum_{j=2}^4 s_i t_{ij | i \neq j} \\
 &= m_{\text{upward}} + m_{\text{downward}} + m_{\text{within non-employment}}
 \end{aligned}$$

with upward mobility being the mobility from different non-employment states into employment; downward mobility the transition from employment into non-employment; and within non-employment mobility the movement between distinct forms of non-employment.

Similarly, using the more detailed taxonomy of labour market states (differentiating between regular wage, self- and casual or other employment) we can write:

$$m_{\text{total (detailed)}} = \sum_{i=1}^6 \sum_{j=1}^6 s_i t_{ij | i \neq j}$$

where S is now the 6x1 vector of wave 1 proportions, and T the 6x6 transition matrix of Table 3.

This is again decomposable into:

$$\begin{aligned}
 m_{\text{total (detailed)}} &= \sum_{i=4}^6 \sum_{j=1}^3 s_i t_{ij} + \sum_{i=1}^3 \sum_{j=4}^6 s_i t_{ij} + \sum_{i=4}^6 \sum_{j=4}^6 s_i t_{ij | i \neq j} + \sum_{i=1}^3 \sum_{j=1}^3 s_i t_{ij | i \neq j} \\
 &= m_{\text{upward}} + m_{\text{downward}} + m_{\text{within non-employment}} + m_{\text{within employment}}
 \end{aligned}$$

We now obtain an additional component, i.e., the mobility within different employment types, and therefore necessarily a larger measure of total mobility.

Table A5 in Appendix lists the mobility measures and their subcomponents based on the basic and detailed labour market status transition matrices, calculated for the whole adult panel member sample and for men and women separately. We observe a downward mobility which is slightly larger than upward mobility, and little difference between men and women in this regard. Within employment, mobility is greater for men than for women, while within non-employment it is the other way around.

Having illustrated some important facets of labour market transitions in South Africa over the 2008-2010/11 period covered by NIDS, we now move to an analysis of the determinants of such transitions in a multivariate context. This will enable us to identify whether there are noticeable differences between particular types of workers. The next subsection spells out our empirical model.

3.2. Model set-up

To evaluate econometrically the effect of specific individual and household characteristics on labour market transitions, we opt for a simple binary probit model of the following form¹¹:

$$\Pr(y = 1 \mid X, Z) = \Phi(X'\beta + Z'\delta),$$

where y is the binary outcome variable of the transition under study; Φ is the standard normal cumulative density function; and X and Z are vectors with potential determinants of transition outcome y .

We will estimate two sorts of probit models with the NIDS data. In models of the first kind, the outcome variable y takes the value 1 if a person employed in 2008 is again employed in 2010/11 and the value 0 if not. People that were not employed at the time of NIDS wave 1, be it unemployed or NEA, are left out of the analysis. Alternatively, in the second kind of probit models, y takes the value 1 for individuals that are in regular wage employment in both waves and 0 for those no longer in regular wage employment in wave 2. Individuals that do not have a regular wage job in 2008 are excluded in this case.¹²

X is a vector of demographic individual- and household-level characteristics as well as geographical variables; in our baseline model this includes age cohort dummies, educational attainment, race, marital status, household size, and urban/rural and province dummies (following the studies summarised in Section 2). In other specifications we will add a household head dummy, the number of other household members in (wage) employment and real per capita household income.

In our second set of probit models, which focus on regular wage employment transitions, we also consider Z , a vector of job-specific variables; these are occupation and sector types, a trade union membership dummy, contract type/duration, the length of wage employment at the time of interview, and initial wage earnings. For all variables included in X and Z we use 2008 values; we want to find out how the initial characteristics of an employed individual (before the recession) relate to whether that individual is again employed (after the recession, in the early recovery period). In view of the gender differences in labour market dynamics, evident from Section 3.1 and the literature, separate models are estimated for male and female panel members aged 20 to 55.

Table A6 in Appendix describes the baseline explanatory variables, comparing their distribution for the different employment transition outcomes. Male workers that make the transition out of employment by 2010/11 tend to be younger, less educated, part of larger households, and are more likely to be Black, unmarried and living in rural areas compared to those that stay in employment. Most of these differences also seem to hold for female workers and for male and female regular wage workers, with some notable exceptions however. For

[11] Estimating a binary logit model yields very similar results in practice. There are two problems with estimating multinomial models here. First, because of the likely misclassifications in wave 2 of some of the non-employed (see Section 3.1), estimating models that differentiate between types of non-employment may lead to distorted results. Second, many of the multinomial models we have tried to estimate do not converge. This is probably because the use of many dummy regressors makes maximum likelihood estimation computationally very demanding.

[12] In terms of the transition matrices presented in Section 3.1 and the Appendix, both kinds of models can be understood as concentrating on the first matrix rows. Individuals that are still employed (or in regular wage employment) in 2010/11, i.e., those in cell (1,1) of the transition matrices, are assigned a value of 1. The individuals represented by the other first-row cells are assigned a value of 0. As such, this paper focuses mainly on downward mobility; we are particularly interested in the characteristics of workers that were laid off (or, alternatively, chose to quit employment) during the difficult economic climate of 2008-2010/11. A deeper study of upward (or within) labour market mobility falls outside the scope of the paper.

example, the racial distribution of male workers employed in regular wage jobs in 2008 does not differ significantly between those that move out of wage employment by 2010/11 and those that remain wage employed.

The next section presents and discusses our findings for the different multivariate model specifications explained above.

3-3. Model estimates and discussion

3-3-1. Employment transitions

Table 4 displays the estimation results for our first kind of probit models. In column (1a) and (1b) the baseline model is estimated, for men and women respectively. Columns (2a) to (4b) show the results when adding extra household-level variables. All specifications include province dummies, the coefficients of which are omitted from the table.

Instead of reporting probit coefficients or marginal effects at the mean, we list the estimated average marginal (or partial) effects, the interpretation of which seems more convenient here (see Long and Freese, 2003).¹³ For categorical variables, each parameter in Table 4 should be read as the survey-weighted average, percentage point difference in the probability of being employed in 2010/11 between the category of individuals in question and the omitted reference category, given that all individuals were employed in 2008 (and holding all other regressors constant at their actual sample values).

Column (1a) of Table 4 indicates that men aged 36-45 had a 13 percentage point higher chance of being in employment than their 20-25 year-old peers. There is no significant difference between the latter age cohort and older workers (aged 46-55). We find these age differences also with female workers (although statistical and economic significance is lower; see column (1b)). Greater educational attainment, i.e., completed secondary-level education or more, seems to protect both men and women from transitioning out of employment, a result which mirrors Leung et al. (2009). These education effects are stronger for female than for male workers. African men employed in 2008 were much more likely to be out of work in 2010/11 than Coloured, Indian or White men. For women, however, there seems to be no clear racial dimension to employment transitions. Married men (but not women) had a greater likelihood of remaining employed than non-married (i.e., single, co-habiting, divorced or widowed) men, which corresponds well with Verick (2010)'s cross-sectional results but may not be readily interpretable. Household size seems to have a small but significant negative effect on male and female workers staying in employment in 2010/11. This could reflect the importance of intra-household transfers (see Verick, 2012), a topic we do not further pursue in the current paper. Lastly, rural women's likelihood of employment in 2010/11, given that they had a job in 2008, was almost 14 percentage points lower than that of urban-based women.

Including additional household characteristics does not alter most of the just-mentioned estimation results. Columns (2a) to (4b) of Table 4 confirm that secondary-level (and especially tertiary) education was a good buffer; racial differences were prevalent for men and not for women; and living in a rural area harmed female workers' prospects of staying employed.

[13] Like Verick (2012), we use the *margins, dydx()* post-estimation command of Stata, combined with the *svy* prefix, to calculate average marginal effects.

Table 4: Probit estimates for employment transitions (NIDS), 2008-2010/11 (baseline and extra household variables): average marginal effects

