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Persistence of Social Exclusion in Tanzania

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Amedeus Malisa

Abstract

Social exclusion is a practice where individuals are fully or partially excluded from social, economic and cultural networks. The concept of social exclusion is multidimensional, and is associated to different economic, social, political and culture aspects. This paper analyses the causes which bring dynamics in the social exclusion. Specifically, I explore the reasons which make an individual who experience social exclusion today, is likely to experience the same in the future. Literature suggests two processes underlying the causes of persistence in social exclusion. One argument is that, individuals are heterogeneous in terms of observed and unobserved adverse features which are important for someone to experience social exclusion over time (heterogeneity). On the other hand, individuals may experience social exclusion due to state dependence, that is, experiencing social exclusion in particular time, may itself incite the chances of experiencing the same in subsequent periods. Differentiating the two processes is important because, policy consequences underlying the the two social exclusion processes are also different. Using Tanzania National Panel Survey data (TZNPS), results show how both heterogeneity and state dependence are connected to the probability of experiencing social exclusion in Tanzania. Results suggest that the probability to experience social exclusion is to a large extent explained by observed heterogeneity and state dependence. There is a higher probability of experiencing social exclusion in the future for those who are socially excluded today compared to those who are not socially excluded. The impact on the dynamics of the past is significant and is more than 6% on average. The findings call for a comprehensive and organized strategies against social exclusion that should focus on policies which improve features that best protect against economic hardships.

Table of Contents

Tables

Appendices

1 Introduction

Social exclusion has in recent years, attracted considerable attention in poverty studies and has raised policy debates in both developing and elsewhere in developed countries. Although the concept is still new in the literature, it has now become a common phenomenon to many economists and in public policy discussions of social welfare. Nevertheless, the concept still lacks a very straightforward definition and its operationalisation in analytical analysis is still debatable. Poggi, (2007), defines social exclusion as a practice where individuals are fully or partially excluded from social, economic and cultural networks. Hence, social exclusion is multidimensional in nature and related to different economic, social, political and culture aspects. Additionally, social exclusion is understood differently in different areas and emphasis is put on the aspects which are crucial in certain area (Bask, 2008). Existing literature suggests three vital elements which one should be aware when discussing social exclusion and which identify socially excluded persons; Relativity, dynamics and agency (Atkinson, 1987). The concept of social exclusion is relative because, one needs to observe an individual relative to the match of the rest of the society he/she lives in order to judge whether a person is excluded or not. On the other hand, it is also argued that, failure to participate in some normal activities in particular society may also be due to voluntary choice of an individual, hence it's important to identify agents connected to the occurrence of social exclusion. Moreover, social exclusion can be due to dynamic process, where this process varies depending on how situations and/or circumstances change over time.

Social exclusion is a highly pressing issue and has recently sparked economic debates among the member states of the European Union. As required by Lisbon Summit, the EU states are obligatory to recognize all individuals who are likely to be excluded, together with all those who are prone to remain or become excluded (Poggi, 2007). International Institute of Labour Studies (Geneva) also recommends that social cohesion should be regarded as one of the aspects of development, and therefore, anything happening to social exclusion is a fundamental question needed to query about development and its patterns. Following these directives, member states have taken considerable steps in fighting against poverty and social exclusion (Bask, 2008). However, the notion of social exclusion has so far attracted little attention to the developing countries regardless of their persistence problems of marginalisation and extreme poverty (Bhala & Lapeyre, 1997).

Due to different policy implications, existing literature emphasizes on the importance of distinguishing between two different processes of social exclusion (Poggi, 2007). On the first ground, persistence of social exclusion can be viewed as a process which arise from individual's heterogeneity which is either observable or unobservable. The former result from the fact that individuals could be heterogeneous in terms of specific observable characteristics that are key on the probability of experiencing social exclusion e.g. sex, level of education and household status while the later refers to unobserved heterogeneity between individuals which may cause persistence of social exclusion. An individual who is socially excluded at any point in time due to these unfavourable characteristics is likely to experience the same in other time because of the same unfavourable characteristics. Secondly, the process of social exclusion can be due to the process called true state dependence. This implies that, experiencing social exclusion at any particular time increases the probability of experiencing the same at subsequent periods (Poggi, 2007).

Policy implications in tackling the two situations are very different which implies that it, is important to distinguish the two processes. For example, in order to minimise the chance of someone who is socially excluded in time *t*, due to true state dependence, one has to somehow remove this person from social exclusion at this time in order to save this person from experiencing it in the future. Therefore, in order to break from this circularity, it is reasonable to intervene on the aspects that generate this state dependence. On the other hand, if persistence of social exclusion is due to unobserved heterogeneity, short term policy aiming at pulling out an individual from social exclusion at time *t*, will not be effective. This is due to the fact that, removing this individual today from social exclusion, does not affect his/her adverse

characteristics and therefore does not reduce his/her chance of encountering social exclusion in subsequent periods.
Therefore, understanding the causes of persistence of social exclusion not only helps to stir up debates on the extent of social exclusion in particular country, but also contributes to the establishment of public policies which are used to address it (Poggi, 2007). It should be of a great concern to policy makers if social exclusion continues for many years without understanding the real cause for social exclusion. Most of government policies and donor fund programs in developing countries tend to channel efforts towards poverty alleviation by providing assistance to individuals who are excluded in certain aspect. It is therefore important to analyse based on the causes of social exclusion, if existing policies are effective and if they achieve targets. Moreover, the dynamic aspects of social exclusion lead to a better understanding of the nature of exclusion and the type of individuals that experience it.

Literature on social exclusion has mainly focused on specific problems such as long-term unemployment and social networks which are considered as examples of social exclusion. Others, tend to develop the appropriate definition measure of social exclusion and on how to identify someone who is socially excluded at particular point in time (e.g. (D' Ambrosio & Chakravarty, 2003) and Nolan, Whelan, Maitre, & Layte (2000)). Some other few studies centre their arguments towards the number of years in which a person is excluded and a degree of exclusion based on different scopes and duration e.g. Burchardt (2000) and Burchardt, Le Grand, & Piachaud (2002). Nevertheless, there are no enough studies in the literature which put their attention on the dynamic process of social exclusion. Poggi (2007) using Spain's as a reference country gives her first attempt to analyse the processes leading to the persistence of social exclusion. However, no attempts have been done to analyse these processes in the developing countries.

To fill this research gap, the main objective of this paper is to add up some new insights on the literature behind the dynamic process of social exclusion, in a different world setting of a developing country. In specific, I want to explore and understand how the state of being socially excluded evolve over time in Tanzania. The paper will try to understand how individuals who are socially excluded in one period of time are more or less likely to experience it in the future. Also, I will try to investigate the processes which create social exclusion persistency in a different world setting compared to the existing developed country scenarios.

This paper contributes to the existing literature of social exclusion in the following two ways. On the first ground, the paper provides additional empirical analyses and findings on the causes of the dynamic process of social exclusion, using multidimensional analysis of social exclusion.