	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
	Male	Female	Male	Female	Male	Female	Male	Female
<i>Omitted: age 20-25</i>								
Age 26-35	0.0751*	0.0494	0.0414	0.0356	0.0652*	0.0558	0.0723*	0.0502
	[0.0387]	[0.0497]	[0.0354]	[0.0491]	[0.0381]	[0.0497]	[0.0374]	[0.0497]
Age 36-45	0.1298***	0.0975*	0.0833*	0.0678	0.1123**	0.1036**	0.1198***	0.0949*
	[0.0479]	[0.0523]	[0.0457]	[0.0514]	[0.0495]	[0.0522]	[0.0461]	[0.0523]
Age 46-55	0.0777	0.0494	0.0221	0.0124	0.0703	0.0465	0.0630	0.0363
	[0.0630]	[0.0559]	[0.0632]	[0.0594]	[0.0638]	[0.0547]	[0.0623]	[0.0564]
<i>Omitted: no education</i>								
Primary education	0.0217	0.0481	0.0227	0.0521	0.0328	0.0403	-0.0110	0.0110
	[0.0429]	[0.0346]	[0.0421]	[0.0361]	[0.0418]	[0.0344]	[0.0390]	[0.0338]
Secondary education	0.1367***	0.1620***	0.1358***	0.1618***	0.1455***	0.1578***	0.0841**	0.0785
	[0.0449]	[0.0457]	[0.0443]	[0.0460]	[0.0449]	[0.0451]	[0.0427]	[0.0476]
Tertiary education	0.1881***	0.3032***	0.1870***	0.3075***	0.1880***	0.2943***	0.1153**	0.1990***
	[0.0486]	[0.0461]	[0.0478]	[0.0457]	[0.0485]	[0.0452]	[0.0532]	[0.0545]
<i>Omitted: Black/African</i>								
Coloured	0.1071**	-0.0461	0.1182***	-0.0443	0.1057***	-0.0425	0.1039**	-0.0732
	[0.0425]	[0.0469]	[0.0397]	[0.0495]	[0.0395]	[0.0461]	[0.0428]	[0.0445]
Asian/Indian	0.1467***	0.0984	0.1613***	0.1054	0.1673***	0.0963	0.1151*	-0.0122
	[0.0561]	[0.1918]	[0.0485]	[0.1871]	[0.0429]	[0.1840]	[0.0609]	[0.2221]
White	0.1149**	0.0548	0.1141**	0.0622	0.1282***	0.0584	0.0668	-0.0363
	[0.0493]	[0.0555]	[0.0488]	[0.0541]	[0.0428]	[0.0541]	[0.0584]	[0.0618]
Married	0.0639*	-0.0273	0.0437	0.0065	0.0632*	-0.0210	0.0488	-0.0488
	[0.0342]	[0.0338]	[0.0337]	[0.0401]	[0.0346]	[0.0329]	[0.0332]	[0.0336]
Household size	-0.0170***	-0.0123**	-0.0102**	-0.0081	-0.0105**	-0.0156**	-0.0092**	-0.0061
	[0.0042]	[0.0061]	[0.0048]	[0.0063]	[0.0049]	[0.0065]	[0.0046]	[0.0058]
Rural	0.0246	-0.1367***	0.0239	-0.1326***	0.0225	-0.1415***	0.0429	-0.1151***
	[0.0351]	[0.0342]	[0.0348]	[0.0344]	[0.0341]	[0.0339]	[0.0345]	[0.0343]
Household head			0.1024***	0.0806**				
			[0.0308]	[0.0356]				
<i>Omitted: No other workers in household</i>								
1 other worker					-0.0016	-0.0356		
					[0.0284]	[0.0338]		
2 or more other workers					-0.1562***	0.0670		
					[0.0602]	[0.0459]		
Household per capita income (log)							0.0572***	0.0767***
							[0.0165]	[0.0200]
Observations	1,576	1,933	1,572	1,918	1,576	1,933	1,576	1,933

Source: Own calculations using NIDS data.

Notes: Average marginal effects based on survey-weighted binary probit regressions where dependent variable takes value 1 if individual was employed in both periods and 0 if only in the first. Sample includes only panel members aged 20-55 who were employed in 2008. All models include province dummies (not reported). Survey design-adjusted standard errors in brackets. Significance levels: ***1% **5% *10%.

The extra household variables also seem to tell a coherent story. Being the household head is positively associated with remaining in employment (columns (2a) and (2b)), a possible explanation being that those who are expected to take care of the household are under pressure not to give up their job.¹⁴ The consequence of having other workers in the household for employment (transitions) is, *ex ante*, ambiguous. Simply put, on the one hand, living together with other workers could reduce incentives to also engage in employment. On the other hand, these co-habiting workers may possess useful social networks increasing employment chances for each other individual in the household.¹⁵ From our estimation results in Table 4 it looks as if the first effect dominates the latter for men (at least when the household had two or more additional workers in 2008), whereas for women there is no significant net impact (columns (3a) and (3b)). The presence in the household of children under the age of five or pensioners receiving a state-provided old age pension in 2008 have no significant direct impact on employment transitions (results not shown). Also local unemployment rates at the district council level (the lowest echelon at which such rates can be deemed representative in NIDS), whether broadly or narrowly defined, do not seem to matter much.

From columns (4a) and (4b), which add the log of real household per capita income (deflated to September 2008) as an extra variable, it appears that workers hailing from richer households were more likely to remain employed. However, since this variable is highly collinear with race, educational attainment and household size, its inclusion makes it difficult to disentangle the precise, independent effects of the different variables. Replacing the log-transformed variable with quartile dummies for household per capita income suggests that the positive correlation of employment security with income can be ascribed mainly to the upper income quartiles (results not shown). Introducing dummies for the quarter in which individuals were interviewed in wave 2, to account for the long (six-quarter) period over which wave 2 was implemented, leaves our results qualitatively unchanged.

3.3.2. Regular wage employment transitions

Table 5 and 6 collect the average marginal effects estimated from our second class of probit models. Most results in Table 5 point in the same direction as those in Table 4, with some important differences however. Whereas restricting our analysis to individuals that were in regular wage employment before the recession substantially reduces sample sizes, it allows us to include in Table 6 a number of extra, job-specific variables (vector Z; cf. Section 3.2) that do not feature in other, cross-sectional studies of South African labour markets during the crisis (see Section 2).

In columns (1a) to (4b) of Table 5 the probit models of Table 4 are re-estimated for regular wage workers only. Most notably, and in contrast with Table 4 results, we find that secondary or higher education did not shield male regular wage workers from job losses. Of course, by restricting the analysis to those in regular wage employment in 2008 we are already focusing on the relatively better-educated. The beneficial effect of education on regular wage job security is however still present for women. A second important difference with Table 4 is that race does not seem to matter for (male or female) regular wage employment transitions. While this finding is in line with Leung et al. (2009), we cannot, however, rule out the possibility that it is influenced by higher attrition rates among Whites.

[14] Household headship is of course correlated with age. This collinearity shows itself in the decline of the statistical and economic significance of the 36-45 age group dummy in columns (2a) and (2b).

[15] See Dinkelman (2004) for a discussion and formalisation of the South African household as fulfilling the roles of private safety net and work/search culture-generator, among other functions.

Table 5: Probit estimates for regular wage employment transitions (NIDS), 2008-2010/11 (baseline and extra household variables): average marginal effects

	(1a) Male	(1b) Female	(2a) Male	(2b) Female	(3a) Male	(3b) Female	(4a) Male	(4b) Female
<i>Omitted: age 20-25</i>								
Age 26-35	0.0550 [0.0625]	0.0467 [0.0442]	0.0258 [0.0596]	0.0608 [0.0471]	0.0627 [0.0619]	0.0643 [0.0448]	0.0488 [0.0612]	0.0510 [0.0426]
Age 36-45	0.1335* [0.0695]	0.0827* [0.0488]	0.0985 [0.0666]	0.0989* [0.0516]	0.1423** [0.0685]	0.1054** [0.0483]	0.1245* [0.0684]	0.0816* [0.0465]
Age 46-55	0.0855 [0.0860]	0.0414 [0.0511]	0.0439 [0.0845]	0.0418 [0.0584]	0.0935 [0.0841]	0.0567 [0.0518]	0.0718 [0.0865]	0.0267 [0.0506]
<i>Omitted: no education</i>								
Primary education	-0.0976** [0.0436]	0.0050 [0.0487]	-0.0940** [0.0438]	0.0147 [0.0480]	-0.0980** [0.0432]	-0.0036 [0.0487]	-0.1035** [0.0415]	-0.0433 [0.0463]
Secondary education	0.0084 [0.0521]	0.1621*** [0.0527]	0.0093 [0.0520]	0.1588*** [0.0530]	0.0095 [0.0517]	0.1544*** [0.0517]	-0.0156 [0.0532]	0.0544 [0.0513]
Tertiary education	0.0228 [0.0539]	0.2621*** [0.0495]	0.0272 [0.0531]	0.2634*** [0.0492]	0.0241 [0.0534]	0.2549*** [0.0486]	-0.0199 [0.0588]	0.1246** [0.0552]
<i>Omitted: Black/African</i>								
Coloured	0.0352 [0.0635]	-0.0389 [0.0584]	0.0467 [0.0606]	-0.0423 [0.0592]	0.0386 [0.0627]	-0.0321 [0.0566]	0.0401 [0.0617]	-0.0694 [0.0532]
Asian/Indian	-0.0311 [0.0981]	0.0450 [0.1023]	-0.0202 [0.0967]	0.0399 [0.0997]	-0.0408 [0.0995]	0.0445 [0.1101]	-0.0615 [0.1058]	-0.1140 [0.1077]
White	-0.0367 [0.0890]	0.0489 [0.0703]	-0.0397 [0.0873]	0.0392 [0.0701]	-0.0400 [0.0911]	0.0436 [0.0701]	-0.0741 [0.0976]	-0.0647 [0.0781]
Married	0.0989** [0.0399]	0.0510 [0.0340]	0.0807** [0.0408]	0.0522 [0.0414]	0.1012** [0.0399]	0.0407 [0.0329]	0.0903** [0.0396]	0.0142 [0.0354]
Household size	-0.0154*** [0.0059]	-0.0106 [0.0070]	-0.0093 [0.0070]	-0.0082 [0.0072]	-0.0176*** [0.0061]	-0.0155** [0.0065]	-0.0085 [0.0069]	-0.0018 [0.0063]
Rural	-0.0471 [0.0398]	-0.1486*** [0.0379]	-0.0485 [0.0392]	-0.1483*** [0.0380]	-0.0487 [0.0397]	-0.1483*** [0.0372]	-0.0275 [0.0414]	-0.1194*** [0.0383]
Household head			0.0865** [0.0432]	0.0247 [0.0394]				
<i>Omitted: No other regular wage workers in household</i>								
1 other regular wage worker					-0.0067 [0.0436]	0.026 [0.0291]		
2 or more other regular wage workers					0.0649 [0.0553]	0.1159*** [0.0407]		
Household per capita income (log)							0.0415* [0.0229]	0.1057*** [0.0269]
Observations	1,122	1,199	1,118	1,189	1,122	1,199	1,122	1,199

Source: Own calculations using NIDS data.

Notes: Average marginal effects based on survey-weighted binary probit regressions where dependent variable takes value 1 if individual was in regular wage employment in both periods and 0 if only in the first. Sample includes only panel members aged 20-55 who were in regular wage employment in 2008. All models include province dummies (not reported). Survey design-adjusted standard errors in brackets. Significance levels: ***1% **5% *10%.

Other effects that lose their significance when considering only regular wage employment are those of household headship (for women) and those associated with co-habiting with two or more regular wage workers (for men) (columns (2b) and (3a)). Conversely, the positive (network) effect of two or more other working household members gains significance for women (column (3b)).

Starting again from the Table 5 baseline model, we add in Table 6 a series of job-specific variables of interest: i.e., in turn, occupation type, sector of employment, union membership, contract type, contract duration, length of wage employment in 2008, and initial wage earnings.

This exercise shows that female wage workers were more than 10 percentage points less likely to be out of a regular wage job in 2010/11 if they practised semi-skilled or managerial/professional rather than elementary occupations (column (1b)).¹⁶ For men there seem to be no significant differences between occupation types (column (1a)). The inclusion of industry dummies in columns (2a) and (2b), whereby we exclude private household workers and take agriculture, hunting, forestry and fishing as the reference industry, suggests that men active in the construction and wholesale and retail trade sectors in 2008 were less likely to still be in regular wage employment by 2010/11.¹⁷ This seems to make sense, given the high labour intensity of these industries and the fact that, in terms of economic value added, they took a hit (trade) or stagnated (construction) during the years under consideration (see Statistics South Africa, 2013a). What is puzzling, however, is the insignificance of the marginal effect of the manufacturing industry dummy, the industry whose contribution to South African GDP suffered most during the global economic crisis and which reportedly shed thousands of workers in 2009 and 2010. Perhaps workers in the South African manufacturing sector have overall more transferable skills than, say, construction workers, which would give them an advantage in finding new employment when made redundant. On a cross-sectional level at least, QLFS data indicates some employment growth in manufacturing between 2010 and 2011, while employment in the construction sector continued to shrink (Statistics South Africa, 2012). To further investigate hypotheses about the vulnerability of certain jobs to economic slowdown, one would need more detailed data on the actual job tasks performed by individuals and/or the specific subsectors in which they are employed.

Columns (3a) and (3b) indicate that union membership is positively associated with regular wage employment in 2010/11, but only significantly so for women. For men, working under a written, and even more, under a permanent contract increases the probability of retaining regular wage employment (columns (4a) and (5a)).¹⁸ The last four columns of Table 6 ((6a) to (7b)) examine the role of work experience, proxied by the log of the number of months an individual was employed in his/her wage job prior to interview, and initial wage earnings, i.e., the log of real monthly take-home pay. Both turn out to be highly significant in explaining male and female job security, but again pose problems of collinearity in view of their correlation with age and education.

[16] We follow Cichello et al.'s (2012) classification of occupations.

[17] The significant marginal effects for men in the utility industry (in column (2a)) and women in the mining and quarrying industry (in column (2b)) should be viewed with caution because of the very small subsamples on which these estimates are based.

[18] When all contract-related variables are simultaneously incorporated in the model, only contract permanence retains its significance (for men).

Table 6: Probit estimates for regular wage employment transitions (NIDS), 2008-2010/11 (extra job variables): average marginal effects

	(1a) Male	(1b) Female	(2a) Male	(2b) Female
<i>Omitted: age 20-25</i>				
Age 26-35	0.0501 [0.0630]	0.0353 [0.0455]	0.0638 [0.0669]	0.0743 [0.0473]
Age 36-45	0.1258* [0.0705]	0.0804 [0.0500]	0.1245* [0.0743]	0.1230** [0.0525]
Age 46-55	0.0863 [0.0840]	0.0425 [0.0520]	0.0796 [0.0889]	0.1125** [0.0553]
<i>Omitted: no education</i>				
Primary education	-0.1008** [0.0431]	-0.0179 [0.0485]	-0.0695 [0.0493]	0.0029 [0.0727]
Secondary education	0.0101 [0.0511]	0.1010* [0.0551]	0.0369 [0.0580]	0.1492* [0.0788]
Tertiary education	0.0290 [0.0542]	0.1942*** [0.0611]	0.0220 [0.0642]	0.2197*** [0.0759]
<i>Omitted: Black/African</i>				
Coloured	0.0342 [0.0651]	-0.0445 [0.0587]	-0.0162 [0.0758]	-0.0100 [0.0599]
Asian/Indian	-0.0361 [0.1007]	0.1309 [0.0917]	-0.0188 [0.0935]	0.0407 [0.0808]
White	-0.0422 [0.0934]	0.0245 [0.0695]	-0.0226 [0.0881]	-0.0011 [0.0693]
Married	0.0999** [0.0411]	0.0481 [0.0326]	0.0926** [0.0416]	0.0355 [0.0345]
Household size	-0.0159*** [0.0061]	-0.0108 [0.0066]	-0.0145** [0.0063]	-0.0094 [0.0064]
Rural	-0.0501 [0.0394]	-0.1384*** [0.0379]	-0.0645 [0.0459]	-0.1732*** [0.0379]
<i>Omitted: elementary occupation</i>				
Semi-skilled	-0.0311 [0.0445]	0.1014** [0.0475]		
Managerial/professional	-0.0495 [0.0689]	0.1081** [0.0538]		
<i>Omitted: agriculture, hunting, forestry and fishing</i>				
Mining and quarrying			-0.0899 [0.0783]	0.1725*** [0.0523]
Manufacturing			-0.0285 [0.0485]	-0.0869 [0.0608]
Utilities			0.1200*** [0.0440]	
Construction			-0.2723*** [0.0735]	-0.0392 [0.0769]
Wholesale and retail trade			-0.1678** [0.0713]	-0.0181 [0.0643]
Transport, storage and communication			-0.0814 [0.0813]	-0.1041 [0.1147]
Financial intermediation, insurance, real estate and business services			-0.0854 [0.0681]	-0.0146 [0.0730]
Community, social and personal services			-0.0491 [0.0630]	-0.0225 [0.0609]
Observations	1,096	1,183	995	891

Table 6 (continued)

	(3a)	(3b)	(4a)	(4b)	(5a)	(5b)	(6a)	(6b)	(7a)	(7b)
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>Omitted: age 20-25</i>										
Age 26-35	0.0431 [0.0578]	0.0396 [0.0453]	0.0577 [0.0616]	0.0481 [0.0441]	0.0325 [0.0584]	0.0338 [0.0444]	0.0578 [0.0629]	0.0194 [0.0423]	0.0230 [0.0589]	0.0298 [0.0442]
Age 36-45	0.1271** [0.0623]	0.0747 [0.0501]	0.1430** [0.0643]	0.0829* [0.0483]	0.1149* [0.0628]	0.0763 [0.0476]	0.0884 [0.0727]	0.0296 [0.0490]	0.0915 [0.0657]	0.0517 [0.0494]
Age 46-55	0.0533 [0.0792]	0.0255 [0.0535]	0.0870 [0.0833]	0.0426 [0.0507]	0.0718 [0.0779]	0.0236 [0.0496]	0.0216 [0.0912]	-0.0745 [0.0547]	0.0360 [0.0835]	0.0062 [0.0519]
<i>Omitted: no education</i>										
Primary education	-0.0950** [0.0434]	-0.0150 [0.0464]	-0.0997** [0.0417]	-0.0002 [0.0480]	-0.0919** [0.0421]	-0.0032 [0.0477]	-0.0983** [0.0445]	-0.0197 [0.0540]	-0.1086*** [0.0385]	-0.0459 [0.0439]
Secondary education	0.0121 [0.0504]	0.1193** [0.0508]	-0.0074 [0.0506]	0.1480*** [0.0544]	0.0139 [0.0502]	0.1347** [0.0565]	-0.0199 [0.0523]	0.1465*** [0.0528]	-0.0414 [0.0508]	0.0437 [0.0501]
Tertiary education	0.0135 [0.0551]	0.2055*** [0.0509]	0.0027 [0.0532]	0.2459*** [0.0525]	0.0235 [0.0544]	0.2419*** [0.0542]	0.0048 [0.0568]	0.2317*** [0.0507]	-0.0659 [0.0601]	0.0981* [0.0570]
<i>Omitted: Black/African</i>										
Coloured	0.0392 [0.0638]	-0.0522 [0.0599]	0.0414 [0.0631]	-0.0385 [0.0587]	0.0326 [0.0598]	-0.0489 [0.0596]	0.0277 [0.0698]	-0.0781 [0.0644]	0.0447 [0.0598]	-0.0682 [0.0603]
Asian/Indian	0.1012 [0.0710]	0.0442 [0.1081]	0.0947 [0.0736]	0.0403 [0.1010]	0.0804 [0.0821]	0.029 [0.1118]	-0.0426 [0.1032]	0.0026 [0.1136]	-0.1039 [0.1086]	-0.0829 [0.0960]
White	-0.0395 [0.0868]	0.0547 [0.0672]	-0.0363 [0.0864]	0.0484 [0.0702]	-0.0737 [0.0945]	0.0585 [0.0660]	0.0158 [0.0818]	0.0074 [0.0686]	-0.1079 [0.1012]	-0.0372 [0.0753]
Married	0.0969** [0.0389]	0.0426 [0.0347]	0.0892** [0.0381]	0.0493 [0.0348]	0.0962** [0.0393]	0.0321 [0.0338]	0.0722* [0.0424]	0.0312 [0.0356]	0.0728* [0.0408]	0.0330 [0.0346]
Household size	-0.0153*** [0.0058]	-0.0118* [0.0070]	-0.0143** [0.0059]	-0.0109 [0.0072]	-0.0136** [0.0059]	-0.0106 [0.0072]	-0.0131* [0.0070]	-0.0096 [0.0077]	-0.0131** [0.0060]	-0.0110* [0.0065]
Rural	-0.0491 [0.0403]	-0.1484*** [0.0377]	-0.0529 [0.0403]	-0.1465*** [0.0381]	-0.0635 [0.0397]	-0.1359*** [0.0385]	-0.0482 [0.0439]	-0.1345*** [0.0377]	-0.0194 [0.0398]	-0.1128*** [0.0396]
Union member	0.0548 [0.0371]	0.0981*** [0.0374]								
Written contract			0.0710* [0.0384]	0.0341 [0.0292]						
<i>Omitted: limited contract duration</i>										
Unspecified contract duration					0.0499 [0.0728]	0.0157 [0.0746]				
Permanent contract					0.1609** [0.0720]	0.1010 [0.0620]				
Months in wage employment (log)							0.0381*** [0.0128]	0.0556*** [0.0124]		
Monthly take-home pay (log)									0.0812*** [0.0231]	0.1011*** [0.0231]
Observations	1,092	1,179	1,110	1,192	1,117	1,190	954	1,023	1,122	1,199

Source: Own calculations using NIDS data.