Secondly, I offer fresh empirical evidence of social exclusion to one of the developing country; Tanzania. Tanzania is specifically interesting for studying this scenario due to the following reasons: Tanzania is one of the poorest countries in the world, with high level of poverty rates where approximately 68% of Tanzanians live below $1.25 a day poverty line. In addition, the country in collaboration with international community, is implementing different policy strategies which are in line with Millennium Development Goals (MDGs) to improve the economy and reducing poverty. Nevertheless, the economy is still inadequate to provide impetus for poverty eradication. Moreover, despite of high growth rates recently achieved by the country based on its massive wealth in natural resources, tourism and fully transitioning to a market economy, these achievements are not directly reflected in the fight against poverty (Central Intelligence Agency, 2016).

The rest of the paper is organised as follows; in the next section, I briefly assess important literature about dynamics in income as well as on social exclusion. Section 3, covers data and methodology. Section 4 discusses the results and section 5 gives a conclusion.

2 Literature Review

2.1 Social exclusion concept and theoretical demarcation

Social exclusion is a common term that repeatedly appears in public policy debates and in discussions related to social welfare. Although there is a great deal of studies on social exclusion, the concept is not very forthright when it comes to definition and its operationalization in analytical studies. The concept of social exclusion is derived from French term "exclusion sociale" and it was used to refer individuals with various kinds of disadvantages such as being mentally or physically handicapped. According to French Republican view, the term refers to a process of 'social disqualification' or 'social disaffiliation' which leads to a relationship failure between society and the individual (Pugam, 1993 and Castel, 1995). Therefore, the concept is deep-rooted in the Republican custom of solidarity of which a state is a role player. French notion of social exclusion has a direct link to this tradition where integration is thought to only be achieved by key state institutions (Ion, 1995). Thus, failure of the state in protecting solidarity of the society can be viewed as social exclusion.

Unlike this view, the Anglo-Saxon tradition on the other hand, perceives social integration in terms of freely chosen relationships between individuals and society. (Silver, 1994). This thinking is rooted in the Liberal paradigm and pictures society as a bulky group which consists of atomised individuals who are competitive in one market place. Based on this view, exclusion may echo voluntary individual choices, patterns of interest or a predetermined relationship between actors or alterations to the system such as discrimination, market failures or unforced rights (Bhala & Lapeyre, 1997).

Studies into social exclusion have mainly been motivated by these two theoretical backgrounds. Anglo-Saxon approach date back to Stouffer's (1949) study on American solders' attitude during the World War II. It was in this research that the idea of relative deprivation was invented, referring to the idea that individuals tend to regard themselves as well-off or bad-off in comparison with others they consider important. This school of thought emphasises the empirical analysis of distributional features of social exclusion which largely relate to material deprivation. French tradition on the other hand, builds on Durkheim (1897) on his study of normlessness. The emphasis is on the role of institutions as an indicator of social facts and communal ways of thinking and feeling. Therefore, exclusion is regarded as social disintegration and inability to support social relations (Vrooman & Hoff, 2013).

The European Commission accentuates that it is a right for each citizen to access certain basic standard of living and right to participate in both social and occupational institutions of the society. These include; being employed, access to housing, health care, education and so on. Social exclusion thus occurs when citizens are unable to secure these social rights or become disadvantageous from accessing them. In the context of globalisation and changing economic situations, social exclusion has a close connection with deep economic restructuring which has been brought about by the emerging global economy (Poggi, 2007).

Following the above different definitions, it is clear that the concept of social exclusion is complex and multidimensional. Due to its multidimensionality feature, social exclusion does not only refer to individuals and societies but also their disadvantages, isolations and absence of freedom. It encompasses the advantages which individuals perceive, together with efforts used by institutions to minimize exclusion and bring about social integration (Gore, 1996). Due to its complexity in the definition, many people have used the term very loosely and it is sometimes confused with notions of poverty and marginalisation. However, broadly described, definition of social exclusion is similar to that of poverty. That is, it is a concept that evolve over time and include economic, social and political aspects (Bhala & Lapeyre, 1997).

A broad approach to poverty which is much attributed to social exclusion is provided by Sen (2000), and is based on individual capabilities. Based on Sen's concept, social exclusion is the concept of individuals' capabilities which provide prospects in achieving valuable 'dimensions' or 'state of being'. According to his view, life can be portrayed as a set of interrelated functionings which consists of beings and doings. Sen proposes that in order to address poverty, one has to focus on various valuable functionings which represent factors of well-being in both physical

elements and complex social achievements. Therefore, exclusion process in one aspect can instrumentally generate other important impoverishment in life through its causal impacts. Theoretically, social exclusion occurs when an individual is deprived concurrently on several dimensions (Vrooman & Hoff, 2013).

This study uses the same line of thought discussed above. Therefore, in this study, social exclusion is viewed as a process which leads to a state of being deprived from valuable dimensions. State of being socially excluded is an aftermath process resulting from combination of some relevant deprivations in the basic functionings (Poggi, 2007). The working definition of social exclusion in this paper follows a definition described by Poggi, (2007), where an individual is considered as socially excluded in specific point in time if he/she is deprived of at least two or more of the important dimensions. The process of social exclusion comes when one more deprivation is added to an individual who is already in the state of social exclusion.

2.1.1 Multidimensional aspect of social exclusion

The definitions given in previous section, leaves an open discussion on which dimensions should be considered relevant when analysing social exclusion. However, selection and identification of excluded individuals is still a matter of discussion. Different studies on the topic have emphasized on different appropriate dimensions. Lee & Murie (1999) for example identify eight relevant dimensions of social exclusion namely; labour markets, health, education welfare, poverty spells, housing, public utilities and social networks. On the other hand, European commission categorises individuals as socially excluded in terms of distribution of income, proportion of individuals below poverty line, persistence of poverty, low education, unemployment and regional disparities. Burchardt, Le Grand, & Piachaud (2002) propose four dimensions; ability to purchase goods and services, being able to participate in social and economic activities, involvement in political aspects and social interacting. Moreover, Bhala & Lapeyre (1997) pinpoint three aspects of social exclusion which are; economic, social and political aspects. The economic aspect covers questions related to income, production and access to goods or services; the social aspect examines relationship issues related to public goods and services, labour market and social participation; the political aspect covers aspects connected with individual security, political participation, freedom of expression and equal opportunities.

It is therefore observed from previous discussion that, there is no common agreement on relevant dimensions which are important to analyse social exclusion. Nevertheless, the definition of social exclusion puts emphasis on the relevance of each dimension in its own aspect. Sen (2000), provides some recommendations on the list to be considered as relevant dimensions of social exclusion. These include; employment, accessibility to health care, education opportunities, social safety, facilities to disabled individuals, credit market inclusion, political and rational inclusion. This paper does not consider to go into details about these dimensions rather intend to follow empirical framework already developed in the literature to analyse dynamic aspects of social exclusion[1]. My framework and subsequent measures on social exclusion build on Senn, Poggi (2007) and Scuttella, Wilkins, & Kostenko (2009) to study social exclusion in Tanzania.