Notes: Average marginal effects based on survey-weighted binary probit regressions where dependent variable takes value 1 if individual was in regular wage employment in both periods and 0 if only in the first. Sample includes only panel members aged 20-55 who were in regular wage employment in 2008. All models include province dummies (not reported). Survey design-adjusted standard errors in brackets. Significance levels: ***1% **5% *10%.

Our results suggest that not only the external economic environment, but also individual or household decisions about labour supply played an important role in South African labour markets over the course of 2008-2011, given the significance for continued employment of factors such as household size and marital status. It seems, nevertheless, difficult to argue that all, or even most transitions out of employment are voluntary. In fact, a simple comparison between those leaving (wage) employment and those remaining (wage) employed of changes in self-perceived life satisfaction and economic status, as well as differences between the economic status anticipated in 2008 and the actual (subjective) economic status in 2010/11, shows that these changes are significantly more likely to be favourable for the latter group (see Table A7 in Appendix). While this is certainly no proof of causality from employment transition outcomes to subjective well-being, it does signal that these transitions are not purely driven by 'free choice' and hints at some unexpectedness of job loss.

One important limitation of the analysis so far is that the NIDS data at hand only provides information on labour market transitions between two points in time. Hence we cannot directly attribute the nature of the transitions we have examined to the global economic crisis and its recessionary effects on the South African economy. It could be that these transitions and their determinants are rather typical of how South African labour markets function, both in 'normal' and more difficult economic times. Also, the design of NIDS requires us to adopt a medium-term view on labour market transitions. The two-year(-plus) time span between the 2008 and 2010/11 NIDS waves may hide a lot of short-term churning across labour market states. Therefore, in the next section we will compare our NIDS findings with results coming from another, higher-frequency longitudinal dataset, i.e., a panel constructed from repeated QLFS cross-sections.

4. EVIDENCE FROM MATCHED QUARTERLY LABOUR FORCE SURVEY (QLFS) CROSS-SECTIONS

4.1. Structure of the dataset and descriptives

The QLFS is a household-based survey which collects information on the labour market activity of individuals aged 15 or older and is implemented by Statistics South Africa.¹⁹ It was launched in 2008 as a replacement for its semi-annual predecessor, the Labour Force Survey (LFS). The QLFS is designed as a rotating panel with a total sample size of around 30,000 dwellings, divided into four equally sized rotation groups. Each quarter, 25% of the dwellings rotate out of the sample and are replaced by new dwellings from the same or the next PSU on a master list. This implies that, in principle, each dwelling remains in the sample for four consecutive quarters. However, the unit of observation is the household rather than the dwelling; if one household moves out of a particular dwelling and another moves in after two quarters, it is the new household that will be enumerated for the remaining two quarters.

Using the QLFS as a longitudinal dataset of individuals is not straightforward, as household identifiers are generally maintained across quarters but individual identifiers not necessarily so. To get around this problem we use a matching on observable demographic characteristics approach, similar to the one developed by Ranchod and Dinkelman (2008) for the earlier LFS. Our matching algorithm is the following:

Step 1: After appending all QLFS cross-sections (quarters), sort the resulting dataset on household identifier and quarter and drop households that appear only once;

Step 2: For each quarter and within the same household, drop individuals that have the same race, gender and ages differing by at most one year. These ‘(almost) twins’ cannot be uniquely matched between quarter t and quarter $t+1$;

Step 3: Match the remaining individuals across quarter t and quarter $t+1$ using the household identifier, gender, race and $age_t = age_{t+1}$;

Step 4: Match individuals (not yet matched in Step 3) across quarter t and quarter $t+1$ using the household identifier, gender, race and $age_t + 1 = age_{t+1}$;

Step 5: Keep only the individuals matched in Steps 3 and 4. They constitute the ‘expanded match’ panel;

Step 6: Impose additional consistency requirements on the ‘expanded match’ panel. Drop individuals whose level of educational attainment differs between quarter t and quarter $t+1$ or whose marital status changes from ‘married’, ‘widowed’ or ‘divorced’ in quarter t to ‘never married’ in quarter $t+1$. The remaining subset of individuals is the ‘strict match’ panel.

Starting from a total sample of 1,087,829 observations for working-age individuals in 20 quarters of QLFS data (2008Q1-2012Q4), the above matching algorithm leaves us with a ‘strict match’ panel dataset of 760,847 observations. We calculate that the average matching rate is 68.8%, compared to 38% reported in Ranchod and Dinkelman (2008) (for 5 semesters of the LFS 2001-2003) and 48.7% in Verick (2012) (for QLFS 2008Q1-2010Q4).

[19] See <http://www.statssa.gov.za/qlfs/index.asp> for more details about the QLFS. As with the NIDS, all QLFS data can be downloaded from DataFirst’s online data portal.

As explained by Ranchod and Dinkelman (2008), a number of issues arise when matching. First, the matched individuals may not be a random subsample of the pooled QLFS cross-sections and therefore not representative of South Africa's population. To the extent that attrition between quarters is correlated with observable characteristics, we can use inverse probability weighting (IPW) techniques to counter the bias caused by non-random matching (see e.g., Wooldridge, 2002: 587-590 on IPW). Probit estimations for each quarter separately indicate that individuals that are older, female, non-African, married, better-educated and live in smaller households are generally more likely to be matched to the next quarter (results not shown). Second, matching could be correlated with unobservable characteristics that are not well proxied by observable variables. This matters because, assuming that labour market transitions are more prevalent among individuals that move, 'the stability of individuals who are matched may lead us to overestimate persistence' (Ranchod and Dinkelman, 2008: 7). Third, even with the consistency checks in our algorithm, we cannot completely rule out false matches in our constructed panels. Random false matches are likely to lead to an *underestimation* of persistence in labour market states.

Bearing these limitations in mind, let us again look at transition matrices. Table 7 compiles quarter-to-quarter transition rates across the five labour market states identified in the QLFS: 'formal sector employment' (with formality based on criteria of company size and registration for VAT and income tax), 'informal sector employment', 'searching unemployed', 'discouraged unemployed' and 'NEA'. Transitions from Q1 to Q2, Q2 to Q3 and Q3 to Q4 are pooled and compared over the years 2008 to 2012 (cf. Verick, 2012). All figures are weighted using the standard QLFS cross-sectional weights multiplied by the inverse of the match probability predicted by the IPW probits mentioned above.²⁰ As with NIDS, we restrict ourselves to panel members aged 20-55 in quarter t.

As expected, we find that quarter-to-quarter movement between different labour market statuses is much more limited than two-year mobility (cf. Table 3), although there is no strict correspondence between the different employment categories in NIDS and QLFS. Still, we find that labour market states are far from stable. Especially job search decisions seem to change quite a bit from one quarter to the next (with discouraged unemployment being the least stable state). Another important observation is that labour market states have become progressively more 'absorbing' during the recession (2009) and in its aftermath (2010-2012). This works in two directions; the prevalence of transitions from unemployment into employment states has fallen over 2008-2012, while movement from formal and informal sector employment to strict unemployment has also come down, albeit to a lesser extent. It therefore seems that the overall net increases in unemployment rates apparent from Table 1 are driven more by reduced inflows into employment than by increased outflows (cf. Verick, 2012).

Tables A8-A9 in Appendix redo the above exercise for men and women separately. Formal sector employment and unemployment are more stable for men than for women, whereas informal sector employment and NEA are steadier states for women (in line with NIDS data; cf. Tables A3-A4). For both sexes we again note an overall, gradual rise in labour market status persistence from 2008 to 2012.

[20] Our IPW probits include as regressors: initial labour market status, five-year age group dummies, race, gender, household size, marital status, educational attainment, geography type and province dummies.

Table 7: Transition matrices for labour market status (QLFS), 2008Q1-2012Q4: row proportions (%)

Labour market status in quarter t	Labour market status in quarter t+1																													
	Formal sector employment				Informal sector employment				Unemployed, searching				Unemployed, discouraged				NEA													
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012					
Formal sector employment	91.0	92.0	92.5	92.7	92.7	3.9	3.3	3.2	3.1	3.1	2.8	2.9	2.3	2.4	2.3	0.5	0.5	0.6	0.7	0.7	1.8	1.3	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Informal sector employment	12.2	10.3	10.0	9.5	9.8	74.4	76.9	79.4	80.1	79.0	6.3	5.5	4.5	4.8	4.8	1.7	2.5	2.3	2.2	2.7	5.5	4.8	3.8	3.3	3.8	3.8	3.8	3.8	3.3	3.8
Unemployed, searching	9.9	7.2	5.6	5.6	6.3	6.8	5.0	5.1	4.1	4.3	62.2	65.5	68.0	69.5	70.1	5.5	7.1	8.4	7.9	7.2	15.6	15.2	13.0	13.0	12.2	12.2	12.2	12.2	13.0	12.2
Unemployed, discouraged	6.4	4.1	3.3	3.6	3.3	6.8	5.0	5.3	3.9	4.1	18.6	17.7	16.1	15.8	14.7	43.9	52.0	55.8	58.5	60.9	24.4	21.3	19.5	18.3	17.0	17.0	17.0	17.0	18.3	17.0
NEA	2.7	1.8	1.8	1.8	1.8	3.4	2.6	2.0	1.7	1.9	10.3	9.6	9.0	8.8	8.5	4.2	5.3	6.3	6.7	6.2	79.5	80.8	80.9	80.9	81.6	81.6	81.6	81.6	80.9	81.6

Source: Own calculations using QLFS data matched on observable individual characteristics.

Notes: Quarter-to-quarter transition rates (Q1 to Q2, Q2 to Q3, and Q3 to Q4) per year for 2008-2012. Sample includes only panel members aged 20-55 in quarter t. All figures have been weighted using QLFS cross-sectional weights for quarter t multiplied by the inverse of the estimated match probability from quarter t to quarter t+1.

Mobility measures in Table A10 in Appendix show that 18% of all 20-55 year-old individuals changed labour market status between quarters in 2012, compared to 21% in 2008. This decline is present in all components of mobility, with the exception of mobility within non-employment, and is, indeed, largest for upward mobility. Female mobility trumps that of men in all years, mostly due to greater within non-employment movement. Because of a faster decline in female mobility, however, the gender gap has narrowed since 2008.

It is one thing to study the evolution of transition rates across different labour market states over time; exposing the determinants of these transitions and any changes therein is another. This is what we set out to do in the next section of the paper.

4.2. Model estimates and discussion

As in Section 3 we limit ourselves for the matched QLFS to a simple binary probit analysis of the determinants of continued employment for 20-55 year-old workers. Our dependent variable assigns a value of 1 to individuals that remain in formal sector employment from one quarter to the next and 0 to those that move out of formal sector employment between quarters. We make abstraction of individuals that are initially not employed in the formal sector. To the extent possible we include in our models the same regressors we used in Table 6 for the NIDS data on regular wage employment, i.e., basic demographic characteristics, geographical and job-specific variables. Table 8 presents the average marginal effects for these probit models, again estimated separately for men and women and with transitions from Q1 to Q2, Q2 to Q3, and Q3 to Q4 pooled for each year over 2008-2012. Survey-design adjusted standard errors are suppressed to save space. Also, for brevity reasons, only four types of specifications are reported. Because of the potential problems with matching we outlined earlier, the following results should be interpreted with caution.

The baseline specifications in columns (1a) and (1b) of Table 8 show communalities with those we estimated using NIDS, but also some noticeable differences (cf. Table 5). One striking result is the importance of secondary and tertiary education for remaining employed in the formal sector for both sexes, something also observed in NIDS for regularly employed women. According to the QLFS data the strength of higher education's buffering effect has decreased over the years, especially in the case of women, but remains statistically significant throughout the whole period. Formal sector job persistence increases with age, right up to the 46-55 age group, while in NIDS it seemed more concentrated in the 36-45 age group. Before and during the recession (2008-2009), partial correlations between age and job persistence were quantitatively much stronger for female workers than for male workers, but in the following years (2010-2012) a convergence in these correlations appears to have occurred. Unlike in NIDS we find some significant racial differences in staying (formally) employed, most clearly between White and Black males. Part of this discrepancy may be due to the high attrition rates of Whites in NIDS, as suggested earlier. Conversely, positive associations of continued employment with being married (for men) and negative associations with household size and rural residence seem to correspond well with what we found before.

Table 8: Probit estimates for formal sector employment transitions (QLFS), 2008Q1-2012Q4: average marginal effects

	(1a)					(1b)					(1c)					(1d)					
	Male	Female	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	
Omitted: age 20-25																					
Age 26-35	0.0153*	0.0174*	0.0300***	0.0291***	0.0361***	0.0563***	0.0513***	0.0186*	0.0490***	0.0292**	0.0152*	0.0157	0.0278***	0.0270**	0.0348***	0.0550***	0.0483***	0.0194	0.0483***	0.0282**	
Age 36-45	0.0329***	0.0273***	0.0577***	0.0393***	0.0499***	0.0807***	0.0622***	0.0474***	0.0498***	0.0492***	0.0325***	0.0268***	0.0546***	0.0358***	0.0486***	0.0781***	0.0562***	0.0472***	0.0493***	0.0478***	
Age 46-55	0.0391***	0.0399***	0.0572***	0.0518***	0.0506***	0.0901***	0.0941***	0.0688***	0.0527***	0.0591***	0.0386***	0.0383***	0.0535***	0.0478***	0.0490***	0.0865***	0.0879***	0.0652***	0.0515***	0.0572***	
Omitted: no education																					
Primary education	0.0082**	0.0013	0.0237*	0.0084	0.0059	0.0521**	0.0503**	0.0056	-0.0077	-0.0190	0.0273**	-0.0024	0.0185	0.0025	0.0049	0.0372	0.0354*	0.0003	-0.0123	-0.0219	
Secondary education	0.0741***	0.0454***	0.0651***	0.0398**	0.0483***	0.1285***	0.0999***	0.0533***	0.0406**	0.0279**	0.0717***	0.0398***	0.0547***	0.0275*	0.0443***	0.1011***	0.0731***	0.0441**	0.0293	0.0302*	
Tertiary education	0.1036***	0.0813***	0.0891***	0.0797***	0.0788***	0.1770***	0.1483***	0.0997***	0.0859***	0.0723***	0.0990***	0.0771***	0.0786***	0.0642***	0.0743***	0.1442***	0.1523***	0.0998***	0.0752***	0.0617***	
Other education	-0.0224	0.0526*	0.0537**	0.0106	0.0682***	0.1837***	0.1508***	-0.0491	0.0702*	-0.0726	-0.0230	0.0465*	0.0451**	-0.0023	0.0653**	0.1865***	0.1248***	-0.0599	0.0609	-0.0797	
Omitted: Black/African																					
Coloured	0.0098	0.0152	0.0356***	0.0034	0.0209**	0.0437***	0.0272**	0.0281***	0.0110	-0.0032	0.0092	0.0148	0.0354***	0.0028	0.0208**	0.0418***	0.0248**	0.0276**	0.0101	-0.0043	
Asian/Indian	0.0068	0.0368***	0.0034	0.0098	0.0336***	0.0184	0.0312*	0.0276*	0.0170	0.0131	0.0053	0.0366***	-0.0001	0.0046	0.0345**	0.0196	0.0267	0.0256	0.0144	0.0106	
White	0.0187*	0.0369***	0.0442**	0.0243***	0.0468***	0.0085	0.0080	0.0293***	0.0071	-0.0100	0.0165	0.0368***	0.0412**	0.0180*	0.0457***	0.0031	0.0066	0.0278***	0.0043	-0.0133	
Married	0.0484***	0.0396***	0.0402***	0.0334***	0.0351***	0.003	-0.0006	0.0046	0.0103	0.0013	0.0478***	0.0340***	0.0390***	0.0319***	0.0342***	0.0000	-0.0019	0.0041	0.0099	0.0003	
Household size	-0.0065***	-0.0048***	-0.0069***	-0.0082***	-0.0038***	-0.0089***	-0.0032**	-0.0047***	-0.0049***	-0.0051***	-0.0065***	-0.0048***	-0.0070***	-0.0082***	-0.0038***	-0.0090***	-0.0031**	-0.0047***	-0.0048***	-0.0051***	
Rural	-0.0100	0.0033	-0.0103	-0.0144*	-0.0232***	-0.0111	-0.0213**	-0.0139	-0.0174*	-0.0265***	0.0103	0.0065	-0.0074	-0.0116	-0.0214***	-0.0087	-0.0200**	-0.0130	-0.0167*	-0.0260***	
Omitted: elementary occupation																					
Semi-skilled																					
Managerial/professional																					
Observations	12,063	12,441	12,438	11,561	12,564	9,100	9,789	9,779	9,538	10,079	12,062	12,441	12,438	11,561	12,564	9,099	9,789	9,779	9,358	10,079	

Table 8 (continued)