2.1.2 Dynamic aspect of social exclusion

When analysing social exclusion, Atkinson (1987) provides three fundamental themes that should be taken into consideration. These include relativity, agency and dynamics. Relativity implies that social exclusion experienced in particular society is relevant in just that particular society, that is material standard or any aspect considered reasonable as a standard of living in particular society is not necessarily to be the same in another society or the same society in different period. Agency means that it is essential to recognize the agents who are responsible for the exclusion process. Dynamics of social exclusion on the other hand, relates to the fact that, one should not only be concerned with current circumstances that affect exclusion but rather, its also important to focus on future factors in the social exclusion process.

[1] For a more detailed list of dimensions which have been used in the literature, see Appendix

Existing empirical literature agree that social exclusion is a dynamic process. This implies that, deprivation of an individual is not only connected to the current status but also his/her past experiences and how they evolve over time (Poggi, 2007). It is important to consider this aspect because various scenarios of social and economic circumstances may influence households' levels of exclusion from different paths. Therefore, dynamic method focusses on factors causing social exclusion from these different paths.

Literature on the dynamic aspect of social exclusion discusses various causes which may lead an individual to be socially excluded. Burchardt, Le Grand, & Piachaud (2002) relate the cause of social exclusion to the factors which profit an individual to undertake normal activities. They include; individual characteristic's, events in life, features of surrounding area where one lives, social interaction and political institutions of the society. In the same vein, Atkinson (1998), relate the causes of social exclusion from labour market and consumption misfortunes.

Despite this massive coverage of the dynamic aspect of social exclusion, its empirical framework is so far sparse. Understanding of dynamics underlying social exclusion is crucial in policies related to poverty. Dynamic theme in particular has drawn significant attention in the literature and is also a significant aspect in this thesis.

2.2 Empirical evidence on social exclusion

There is a considerable number of studies which have focused on social exclusion. Significant number of these studies have however based their attention on proposing an appropriate definition of social exclusion and/or suggesting adequate measure of social exclusion while so few have tried to analyse its dynamics.

One of the main critiques of the concept of social exclusion is that it is very ambiguous and lack exact generally agreed definition. As it is clear by now that, social exclusion is a multi-dimensional concept with various definitions. Silver (1994) for example, describes three major aspects of exclusion; the solidarity aspect, specialisation aspect and monopoly aspects. Byrne (1999) describes social exclusion as changes in the whole society which consequently affect other people in that particular society. This implies that, social exclusion is a result form social stratification that produce social change. Hence, in order to tell something related to its dynamics, there is a need for for longitudinal data. There is however a need to operationalise the concept before carrying quantitative analyses on social exclusion since regardless of the fact that its definition would be comparable in different studies, its operationalisation may be different (Bask, 2008).

Burchardt, Le Grand, & Piachaud, (2002) for example viewed social exclusion as lack of opportunity to participate in four central scopes of integration. These scopes are; consumption, which involves the ability to purchase goods and services; production, which describes involvement in economical and significant social proceedings political engagement, involvement in local and/or national decision making; and social interaction, which describes how one integrate with family, friends and community. Similarly, Chakravarty & D' Ambrosio (2006), treat the time of sufferance to a certain welfare difficulty as a threshold for social exclusion.

However, in the French republican debate, social exclusion is viewed as a failure of the state in providing social cohesion. That is, it presupposes a national consensus with a collective integrity that brings individuals to the society regardless of their differences and interests. Hence in general traditional solidarity holds the idea of national communism which go beyond individual and /or group interests. In this context, it is the role of the state to alleviate poverty while providing individuals with protection on risks associated with industrial society (Bhalla & Lapeyre, 2004).

As opposed to French Republican debate, Anglo-Saxon tradition on the other hand, describes social integration as a spontaneous chosen relationship between a person and the society he/she lives in. Society is viewed as a framework where atomized individuals compete within the market place. In other words, social exclusion is seen as a voluntary individual choices or predetermined relationships between distortions such as market failure and unenforced rights (Bhalla & Lapeyre, 2004).

Social exclusion is also related to the concept of capability and state of functioning deprivations (Poggi, 2007). As Sen (2000), pointed out, the idea of social exclusion is closely related to the notions of poverty and deprivations. The capability approach on poverty is also multidimensional and there are distinctive abilities and functionings which should be considered when analysing it. Sen suggests that, it is useful to investigate social exclusion using this broad approach. This is due to the fact that; firstly, social exclusion may have a direct relationship with capability poverty; and secondly, being socially deprived from one particular relation may cause other deprivations as well. Therefore, considering social exclusion based on poverty approach can enable to establish a general overview of capability failure.

Nolan, Whelan, Maitre, & Layte (2001a-2001c) have carried number of studies on poverty mobility and deprivation of poverty. Their mode of analysis is based on tabulating the time an individual spends in deprivation and poverty. Their findings suggest that, European countries have distinct dimensions of deprivations. However, these deprivations are consistent across individual countries. Similarly, Alkire & Foster (2011), provide multidimensional measure through which poverty can be viewed and understood. They offer practical approach of identifying the poor and how to measure aggregate poverty using multidimensional poverty measurement as a departure from traditional one-dimensional approach. The identification method in their study is also well suited for use in analysing social exclusion.

Despite that previous studies have found a relationship between poverty and social exclusion, studies that focus on social exclusion dynamics are so far sparse. Burchardt (2000) explores different dimensions of social exclusion at a single point in time while tracing the progress of the individual over time. Results show that, an individual being socially excluded in one period in time (whether in consumption, production, political aspect or social interactions) increases the probability of being socially excluded in subsequent periods. Burchardt, Le Grand, & Piachaud (2002) later extend the study to propose a multi-facet dynamic approach in measuring social exclusion in order to assess the efficiency of government policies. Both studies use longitudinal panel data from the British Household Panel Survey (BHPS).

Similarly, Tsakloglou & Papadopoulos (2002), trailing the idea that social exclusion is a dynamic process, identify members of the population who are at risk of being socially excluded in Europe. They build a static indicator of deprivation in terms of income, living conditions and social interaction which they later aggregate the information to obtain static indicator of cumulative deprivation. Individuals classified at higher risk in more than two times in a period of three years are considered to be at high risk of being socially excluded. More recent, Vrooman & Hoff (2013), propose an improved and more concise measure of social exclusion prevalence in the Netherlands. Focusing on groups and other cognitive tests, the study investigates how different measures adequately cover different aspects of social exclusion and its dynamics. The lesson from these studies is that identification of individuals at risk of deprivation and duration of social exclusion play important role when analysing the social exclusion dynamics. This paper on the other hand, extends the dynamic aspect by exploring more on the factors leading to the persistence of social exclusion.