	(3a) Male				(3b) Female				(4a) Male				(4b) Female			
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	
Omitted: age 20-25																
Age 26-35	0.0115	0.0158	0.0278**	0.0296***	0.0350***	0.0516***	0.0500***	0.0173	0.0480***	0.0275**	0.0022	0.0043	0.0163*	0.0145	0.0276***	
Age 36-45	0.0250**	0.0231**	0.0538***	0.0392***	0.0471***	0.0714***	0.0582***	0.0442***	0.0473***	0.0457***	0.0131	0.0098	0.0371***	0.0166	0.0355***	
Age 46-55	0.0308***	0.0342***	0.0519***	0.0498***	0.0460***	0.0766***	0.0897***	0.0644***	0.0491***	0.0528***	0.0149	0.0179*	0.0322***	0.0251**	0.0311***	
Omitted: no education																
Primary education	0.0238*	0.0015	0.0218*	0.0104	0.0100	0.0314	0.0189	-0.0075	-0.0144	-0.0303*	0.0138	-0.0057	0.0096	-0.0002	0.0061	
Secondary education	0.0617***	0.0398***	0.0556***	0.0352**	0.0445***	0.0998***	0.0610***	0.0372**	0.0305	0.0210	0.0393***	0.0207*	0.0303***	0.0079	0.0302**	
Tertiary education	0.0874***	0.0730***	0.0775***	0.0725***	0.0718***	0.1433***	0.1111***	0.0839***	0.0758***	0.0525***	0.0629***	0.0541***	0.0523***	0.0415***	0.0542***	
Other education	-0.0242	0.0477*	0.0547***	0.0095	0.0666***	0.1546***	0.1139***	-0.0667	0.0611	-0.0862	-0.0123	0.0333	0.0351*	-0.0282	0.0725***	
Omitted: Black/African																
Coloured	0.0088	0.0132	0.0328***	0.0008	0.0169*	0.0447***	0.0278***	0.0257**	0.0126	-0.0010	-0.0092	0.0021	0.0245***	-0.0050	0.0182*	
Asian/Indian	0.0057	0.0361***	0.0023	0.0107	0.0357***	0.0212	0.0278	0.0263	0.0189	0.0148	0.0031	0.0339***	-0.0055	0.0083	0.0338**	
White	0.0222**	0.0370***	0.0444***	0.0265***	0.0477***	0.0120	0.0075	0.0310***	0.0097	-0.0078	0.0218**	0.0388***	0.0431***	0.0224**	0.0488***	
Married	0.0498***	0.0334***	0.0375***	0.0304***	0.0341***	0.0010	-0.0003	0.0045	0.0091	0.0006	0.0366***	0.0253***	0.0308***	0.0168**	0.0272***	
Household size	-0.0063***	-0.0047***	-0.0068***	-0.0081***	-0.0035***	-0.0090***	-0.0032**	-0.0046***	-0.0050***	-0.0055***	-0.0057***	-0.0041***	-0.0064***	-0.0071***	-0.0032***	
Rural	-0.0141	-0.0024	-0.0134*	-0.0217***	-0.0319***	-0.0006	-0.0088	-0.0091	-0.0139	-0.0226**	-0.0112	-0.0002	-0.0161**	-0.0167**	-0.0298***	
Omitted: elem. occup.																
Semi-skilled																
Managerial/professional																
Omitted: agricult. et al.																
Mining and quarrying	0.0509***	0.0254**	0.0364**	0.0169	0.0098	0.0966***	0.1333***	0.0833***	0.0833***	0.0846***	0.0261*	-0.0095	0.0137	-0.0294**	-0.0291**	
Manufacturing	0.0129	-0.0070	0.0040	-0.0038	-0.0153	0.0476**	0.0716***	0.0525***	0.0220	0.0338	-0.0044	-0.0309***	-0.0193**	-0.0280***	-0.0375***	
Utilities	0.0093	0.0065	0.0015	0.0175	-0.0108	-0.0861	0.0546	0.0629**	-0.0092	0.0960***	-0.0166	-0.0167	-0.0304	-0.0108	-0.0379	
Construction	-0.0750***	-0.0658***	-0.0757***	-0.0639***	-0.0826***	0.0005	-0.0190	-0.0392	0.0148	0.0204	-0.0459***	-0.0516***	-0.0600***	-0.0517***	-0.0628***	
Wholes. and retail trade	-0.0197	-0.0250*	-0.0122	-0.0285***	-0.0336***	0.0155	0.0562***	0.0182	0.0240	0.0270	-0.0295**	-0.0373***	-0.0256***	-0.0403***	-0.0437***	
Transport et al.	-0.0314*	-0.0320**	-0.0374**	-0.0523***	-0.0518***	0.0351	0.0771***	0.0302	0.0314	0.0605**	-0.0306**	-0.0371***	-0.0421***	-0.0515***	-0.0515***	
Financial intermed. et al.	-0.0214	-0.0175	-0.0066	-0.0082	-0.0182	0.0347*	0.0795***	0.0200	0.0237	0.0280	-0.0374***	-0.0344***	-0.0309***	-0.0272***	-0.0323***	
Comm. et al. services	0.0267**	0.0035	0.0092	0.0056	-0.0030	0.0577***	0.0607***	0.0560	0.0366*	0.0458**	0.0025	-0.0198*	-0.0155	-0.0261***	-0.0306***	
Union member																
Written contract																
Omitted: lim. contract dur.																
Unspec. contract dur.																
Permanent contract																
Observations	12,062	12,436	12,436	11,557	12,560	9,097	9,786	9,774	9,260	10,078	12,061	12,436	12,436	11,318	12,249	

Source: Own calculations using QJFS data matched on observable individual characteristics.

Notes: Average marginal effects based on survey-weighted binary probit regressions where dependent variable takes value 1 if individual was in formal sector employment in both quarter t and quarter t+1 and 0 if only in quarter t. Sample includes only panel members aged 20-55 who were in formal sector employment in quarter t. Results for transitions from Q1 to Q2, Q2 to Q3, and Q3 to Q4 are pooled per year for 2008-2012. All models include province dummies (not reported). Significance of point estimates based on survey design-adjusted standard errors (not reported). Significance levels: ***1% **5% *10%.

In columns (2a)-(3b) we add, in turn, occupation type and sector dummies. There is some evidence of semi-skilled and professional workers being more likely to stay in the formal sector than elementary workers. For male workers this is most evident in 2009-2011 and for women in 2008-2009. Focusing on the sector of male employment, working in construction stands out as being negatively associated with job security over the whole 2008-2012 period (cf. NIDS), with no clear trend in the strength of the effect. Negative correlations of the wholesale and retail trade sector and transport, storage and communication cluster show themselves most clearly in 2011-2012. Unexpectedly, mining correlates positively with male formal sector employment persistence in 2008-2010. For female workers the likelihood of keeping a job from one quarter to the next is especially greater in the community, social and personal services sector (by far the most common sector of formal employment for women) and in manufacturing.²¹ In 2009 female job security was significantly higher in almost every single sector compared to agriculture and related activities.

Finally, in columns (4a) and (4b) a full set of job-specific variables is included at once: occupation types, sector, contract type, contract duration and trade union membership. This last variable is, however, only available in the QLFS data from 2010Q3 onwards and therefore excluded from the 2008-2010 estimations.²² Male and female individuals that work under a written and/or permanent contract or that are union members have higher chances of continued formal sector employment (largely in line with NIDS findings). There are no clear time trends in the strength of association of these variables with the outcome variable, except a small decline in the importance of having a permanent contract. Moreover, and despite obvious multicollinearity issues, most results which we reported for columns (1a)-(3b) seem to withstand the simultaneous inclusion of job-specific variables. We still find evidence of higher education's protection against transitions out of formal sector employment. One noticeable change is with respect to the sector dummies for male workers; once we control for contract-related variables, almost all sectors appear to underperform in terms of employment persistence relative to agriculture (where verbal and non-permanent contracts are comparatively common).

[21] The significant marginal effects for female miners are again based on very small subsamples.

[22] Moreover, the union variable contains quite a number of difficult-to-classify values, which results in smaller sample sizes for the regressions where it is included.

5. CONCLUSIONS

This paper has studied South African labour market transitions and their determining factors during the global financial and economic crisis, employing two longitudinal, individual-level datasets: first, the NIDS, a nation-wide, multipurpose panel survey dataset with waves in 2008 and 2010/11; and second, a quarterly panel created by matching QLFS cross-sections over 2008Q1-2012Q4. These datasets have allowed us to look at gross changes in labour market participation, complementing earlier, cross-sectional studies, and to gauge the demographic, geographical and job-specific characteristics associated with staying employed, or not, in South Africa during the zenith and aftermath of the global crisis.

While some of our results need to be subjected to further scrutiny, and keeping in mind the limitations of the data at hand, a number of findings are worth mentioning at this stage. First of all, building on Cichello et al. (2012) for NIDS and Verick (2012) for QLFS, we find considerable mobility in South African labour markets over the crisis period, in and out of employment as well as within different employment and non-employment states, in line with longitudinal research considering earlier time periods.

Second, whereas transitions out of employment are partly the result of conscious labour supply decisions, also the external environment seems to play an important role. In NIDS and the matched QLFS we find evidence suggesting that the likelihood of continued employment, whether evaluated over a two-year period or from one quarter to the next, differs significantly between particular types of workers. From both datasets it appears that younger and less-educated workers are more likely to transition out of employment. Evidence on racial differences is mixed and may be blurred by non-random sample attrition in the data. Being a trade union member and working under a written and/or permanent contract significantly increase one's chances of staying in regular wage work and formal sector employment. *Ceteris paribus*, construction and wholesale and retail trade, but not manufacturing, seem to have been the sectors with the least job security for male workers. A simple comparison between those leaving employment and those remaining employed of changes in subjective measures of life satisfaction and economic status from NIDS further supports the hypothesis that transitions out of employment were, to some degree, unexpected and not entirely driven by individual or household choice.

Third, closer examination of the evolution over time of quarter-to-quarter transition rates between labour market states learns that mobility gradually decreased over the 2008-2012 period, and confirms Verick's (2012) finding that net increases in unemployment rates during the crisis are to be ascribed more to reduced inflows into employment than a rise in outflows. Focusing again, however, on the determinants of staying employed, we do find time variation in the economic significance of some demographic and job-specific explanatory variables. For example, according to our QLFS estimates, the strength of the buffering effects of higher education and of having a permanent contract diminished over the years under consideration. It could be that better-educated workers (often trained on the job) are only made redundant when the economy remains sluggish over a longer period, as it may cost companies much effort and money to hire and train similar workers once economic prospects turn favourable again. Less-educated workers may be dismissed first, because they are easier to replace in the future. Such speculative hypotheses would need to be further tested. In any case, it seems not straightforward to link the time-varying strength of job security correlates directly to the evolution of South Africa's economy over the course of the crisis.

There are several directions in which this research could be extended. One obvious extension is to study in greater detail other labour market transitions with NIDS and QLFS, including the factors that hinder or help the unemployed in South Africa finding a job during the crisis (see e.g., Posel et al., 2012 on NIDS). Another interesting avenue would be to use more detailed information on job tasks and/or specific subsectors to further disentangle the vulnerability of particular types of workers. Lastly, we expect the third wave of the NIDS panel (not available at the time of writing) and a better-matched QLFS panel (under preparation by Statistics South Africa) to further contribute to our understanding of how labour market transitions may vary along with South Africa's economic performance.