Approaches used in dynamic literature vary depending on the nature of the research question. Jenkins (2000), has provided main four types of dynamics models which have been mostly used to study dynamics in income and poverty. The first type of models explores different dynamics of poverty in terms of unchanging features of an individual. These models categorise individuals who experience particular type of poverty deprivation. Gardiner & Hills (1999) use this approach to analyse why individuals' incomes follow different paths and its policy implications. Second type of models investigate the probability of transitions into and out of poverty based on observed characteristics facing the people experiencing these deprivations. The emphasis in these models is put on the type of individuals who are likely to enter into or exit from poverty. Third approach is to explain income paths of individuals in terms of observed and unobserved practises in order to determine processes which drive poverty dynamics. The last approach models poverty transitions in economic processes as a function of observed and unobserved features of an individual so as to identify main characteristics for poverty dynamics (Burgess & Prosper, 1998).

In this paper, I focus on the last method which is adopted from Poggi (2007). I intend to analyse and capture dynamics triggering the persistence of social exclusion in terms of unobserved

heterogeneity and a true state dependence. Social exclusion is modelled by allowing lag independent variable and complex error structure. In the literature, the method has been mainly used to study poverty dynamics. Stevens (1999) investigates persistence of poverty by focusing on unobserved heterogeneity and state dependence using hazard rate approach which accounts for several spells. Findings suggest importance of considering spells and unobserved heterogeneity while analysing persistence of poverty. Similar other studies have also focused on the same and they both point the importance of unobserved heterogeneity, true state dependence, panel attrition and connected issues of endogeneity of initial condition (Devicienti, 2001). Likewise, other studies have tried to examine true state dependence in the incidences where there is unobserved heterogeneity (Trivellato, Giraldo, & Rettore, 2002).

3 Methodology

3.1 Data

As I have defined above, social exclusion is a process in which an individual or groups is/are fully or partially excluded from social, economic and cultural network(s) in the environment (he/she) they live(s). This implies that, the process of social exclusion leads to a state of exclusion which is a cumulative of important deprivations. In order, to construct an indicator which represents individual's state of social exclusion, I use three available waves of the Tanzania National Panel Surveys (TZNPSI-TZNPSIII). The TNPS are series of countrywide household panel surveys that have extensive information on different topics including agricultural production, non-farm income generating activities, consumption expenditures and on wealth of other socio-economic generating activities. The surveys are implemented by the Tanzania National Bureau of Statistics (NBS). Currently, there are only three TZNPS conducted where the first survey was conducted between October 2008 and October 2009, the second from October 2010 to November 2011 and the third from October 2012 to November 2013 (National Bureau of Statistics (NBS) [Tanzania], 2012-2013).

The TZNPSs have advantage over Household budget surveys since they provide high quality household-level data to different stakeholders when monitoring poverty dynamics and enable tracking and monitoring of other major national-level government policy initiatives. Therefore, using this data enable me to examine economic and social household situations from a dynamic perspective. However, due to selection problems, TZNPS might be less representative since there is a very high chance that homeless population which have higher probability of being socially excluded to be omitted. Also another bias may arise when suitable individuals refuse to take interviews. The TZNPS address these issues by offering cross sectional weights which reflect population characteristics in terms of age, sex, area etc. this study uses these weights in order to try to correct for these biases.

In addition, for panel related data there is another problem of attrition where for one reason or another, an individual in the first wave may not be interviewed in the subsequent waves. In the TZNPS data, attrition between the first and third wave is about 3.9 percent and is slightly higher in Dar es Salaam (about 10%) while in other urban and rural areas is lower. However, according to the National Bureau of Statistics (NBS) [Tanzania] (2014) the most likely cause of attrition during the survey was inability to find the household rather than refusal to participate in the survey hence the bias based on refusal is minimal.

However, since the study intends to study the persistence of social exclusion based of particular functionings, the data needed to be cleaned to accommodate only those individuals with no missing data in all three waves. After data cleaning, 13, 028 individuals were left in each wave and only 7,255 individuals (aged 16+) were included in the sample. The data also include longitudinal weights which are also available in the TZNPS, however because of econometric efficiency, they are not used in the estimation. I use the social exclusion working definition explained in section 2.1, to construct a summary measure of social exclusion. Firstly, I choose relevant dimensions and things which represent them, secondly, I use the summary measure from these dimensions to identify deprived individuals and finally I aggregate these functionings to get measure of social exclusion. Details are discussed below.

3.2 Functioning selection

There is an on-going discussion on appropriate 'functionings' that should be used in determining whether an individual is excluded and how to choose them. Therefore, compilation of comprehensive list is relatively unambiguously established (Poggi, 2007). Guidance in the area is however proposed by Sen (2000) and the famous 'Scandinavian approach' suggested by Brandolini & D'Alessio (1998). This study follows Poggi (2007) and Scuttella, Wilkins, & Kostenko (2009) who use the mentioned guidance to select important dimensions to capture primary characteristics of social exclusion.

Following previous empirical framework, the chosen functionings include; fulfilment of basic needs, having sufficient income, ability to attain particular quality of life, adequate housing, social

interactions, general health of a person, being able to live in a safe and unpolluted environment and ability to perform paid or unpaid job activity. The first four dimensions represent the economic features of social exclusion while the remaining focus on the social dimension of the same. It should be noted that, each of the selected functionings is regarded important in its own, regardless of the interactions amongst them. Some of these dimensions can themselves be considered as causes of social exclusion while others act as instruments in causing social exclusion (Poggi, 2007). Therefore, some dimensions may not be the cause of the deprivation in some point but can result into impoverishment through causal effect. Inclusion of environmental circumstances and health status for example have significant effect in the analysis although they themselves do not lead to social exclusion.

Due to problem of data[2], I failed to include social and health aspects of social exclusion, hence my study covers only six of the remaining dimensions. However, even if not exhaustive, these dimensions appear to be reasonable and coherent with empirical framework discussed above. Also to replace some measuring items in basic need dimension, I used the relativity principle of social exclusion to include other proxies which according to living standards are considered basic, at least in the least developing countries and Tanzania in particular. Table 1 gives a summary of the six dimensions of social exclusion, their respective weights and operationalisation items selected from the TZNPS. The items in the list are a mixture of household level and individual level. It should also be noted that, while other dimensions' focus is on subjective wellbeing, others are inescapably biased towards particular type of group. Since the unit of measurement is individual, there is a high probability that there will be intra-household correlations in the exclusion status. Since we are considering an indicator which comprehensively summarise the selected dimensions, summary index of social exclusion is needed which also requires weighting structure in each dimension.

In order to study the predictive relationship between different dimensions, I conducted correlation test and results are displayed in the Appendix. Generally, there is low degree of association across the dimensions where most coefficients are on average, with absolute value below 0.2; however, correlation between housing and quality of life is slightly higher. In addition, economic dimensions have stronger correlation which suggest that, these dimension, capture slightly complementary aspects.