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APPENDIX

Table A1: Transition matrix for labour market status (NIDS; male only), 2008-2010/11: row proportions (%)

		Labour market status in 2010/11				
		63.0	10.6	4.0	22.4	
Labour market status in 2008		Employed	Unemployed, searching	Unemployed, discouraged	NEA	
	65.9	Employed	77.5	6.7	3.3	12.5
	15.0	Unemployed, searching	38.7	22.3	3.2	35.9
	3.8	Unemployed, discouraged	44.1	13.6	12.0	30.3
	15.4	NEA	29.2	14.9	5.9	50.0

Source: Own calculations using NIDS data.

Notes: Sample includes only male panel members aged 20-55 in 2008. All figures have been weighted using panel survey weights that account for between-wave attrition. Outer left column (top row) gives the overall proportions of each category in 2008 (2010/11).

Table A2: Transition matrix for labour market status (NIDS; female only), 2008-2010/11: row proportions (%)

		Labour market status in 2010/11				
		42.0	13.0	5.6	39.4	
Labour market status in 2008		Employed	Unemployed, searching	Unemployed, discouraged	NEA	
	44.2	Employed	65.4	6.7	3.2	24.7
	21.0	Unemployed, searching	29.1	21.2	8.2	41.6
	8.0	Unemployed, discouraged	22.7	19.5	10.3	47.5
	26.8	NEA	19.2	15.1	6.2	59.5

Source: Own calculations using NIDS data.

Notes: Sample includes only female panel members aged 20-55 in 2008. All figures have been weighted using panel survey weights that account for between-wave attrition. Outer left column (top row) gives the overall proportions of each category in 2008 (2010/11).

Table A3: Transition matrix for detailed labour market status (NIDS; male only), 2008-2010/11: row proportions (%)

		Labour market status in 2010/11						
		50.1	6.6	6.2	10.6	4.0	22.5	
		Regular wage employ.	Self-employ.	Casual and other employ.	Unemploy. searching	Unemploy. disc.	NEA	
Labour market status in 2008	48.7	Regular wage employment	77.9	4.2	4.1	5.1	2.5	6.2
	7.6	Self-employment	22.2	31.2	8.2	8.3	4.4	25.7
	9.6	Casual and other employment	27.5	7.5	10.6	14.0	6.4	34.1
	14.9	Unemployed, searching	26.1	3.8	8.4	22.4	3.2	36.1
	3.8	Unemployed, discouraged	26.3	5.3	12.9	13.7	12.0	29.8
	15.4	NEA	18.7	4.9	5.6	14.9	5.9	50.0

Source: Own calculations using NIDS data.

Notes: Sample includes only male panel members aged 20-55 in 2008. All figures have been weighted using panel survey weights that account for between-wave attrition. Outer left column (top row) gives the overall proportions of each category in 2008 (2010/11).

Table A4: Transition matrix for detailed labour market status (NIDS; female only), 2008-2010/11: row proportions (%)

		Labour market status in 2010/11						
		32.8	5.5	3.6	13.0	5.6	39.4	
		Regular wage employ.	Self-employ.	Casual and other employ.	Unemploy. searching	Unemploy. disc.	NEA	
Labour market status in 2008	29.0	Regular wage employment	74.6	2.0	2.1	5.5	3.0	12.9
	7.2	Self-employment	12.5	36.1	3.2	7.4	1.2	39.6
	7.9	Casual and other employment	21.2	5.5	2.4	10.5	5.8	54.6
	21.0	Unemployed, searching	19.5	4.0	5.6	21.2	8.2	41.6
	8.0	Unemployed, discouraged	15.3	2.5	4.8	19.5	10.3	47.5
	26.8	NEA	12.1	3.3	3.9	15.1	6.2	59.5

Source: Own calculations using NIDS data.

Notes: Sample includes only female panel members aged 20-55 in 2008. All figures have been weighted using panel survey weights that account for between-wave attrition. Outer left column (top row) gives the overall proportions of each category in 2008 (2010/11).

Table A5: Labour market mobility measures and decomposition (NIDS), 2008-2010/11

Panel A: Measures for labour market status transitions

	Immobility	Mobility			
		overall	upward (into employment)	downward (out of employment)	within non-employment
All adults	55.2	44.8	12.6	15.1	17.1
Male	62.5	37.5	12.0	14.8	10.7
Female	50.1	49.9	13.1	15.3	21.5

Panel B: Measures for labour market status transitions (detailed)

	Immobility	Mobility				
		overall	upward (into employment)	downward (out of employment)	within non-employment	within employment
All adults	48.6	51.4	12.6	15.1	17.1	6.6
Male	52.9	47.1	11.9	14.8	10.7	9.7
Female	45.7	54.3	13.1	15.3	21.5	4.4

Source: Own calculations using NIDS data.

Notes: Based on transition matrices Tables 2-3 and Tables A1-A4. For decomposition method, see main text (Section 3.1).

Table A6: Summary statistics for main explanatory variables 2008 (NIDS), by gender and employment transition outcome in 2010/11

	Male			Female			Male			Female		
	Not employed	Employed	F-stat.	Not employed	Employed	F-stat.	Not wage employed	Wage employed	F-stat.	Not wage employed	Wage employed	F-stat.
Age 20-25	0.2609 [0.0303]	0.1399 [0.0163]		0.1388 [0.0186]	0.1210 [0.0166]		0.2284 [0.0358]	0.1167 [0.0169]		0.1431 [0.0238]	0.1248 [0.0209]	
Age 26-35	0.3525 [0.0352]	0.3630 [0.0207]	5.59***	0.3136 [0.0242]	0.3316 [0.0205]	1.07	0.4281 [0.0467]	0.3793 [0.0245]	4.62***	0.3273 [0.0359]	0.3368 [0.0241]	0.80
Age 36-45	0.1972 [0.0259]	0.3033 [0.0197]		0.2833 [0.0247]	0.3219 [0.0193]		0.1963 [0.0283]	0.3227 [0.0235]		0.2734 [0.0307]	0.3232 [0.0229]	
Age 46-55	0.1894 [0.0301]	0.1938 [0.0180]		0.2643 [0.0208]	0.2255 [0.0182]		0.1471 [0.0340]	0.1812 [0.0191]		0.2562 [0.0339]	0.2153 [0.0185]	
No education	0.2335 [0.0280]	0.1450 [0.0163]		0.2551 [0.0201]	0.1187 [0.0119]		0.1015 [0.0181]	0.1349 [0.0193]		0.2044 [0.0249]	0.0987 [0.0128]	
Primary edu.	0.5112 [0.0369]	0.3519 [0.0226]	11.94***	0.4712 [0.0254]	0.3405 [0.0201]	29.95***	0.4799 [0.0443]	0.3277 [0.0254]	3.92**	0.5213 [0.0392]	0.2985 [0.0236]	21.15***
Second.edu.	0.1884 [0.0268]	0.2863 [0.0229]		0.1950 [0.0222]	0.2604 [0.0171]		0.2634 [0.0388]	0.3005 [0.0265]		0.1921 [0.0292]	0.2868 [0.0220]	
Tertiary edu.	0.0669 [0.0202]	0.2168 [0.0240]		0.0787 [0.0160]	0.2804 [0.0257]		0.1552 [0.0377]	0.2369 [0.0280]		0.0822 [0.0211]	0.3160 [0.0277]	
Black/Afr.	0.9192 [0.0235]	0.7545 [0.0318]		0.8246 [0.0329]	0.7011 [0.0360]		0.8222 [0.0415]	0.7490 [0.0347]		0.7962 [0.0379]	0.6828 [0.0390]	
Coloured	0.0451 [0.0147]	0.0955 [0.0190]	8.20***	0.0983 [0.0208]	0.1072 [0.0214]	4.07**	0.0735 [0.0205]	0.1049 [0.0233]	0.95	0.1361 [0.0323]	0.1271 [0.0255]	3.98**
Asian/Indian	0.0111 [0.0106]	0.0282 [0.0109]		0.0200 [0.0180]	0.0401 [0.0152]		0.0259 [0.0169]	0.0285 [0.0105]		0.0136 [0.0106]	0.0269 [0.0139]	
White	0.0246 [0.0131]	0.1217 [0.0241]		0.0571 [0.0175]	0.1516 [0.0292]		0.0784 [0.0356]	0.1175 [0.0254]		0.0541 [0.0218]	0.1631 [0.0326]	
Not married	0.7243 [0.0318]	0.5513 [0.0267]	15.07***	0.6323 [0.0275]	0.5895 [0.0260]	1.40	0.6927 [0.0410]	0.5109 [0.0307]	11.80***	0.7140 [0.0327]	0.5856 [0.0297]	9.98***
Married	0.2757 [0.0318]	0.4487 [0.0267]		0.3677 [0.0275]	0.4105 [0.0260]		0.3073 [0.0410]	0.4891 [0.0307]		0.2860 [0.0327]	0.4144 [0.0297]	
Hh. size	4.7230 [0.3773]	3.3700 [0.1278]	13.93***	5.4888 [0.2375]	4.3910 [0.1773]	16.85***	3.9732 [0.3115]	3.2282 [0.1473]	4.74**	5.2662 [0.2545]	4.2588 [0.2032]	10.64***
Urban	0.6062 [0.0450]	0.7490 [0.0265]	12.36***	0.5277 [0.0399]	0.7745 [0.0231]	51.82***	0.6763 [0.0422]	0.7641 [0.0291]	5.04**	0.5953 [0.0481]	0.8088 [0.0224]	27.06***
Rural	0.3938 [0.0450]	0.2510 [0.0265]		0.4723 [0.0399]	0.2255 [0.0231]		0.3237 [0.0422]	0.2359 [0.0291]		0.4047 [0.0481]	0.1912 [0.0224]	

Source: Own calculations using NIDS data.