3.2.1 Weighting structure

In order to comprehensively determine how the dimensions mentioned above represent overall wellbeing of an individual, one also requires representative weighting structure on each dimension. Different weight structures will undoubtedly reflect different opinions. Some studies suggest the use of data frequency and multivariate techniques (Tsakloglou & Papadopoulos, 2002). Bhala & Lapeyre (1997) suggest to consider weights depending on degree and development of the country under consideration. That means, industrialised countries weight on economic and social aspects should almost be the same while in developing countries economic aspect should remain the most important one. However, following Poggi (2007), Kostenko, Scutella, & Wilkins (2009), and other empirical studies[3], this study uses equal weights since using different weights may result into arbitrariness within dimensions. The approach gives equal weight to each of the six dimensions and also gives equal weight to each item within the dimension. This is based on the implicit assumption that; each dimension is equally important contributor to the social exclusion.

Therefore, for every item in particular dimension, I assign to each individual a score between zero and one. An individual is assigned a score of one if he/she can afford the item, has no problem with the item or has that particular item. On the other hand, an individual is assigned a score of zero if he/she is deprived from that item. All items corresponding to every dimension are aggregated by adding up their scores and results are divided by the weight of particular dimension. This means all individuals obtain a score between 0.167 and zero, and values which are between zero and 0.167 refer to intermediate situations. A value of 0.167 implies that a

[2] The available information in the three waves did not allow to trace items in the social and health dimensions because questions asked in about the items varied over the three waves.

[3] See Appendix

dimension is fully achieved and a value of zero means a dimension is not achieved while intermediate values signify intermediate conditions.

Table 1 Functionings used in the Analysis

Dimensions and their respective components	Weights
Basic needs fulfilment (BASIC)	**1/6**
Not eating three meals a day	
Being unable to buy basic items by the household (e.g. soaps, toothpaste)	
Universal Primary Education	
Being unable to pay bills	
Having an adequate income (INCOME)	**1/6**
Income in general	
To reach a certain quality of life (QUALITY)	**1/6**
Car or van	
TV	
Video recorder	
Mobile phone	
Having an adequate house (HOUSING)	**1/6**
Not having indoor flushing toilet	
Not having running water	
Not having enough space	
Not having enough light	
Not having dump walls, floors	
Not having a leaky roof	
Living in a safe and clean environment (LIVING)	**1/6**
Vandalism or crime in the area	
Being able to perform paid or unpaid work activities (WORK)	**1/6**
Being unemployed	

Each item represents the ability of an individual to afford or possess a good or absence of a particular problem for at least 50% of the sample.

3.3 Measure of Social Exclusion

Being in a situation of inclusion or exclusion on the selected dimensions is undoubtedly a matter of degree (Poggi, 2007). Therefore, at different point in time a dimension may be achieved depending on the choice of the threshold used, below which an individual is regarded as deprived. The choice of this threshold is however subjected to some degree of uncertainty.

3.3.1 Determination of cut-off point

In order to find group attribute levels and cluster individuals in different groups, there is a need to establish cut-off points. Literature on income and social exclusion thresholds is vast and subject to discussion. While some developed countries e.g. Britain official statistics suggest 50% as income distribution cut-off point, Eurostat on the other use 60% as median which both show level of arbitrariness. Tsakloglou & Papadopoulos (2002) carried a sensitivity analysis on various cut-off points, i.e. 50%, 60% and 70% and conclude that robustness of the result is not subject to the cut-off points chosen.

Since there are few attempts which specify required cut-off points needed, this study uses common cut-off points used in the literature. In each dimension, fixed threshold is set as 50% of mean distribution[4] of the dimension. I consider each person below this established cut-off point to be deprived in particular dimension and therefore, a person can be deprived in more than one functioning. Using this threshold for each dimension at each period, together with information of deprivation from each dimensions, I create a summary measure of social exclusion. A summary measure of social exclusion for an individual is obtained by adding together each dimension's deprivation. Following the definition of social exclusion explained above, I consider someone being excluded if that person is deprived in at least two or more dimensions. The summary measure of social exclusion, takes a value of one if an individual is socially excluded and zero for otherwise.

3.4 The model

In order to provide a better understanding of the social exclusion persistence, this section describes the model which will be used. As mentioned earlier, persistence is generated by two processes; unobserved heterogeneity and true state dependence. The former means individuals could be heterogeneous in terms of characteristics that are vital for someone to experience social exclusion which are persistent overt time. In this case, a person experiencing social exclusion at a particular point in time due to unobserved (adverse) characteristics, is likely to experience the same at any subsequent period because of the same adverse characteristics. The later process explains the situation where an individual experiencing social exclusion at any specific time, itself, increases the chance of experiencing social exclusion in other period (Poggi, 2007). For each individual, I calculate a score of social exclusion indicator where, a social exclusion indicator is one if the individual is excluded and zero otherwise. The sample is comprised of individuals aged 16+ who are observed in all three waves and in total I have 21,765 observations.

There are some methodological problems when one wants to estimate persistence of a discrete choice variable in econometrics and in specific the presence of true state dependence and unobserved heterogeneity. The problem is how to come up with consistent estimation in non-linear model. Existing literature suggests two ways to deal with this problem; the random effects model approach and the fixed effect model approach. Each of the approach is based on the assumptions put forward. Honore (2002), provides a detail discussion on the choice between these two approaches. In this paper, I follow Poggi (2007) approach and use random effects model which enables me to specify the model in a way that I can use the model for prediction and calculate quantities for all variables of interest. These include, average partial effects and effects of 'what-ifs' from estimation results. Fixed effects models result in the estimation of some limited dimensional parameters from which one may fail to estimate all functions of the distribution of data. Also it is relatively easy to use standard software available to estimate dynamic logit model with random effect. However, for random effect coefficients to be efficient, one has to ensure that distributional assumptions are satisfied.

In addition, the initial condition of the model and its assumption on initial observation need to be specified in order for the model results to be fully parameterised and to allow interpretation. This is a problem when there is no concurrence between the start of the observation period and stochastic process which generate social exclusion experiences (Arulampalam, Booth, & Taylor, 2000). A significant number of studies have suggested on how to handle the initial condition in dynamic models which have additive unobserved effect and initial condition problem. Nevertheless, they all agree that handling initial condition is much harder to resolve especially in non-linear models (e.g Ahn & Schmidt (1995), Anderson & Hsiao (1982), Arellano & Bond (1991) and Arellano & Bover, (1995)). As for the case under study, individuals might have experienced social exclusion before the period under study. Hence, those individual excluded in the first wave might be there because they had earlier history of exclusion or some other characteristics which affect their exclusion susceptibility. Wooldridge (2005), proposed a simple solution to handle this

[4] For robustness, other cut-offs were also tested (40% and 60%) in the analysis, Descriptive statistics are shown in the appendix. Although results for social exclusion were higher compared to those with 50% cut-off, significance of coefficients did not change.

type of problem of which this paper follows closely. He suggested finding individual specific effect distribution, conditional on the initial value and the observed history of strictly exogenous explanatory variables. This makes it possible to account for probable correlation between individual specific effects (which are time invariant unobserved individual determinants of social exclusion) and levels of social exclusion experienced by individuals in the initial period. This also makes it possible to relax exogeneity assumption in that, we can allow correlation between unobserved and observed individual characteristics.