Notes: Survey-weighted proportions in age cohort/education/race/marital status/location categories of male/female adults, compared along employment transition outcomes in 2010/11. For household size, means are compared. Sample includes only panel members aged 20-55 who were in employment/regular wage employment in 2008. Survey design-adjusted standard errors in brackets. F-statistics are converted from Pearson χ^2 -tests of independence with survey design corrections of Rao and Scott (1984); except for comparison of mean household sizes, for which survey-adjusted Wald F-statistics are reported. Significance levels: ***1% **5% *10%.

Table A7: Comparison of changes in subjective measures of well-being (NIDS), by gender and employment transition outcome in 2010/11

		Male			Female			Male			Female		
		Not employed	Employed	F-stat.	Not employed	Employed	F-stat.	Not wage employed	Wage employed	F-stat.	Not wage employed	Wage employed	F-stat.
Change in life satisfaction	-	0.5939 [0.0384]	0.5335 [0.0225]		0.5300 [0.0335]	0.4638 [0.0285]		0.5441 [0.0459]	0.5273 [0.0281]		0.5909 [0.0420]	0.4819 [0.0324]	
	o	0.1141 [0.0218]	0.1244 [0.0148]	0.94	0.1201 [0.0188]	0.1846 [0.0198]	2.86*	0.1531 [0.0374]	0.1330 [0.0165]	0.28	0.1440 [0.0270]	0.1715 [0.0223]	2.63*
	+	0.2920 [0.0349]	0.3421 [0.0230]		0.3498 [0.0307]	0.3516 [0.0262]		0.3027 [0.0426]	0.3398 [0.0293]		0.2651 [0.0417]	0.3467 [0.0294]	
Change in economic status	-	0.3638 [0.0430]	0.2830 [0.0205]		0.3625 [0.0282]	0.3298 [0.0230]		0.3942 [0.0523]	0.2775 [0.0258]		0.3527 [0.0395]	0.3229 [0.0244]	
	o	0.3389 [0.0352]	0.3340 [0.0227]	2.60*	0.2753 [0.0264]	0.3406 [0.0225]	1.71	0.3613 [0.0439]	0.3330 [0.0270]	4.73***	0.3185 [0.0405]	0.3469 [0.0264]	0.26
	+	0.2974 [0.0349]	0.3830 [0.0238]		0.3622 [0.0281]	0.3296 [0.0230]		0.2446 [0.0370]	0.3895 [0.0292]		0.3288 [0.0327]	0.3301 [0.0265]	
Difference between actual and anticipated economic status	-	0.7132 [0.0343]	0.5899 [0.0268]		0.6468 [0.0319]	0.6390 [0.0244]		0.7801 [0.0376]	0.5645 [0.0321]		0.6932 [0.0332]	0.6461 [0.0262]	
	o	0.1487 [0.0257]	0.2676 [0.0216]	6.07***	0.2102 [0.0228]	0.2050 [0.0181]	0.11	0.1112 [0.0228]	0.2749 [0.0233]	11.17***	0.1770 [0.0313]	0.2180 [0.0212]	0.70
	+	0.1380 [0.0255]	0.1425 [0.0197]		0.1430 [0.0234]	0.1560 [0.0191]		0.1087 [0.0325]	0.1606 [0.0251]		0.1298 [0.0224]	0.1359 [0.0198]	

Source: Own calculations using NIDS data.

Notes: Survey-weighted proportions of male/female adults with negative/zero/positive changes in different self-reported measures of well-being, compared along employment transition outcomes in 2010/11. 'Change in life satisfaction' is calculated as the change in 1-10 scores assigned by individuals to the question 'How do you feel about your life as a whole right now?', between 2008 and 2010/11. 'Change in economic status' is calculated as the change in 1-6 scores assigned by individuals to the question 'Please imagine a six step ladder where the poorest people in South Africa stand on the bottom and the richest people on the highest step. On which step are you today?', between 2008 and 2010/11. 'Difference between actual and anticipated economic status' is calculated as the difference in 1-6 scores assigned by individuals to the questions 'Please imagine... On which step are you today?' in 2010/11 and 'Please imagine... On which step do you expect to be 2 years from now?' in 2008. Sample includes only panel members aged 20-55 who were in employment/regular wage employment in 2008. Survey design-adjusted standard errors in brackets. F-statistics are converted from Pearson χ^2 -tests of independence with survey design corrections of Rao and Scott (1984). Significance levels: ***1% **5% *10%.

Table A8: Transition matrices for labour market status (QLFS; male only), 2008Q1-2012Q4: row proportions (%)

		Labour market status in quarter t+1																								
		Formal sector employment			Informal sector employment			Unemployed, searching			Unemployed, discouraged			NEA												
Labour market status in quarter t		2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012					
Formal sector employment		91.4	92.3	92.9	92.9	93.1	4.2	3.4	3.3	3.1	3.3	2.8	3.0	2.4	2.5	2.3	0.4	0.5	0.5	0.6	0.5	1.2	0.8	1.0	0.9	0.9
Informal sector employment		17.2	14.4	14.0	12.7	13.2	70.7	72.9	75.2	75.9	75.4	7.3	6.7	5.4	6.5	5.8	1.7	2.2	2.6	2.4	2.9	3.2	3.8	2.9	2.4	2.7
Unemployed, searching		13.1	9.1	7.4	7.5	7.5	7.0	5.4	6.0	5.0	5.1	63.5	67.4	69.2	70.5	71.3	5.1	6.4	8.0	7.6	7.1	11.4	11.7	9.6	9.4	9.0
Unemployed, discouraged		7.5	5.9	4.2	4.6	4.0	8.7	5.7	5.7	4.3	4.4	21.4	22.5	18.0	18.4	17.5	45.8	52.5	57.8	59.2	60.8	16.7	13.3	14.4	13.6	13.3
NEA		3.4	2.4	2.5	1.8	2.3	3.7	2.6	2.1	1.5	1.5	11.6	11.9	10.6	9.3	9.7	3.6	4.7	6.6	6.6	6.0	77.7	78.4	78.2	80.8	80.5

Source: Own calculations using QLFS data matched on observable individual characteristics.

Notes: Quarter-to-quarter transition rates (Q_t to Q₂, Q₂ to Q₃, and Q₃ to Q₄) per year for 2008-2012. Sample includes only male panel members aged 20-55 in quarter t. All figures have been weighted using QLFS cross-sectional weights for quarter t multiplied by the inverse of the estimated match probability from quarter t to quarter t+1.

Table A9: Transition matrices for labour market status (QLFS, female only), 2008Q1-2012Q4: row proportions (%)

		Labour market status in quarter t+1																								
		Formal sector employment				Informal sector employment				Unemployed, searching				Unemployed, discouraged				NEA								
Labour market status in quarter t		2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Formal sector employment		90.2	91.6	92.0	92.3	92.2	3.5	3.0	3.0	3.1	2.8	2.9	2.8	2.3	2.1	2.3	0.6	0.5	0.8	0.8	0.9	2.7	2.0	2.0	2.0	1.8
Informal sector employment		8.2	7.3	6.5	6.6	6.8	77.2	79.8	83.0	83.7	82.1	5.5	4.6	3.7	3.4	3.8	1.7	2.7	2.1	2.1	2.4	7.4	5.6	4.6	4.6	4.8
Unemployed, searching		7.2	5.3	3.7	3.7	5.0	6.5	4.7	4.2	3.2	3.4	61.1	63.7	66.9	68.6	68.9	5.9	7.8	8.8	8.1	7.4	19.3	18.6	16.4	16.4	15.4
Unemployed, discouraged		5.7	2.7	2.7	2.9	2.7	5.7	4.5	5.1	3.6	3.9	17.0	14.3	14.6	13.9	12.6	42.8	51.6	54.3	57.9	60.9	28.7	26.9	23.3	21.8	20.0
NEA		2.3	1.5	1.5	1.9	1.6	3.2	2.5	1.9	1.8	2.0	9.7	8.5	8.1	8.5	7.8	4.5	5.6	6.2	6.8	6.4	80.3	81.9	82.3	81.0	82.2

Source: Own calculations using QLFS data matched on observable individual characteristics.

Notes: Quarter-to-quarter transition rates (Q1 to Q2, Q2 to Q3, and Q3 to Q4) per year for 2008-2012. Sample includes only female panel members aged 20-55 in quarter t. All figures have been weighted using QLFS cross-sectional weights for quarter t multiplied by the inverse of the estimated match probability from quarter t to quarter t+1.

Table A10: Labour market mobility measures and decomposition (QLFS), 2008Q1-2012Q4

	Immobility	Mobility				
		overall	upward (into employment)	down- ward (out of employment)	within non-em- ployment	
All adults						
2008	79.0	21.0	4.8	4.0	8.9	3.3
2009	80.6	19.4	3.6	3.5	9.6	2.7
2010	81.0	19.0	3.4	3.0	10.2	2.4
2011	81.3	18.7	3.2	2.9	10.3	2.3
2012	81.8	18.2	3.3	3.0	9.6	2.4
Male						
2008	80.5	19.5	4.9	3.8	6.3	4.4
2009	81.5	18.5	3.9	3.6	7.6	3.4
2010	81.7	18.3	3.8	3.1	8.2	3.2
2011	82.3	17.7	3.4	3.2	8.1	3.0
2012	82.5	17.5	3.5	3.0	7.9	3.1
Female						
2008	77.6	22.4	4.7	4.1	11.3	2.3
2009	79.7	20.3	3.4	3.5	11.4	2.0
2010	80.4	19.6	3.1	2.8	12.0	1.7
2011	80.4	19.6	2.9	2.6	12.3	1.7
2012	81.1	18.9	3.1	2.9	11.1	1.7

Source: Own calculations using QLFS data matched on observable individual characteristics..

Notes: Based on transition matrices Table 7 and Tables A8-A9. For decomposition method, see main text (Section 3.1).



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