In order to analyse how the above calculated indicator for social exclusion change over time, I use a dynamic panel data logit model. The model can predict an outcome variable that is categorical from predictors that are both continuous and/or categorical and also has a better interpretation. Below is a brief description of the model as presented by Wooldridge (2005).

Given an individual observed from time $t = 1$ to $t = 3$ the conditional probability that exclusion occurs is provided by

$$P(y_{it} = 1|y_{it-1}, \dots y_{i0}, z_i, c_i) = \phi(z_{it}\gamma + \rho y_{it-1} + c_i) \quad (1)$$

where ϕ is a functional form of logistic distribution; y_{it} is the dependent variable where it represents the exclusion state of individual i in time t; z_i and z_{it} are vectors of time-constant and time varying explanatory variables respectively; c_i is the individual specific effects and ρ and γ are parameters to be estimated.

As stated in Wooldridge (2005), the equation is assumed to comply with the following assumptions: On the first ground, the dynamics are assumed to be of first order once z_i and c_i are conditioned on; secondly, the unobserved effect is additive in the distribution function, ϕ; thirdly, z_{it} fulfils a strict exogeneity assumption. The parameters in (1) can be consistently estimated by assuming a density for the individual specific effects given initial condition of exclusion state, y_{i0}, and the time invariant explanatory variables, z_i. Therefore, it is assumed that;

$$c_i|y_{i0}, z_i \sim \phi(a_0 + a_1 y_{i0} + z_i \alpha_2, \sigma_a^2) \quad (2)$$

where σ_a^2 is conditional standard deviation of individual specific effect (c_i) while a_0, a_1 and α_2 are parameters to be estimated. Since we want to identify coefficients for time constant covariates, the vector z_i appears in equation (2) and not in the right side of equation (1).

Following equations (1) and (2), conditional density for the conditional distribution is given by

$$f(y_{it}, .. y_{iT}|y_{i0}, z_i, c_i; \gamma, \rho) = \prod_t \{\phi(z_{it}\gamma + \rho y_{it-1} + c_i)^{yt}. [1 - \phi(z_{it}\gamma + \rho y_{it-1} + c_i]^{1-yt}\} \quad (3)$$

In order to maximize the density, equation (3) is integrated with respect to the logistic distribution density in equation (2) to obtain parameters ρ, γ, a_0, a_1 α_2 and σ_a^2 where, estimation is consistent under the assumption that the model is correctly specified.

In the above specification, coefficient of ρ determines if exclusion structure of dependent variable, y_{it} , features a true state dependence. It tells us whether experiencing exclusion in one point in time increases the chance of being socially excluded in subsequent periods. That is if, $\rho > 0$, then experiencing exclusion at time $t - 1$, increases the probability to experience the same in year t. In addition, estimate of a_1 gives the information about direction of the relationship between unobserved individual characteristics and level of social exclusion at the first period. Moreover, estimate of σ_a^2 denotes the magnitude of dispersion accounted by unobserved heterogeneity.

As proposed by Wooldridge (2005), specification of the model above, needs a balanced panel and therefore attrition and selection problems are not allowed. However, since selection and attrition problems both depend on initial conditions, this allow attrition to also vary across initial level of social exclusion. Therefore, it is okay to consider these problems without necessarily model them

based on initial conditions. For balanced panel, as in the current study, the problems become less complicated since there is a compensation for loss of information.

4 Results

4.1 Indication of social exclusion and its persistence in Tanzania

From the descriptive statistics in Table 2, it is observed that, social exclusion in Tanzania is particularly very large, about 88% of the sample is excluded. Significant proportion of the population is excluded in the economic dimension (income 62%, work 32%, quality of life 75% and basic needs 59%). On the other hand, only 24% of the population in the sample live in urban area while quite a few proportion of the sample have higher education (about 1%).

Table 2 Descriptive Statistics

	For all variables *N*=21765			
Variable	Mean	Std. Dev.	Min	Max
Region	17.58663	16.68008	1	55
Locality	1.758787	0.8374513	1	3
Sex	0.476499	0.4994589	0	1
High_ed	0.0110728	0.1046457	0	1
Age	38.60345	16.71584	16	106
Urban	0.2405238	0.4274114	0	1
SE	0.8757638	0.3298584	0	1
Income SE	0.6201241	0.4853669	0	1
Work SE	0.3181254	0.4657592	0	1
Living SE	0.0765909	0.2659473	0	1
Quality SE	0.7540087	0.4306833	0	1
Housing SE	0.6645072	0.4721733	0	1
Basic SE	0.5946703	0.490967	0	1
Northern zone	0.1185389	0.3232526	0	1
Coastal zone	0.3046175	0.4602558	0	1
Central zone	0.0851826	0.2791597	0	1
Lake zone	0.1837354	0.3872771	0	1
Southern zone	0.1418332	0.348887	0	1
Zanzibar	0.1660924	0.3721721	0	1
cc	0.4976338	0.5000059	0	1
cwc	0.0877556	0.2829456	0	1

SE=Social exclusion based the definition discussed in section 3.3; cc=refers to individuals cohabiting and have children; and cwc refers to cohabitation without children

Table 3 indicates the percentage of the individuals aged 16+ who are below the threshold for each of the dimension for the three waves. In 2008, about 92% of the sample was deprived in at least two dimensions while the proportion drops to 78% in 2012. High deprivation proportions are observed in the quality of life, basic needs, housing qualities and income dimensions while living dimension has the lowest proportion of deprivation. Most of these dimensions reflect economic aspects of social exclusion implying that significant number of individuals in Tanzania are socially excluded in economic aspects as compared to other dimensions. This is also true given economic condition of the country.

Table 3 Deprivation percentages based on particular dimension (Balanced Panel)

	2008	2010	2012
Basic	55%	75%	49%
Quality	79%	78%	69%
Housing	69%	67%	63%
Living	10%	8%	5%
Work	45%	33%	18%
Income	64%	64%	58%
Social Exclusion	92%	93%	78%

It should be noted that, the proportion of individuals regarded as socially excluded is subject to the particular threshold selected in every dimension. Therefore, the higher the cut-off, the more the proportion of people who are considered deprived in a particular dimension, and more will appear socially excluded and vice-versa. Hence, attention should be focused on the pattern and relationship between the dimensions in which there is social exclusion at a particular point in time rather than the level of exclusion per-se.

Across the dimensions of exclusion in particular point in time, we observe that more than 50% of the sample suffer from social exclusion in at least three dimensions. The proportion of deprivation is relatively higher in the first wave and decrease in subsequent waves, nevertheless, the proportion is still high. The proportion of individuals deprived in more than three dimensions is relatively lower than those deprived in at least three dimensions and evidence shows that there is also significant proportion of individuals excluded in all dimensions. Although the current study considers only six dimensions, results are in particular different from those obtained by Burchardt, Le Grand, & Piachaud (2002) and Poggi (2007) who find no evidence of individuals who are excluded in all the dimensions in U.K and Spain respectively.

Relationship of social exclusion over time is rather resilient over the three waves. Social exclusion in one wave has a strong correlation with social exclusion in the subsequent wave. Table 3 also demonstrates how social exclusion evolve over time for each dimension. The rates of deprivations observed in wave III are slightly lower than those registered in the first wave for each dimension. This implies that, there is a decrease of social exclusion over time although the decrease is not so significant given the number of waves available.

Considering the patterns of social exclusion, Table 4 shows the proportion of individuals who are excluded for one wave or more over the period of study. As time evolves, there is an increasing proportions of individuals who move from being socially excluded and correspondingly, a decrease percentage of people who have experienced social exclusion during the period of study. Only about 4% of the population has never experienced exclusion for the entire period of study. About 98% of the sample has experienced social exclusion in at least once in the entire period, and a decreasing proportions are observed when considering two or more consecutive waves. This decrease in frequency from the first wave to the third wave suggests that inclusion or exclusion in Tanzania varies over time. These results are in line with those obtained by Poggi (2007) and Burchardt et al (2002).

Table 4 Persistence of social exclusion in subsequent waves in various spells

Individuals excluded in j consecutive years in	Total	Percentage of individuals experiencing the following number of spells				
		One	Two	Three	Four	Five or more
Only 1 year	98%	92%	79%	52%	19%	1%
2 years	98%	93%	76%	45%	13%	1%
3 years	93%	78%	57%	27%	6%	0%

However, there is significant proportion of long-stayers which also represents significant level of total exclusion. About 31% of all observations of social exclusion is represented by those individuals who remain excluded in the final wave. These long-stayers have significant implications in policy aspects. This is because, in order to help the long-stayers, policy interventions should focus on helping them find a pathway out of social exclusion. There is also an indication of some degree of mobility, where proportion of the individuals experience some social exclusion but not excluded throughout the entire study period. Focussing on frequency of the exclusion spells in Table 4, it is observed that about 50% experience multiple spells. In particular, 52% in wave I, 45% in wave II and 27% in wave III experience three or more multiple spells.

4.2 Empirical results

In this section, I will discuss the empirical results based on the descriptive findings discussed above. In the first part, I will present estimates of the true state dependence and the heterogeneity while the second part, I will analyse the significance of the dynamics of the model.

4.2.1 Estimates of Persistence

Using the dynamic logit model discussed in section 3.4, I present the estimates of the conditional maximum likelihood with asymptotic standard errors, in Table 5 for the following cases. On the first ground, I consider only lag of social exclusion and initial condition as explanatory variables in Model 1. Secondly, to account for observed heterogeneity, I include some other explanatory variables in Model 2 and Model 3. In order to explicitly control for problems associated with probable intra-household correlation, results include robust variance estimates. Odds ratio estimates of the same are presented in Table 6.

In model 1, coefficient of lagged social exclusion is highly significant. This also applies for the initial value of social exclusion which implies that, there is a significant correlation between the unobserved heterogeneity and the initial condition. In particular, coefficient of initial social exclusion is 2.1 which is larger than that on lagged social exclusion which is approximately 0.8. Furthermore, coefficient of the conditional standard error of c_i (σ_a) is equal to 0.21 and is statistically different from zero, implying presence of unobserved heterogeneity.

Table 5 Social exclusion-three waves balanced panel

SE	Model 1		Model 2		Model 3	
	Coef.	Std Err	Coef.	Std Err	Coef.	Std Err
SE_lag	0.8395***	0.1526	0.6842***	0.1080	0.6894***	0.1082
SE_0	2.0943***	0.1919	1.5616***	0.1035	1.564***	0.1036
Edu_h	-	-	-1.5945***	0.1964	-1.5908***	0.1985
Male	-	-	-0.1383**	0.0542	-0.1357*	0.0542
Age	-	-	-0.4222***	0.010	-0.0422***	0.0102
Square of Age	-	-	0.0005***	0.0001	0.0005***	0.0001
Urban	-	-	-1.0491***	0.0615	-1.0578***	0.0617
Northern zone	-	-	-0.1739	0.1056	-0.1821	0.1057
Southern highlands	-	-	0.1093	0.1089	0.1013	0.1090
Central zone	-	-	0.8025***	0.1451	0.7938***	0.1538
Lake zone	-	-	0.3334***	0.1072	0.3294***	0.1042
Coastal	-	-	-0.4506***	0.0748	-0.4609***	0.0750
Cc	-	-	-0.0694	0.0641	0.5669***	0.1984
Cwc	-	-	-0.2332*	0.0962	0.1202	0.2976
Constant	-0.7164***	0.0687	1.2010***	0.2319	1.1869***	0.2335
Cc dummies	No	No	No	No	Yes	Yes
Cwc dummies	No	No	No	No	Yes	Yes
Sigma_a	0.208**	0.3978	0.0058	0.0209	0.0058	0.0201
LR Test	-		807.28***		27.71***	
N	14,510		14510		14510	

* p<0.1, ** p<0.05, *** p<0.01
SE_lag=social exclusion at time *t-1*; SE_0=social exclusion at the initial period; Edu_h=high level of education; cc=cohabitation with children; cwc=cohabitation without children. Northern zone, Southern highlands, Central zone, Coastal zone and lake zone are base year constant variables. (*) means statistically at 10%, (**) means statistically significant at 5% and (***) means statistically significant at 1%.

Presence of unobserved heterogeneity in model 1, suggests that there is a need to control for observed heterogeneity. Hence, in model 2, I include base year constant dummy variables representing gender, age and square of age and time varying variables demonstrating cohabitation status with or without children in the family. I also included some base year time constant zonal dummies to account for regional differences. Zonal dummies correspond to five zones identified by NBSTZ which include; Northern zone, Southern Highlands, Lake zone, Central zone and Zanzibar. Note that, reference group is composed of females who are living alone in Zanzibar area with low education. After inclusion of these variables, there is sharp decrease of unobserved heterogeneity that cannot be described by explanatory variables. The estimated σ_a is now 0.005 and statistically insignificant. Hence, in model 2, there is now low correlation between the initial condition and unobserved heterogeneity as in model 1. Using Likelihood ratio test (LR-Test), it is observed that, model 2 has also a better fit than model 1. Amongst the explanatory variables included in model 2, level of education appears to considerably reduce the chance of undergoing social exclusion. Coefficient of male is also negative, hence; males are somewhat less likely to experience social exclusion as compared to females. Same applies to individuals who live in urban areas compared to rural areas. Coefficient estimates of age and its square show that, probability of experiencing social exclusion decrease with age and the phenomenon reverse in old

age, however the magnitude of these coefficients are relatively low. Individuals living in Central and Lake zone face lower risk of experiencing of social exclusion as compared to reference group. This also applies with individuals who cohabit without children. Results are similar to those obtained by Poggi (2007), however the magnitude of coefficients are relatively larger in this study.

Table 6 Social exclusion-three waves balanced panel (odds ratios)

SE	Model 1		Model 2		Model 3	
	Coef.	Std Err	Coef.	Std Err	Coef.	Std Err
SE_lag	2.3152***	0.3534	1.9822***	0.2142	1.9925***	0.2156
SE_0	8.1197***	1.5581	4.7665***	0.4932	4.7762***	0.4948
Edu_h	-	-	0.2030***	0.0399	0.2037***	0.0400
Male	-	-	0.8708**	0.0472	0.8731**	0.0474
Age	-	-	0.9587***	0.0096	0.9607***	0.0098
Square of Age	-	-	1.00052***	0.0001	1.0005***	0.0001
Urban	-	-	0.3502***	0.0215	0.3472***	0.0214
Northern zone	-	-	0.8404	0.0887	0.8336	0.0881
Southern highlands	-	-	1.1154	0.1214	1.1066	0.1207
Central zone	-	-	2.2312***	0.3426	2.2117***	0.3399
Lake zone	-	-	1.3957***	0.1454	1.3901***	0.1449
Coastal			0.6372***	0.0476	0.6307***	0.0473
Cc	-	-	0.9327	0.0598	1.7627***	0.3498
Cwc	-	-	0.792*	0.0762	1.1278	0.3356
Constant	0.4885***	0.0336	3.3234***	0.7708	3.2771***	0.7653
Cc dummies	No	No	No	No	Yes	Yes
Cwc dummies	No	No	No	No	Yes	Yes
Sigma_a	0.2076***	0.39478	0.0058	0.0209	0.0058	0.0201
LR Test	-		807.28***		27.71***	
N	14510		14510		14510	

* p<0.1, ** p<0.05, *** p<0.01

SE_lag=social exclusion at time *t-1*; SE_0=social exclusion at the initial period; Edu_h=high level of education; cc=cohabitation with children; cwc=cohabitation without children. Northern zone, Southern highlands, Central zone, Coastal zone and lake zone are base year constant variables. (*) means statistically at 10%, (**) means statistically significant at 5% and (***) means statistically significant at 1%.

To further control for unobserved heterogeneity, model 3 include for each time varying-variable, its corresponding time invariant dummies as suggested by Wooldridge. Although, the estimated σ_a is still 0.005, model 3 has the best fit compared to the the other three models. I also tried to include, dummy variables for each wave in order to capture time trends. However, the variables were dropped due to collinearity and also results had the least power compared to the models discussed above. Probable cause may be due to number of waves in the study and therefore, time varying variables did not change significantly over the period of study.

The coefficients returned from the logistic regression in Table 5 are log-odds ratios. They indicate how the log-odds of a socially excluded individual change with one-unit change in the explanatory variables. Hence, the sign of the log-odds ratio shows the direction of its relationship. However, all odds-ratios in Table 6 are all positive values, and the distinction regarding positive and

negative relationship in the odds ratio is determined by the side of one they fall in. While the values of one indicate no relationship, less than one values indicate a negative relationship while greater than one values show a positive relationship. Therefore, results in Table 6, have the same interpretation and are equivalent with those discussed in Table 5.

As Poggi (2007) pointed out, the strict exogeneity assumption from econometric point of view is relatively difficult to test. The assumption requires that, conditional on previous level of social exclusion and on unobserved individual features, present social exclusion must not be correlated to other values of other past or future variables. The assumption is violated if responses from social exclusion are associated with values of the explanatory variables included as predictors in the model. In the model discussed above, the assumption can be even stricter since among covariates included in the analysis comprise of individual aspects such as age, geographical location of residents and education which are less likely to be altered by previous social exclusion. In addition, variables such as marital status and children in the household may be more challenging since it is expected that, social exclusion may have negative effect on marriage and fertility (Biewen, 2004). Although, there is no formal test in the paper to test this, I only present results by comparing the estimates of model 2 and model 3 in Table 5. The models represent, respectively two cases where one is estimated with time constant variables (cohabitation status with or without children) and the other without. It is clearly observed that, there is no substantial differences in the estimates and coefficient of the lagged social exclusion in model 3 is relatively lower than in model 1 where no exogenous variables are included. Therefore, it can be concluded that, estimated state dependence in model 3 is not biased considering that it is hard to tell whether covariates added in model 2 violates exogeneity assumption.

Generally, the estimation of the previous models shows that, probability to experience social exclusion is to a large extent explained by observed heterogeneity and state dependence. This is vividly observed in the Tanzania as significant proportion of the population (68%) still live below poverty line of $1.25 a day. The most prominent problems facing the country in poverty reduction efforts include; low education, unemployment, rising income disparities and failure to fully exploit its natural resources (UNDP in Tanzania, 2013). Secondly, significant part of persistence of social exclusion is attributed to the past social exclusion. That is, someone experiencing social exclusion now has a higher probability of experiencing it in the future. These findings are vital for policy relevance since results are suggestive on proper policies which will get people out of social exclusion as well as reducing their prone for future exclusion.

4.2.2 Importance of the Dynamics and the effect of Observed Heterogeneity

In order to assess importance of the dynamics in the model, I estimate average partial effects. This is to test whether there are dynamic effects in the model by calculating the magnitude of marginal partial effects and test relevance of the state dependence. The marginal effects will be more robust in analysing impact of observed heterogeneity in social exclusion conditional on past social exclusion status. The average partial effects conditional on response probability are given by;

$$E[\phi(\rho y_{it-1} + c_i)] \tag{4}$$

where, expectation is computed with respect to the distribution of individual specific effects, c_i. Consistent estimator as proposed by Wooldridge (2005) is provided by the following;

$$N^{-1}\sum_{i=1}^{N}\phi(\hat{\rho}_a y_{it-1} + \hat{a}_{0a} + \hat{a}_{1a} y_{i0} + z_i \hat{a}_{2a}) \tag{5}$$

The subscript a in equation (5) refers to a multiplication by $(1 + \hat{\sigma}_a^2)^{-1/2}$ and coefficients are estimated using conditional maximum likelihood estimations.

Based on the results of model 3 and the estimator above, I estimate the effects of a variation in some explanatory variables conditional on the probability of facing social exclusion, as a mean

over other distribution characteristics in the sample. On the first ground, I estimate the probability of exclusion for wave III given that an individual status of exclusion in wave II. Results are displayed in Table 7 below.

Table 7 Partial effects

Estimated probability of being socially excluded in wave III given that the individual is or not excluded in wave II	Excluded in wave II	Not excluded in wave II	Estimated dependence
Probability	0.8658	0.7860	0.0798
Probability of being excluded in wave III if			
Male	0.8590	0.7762	0.0829
Female	0.8720	0.7948	0.0772
Lives in			
Urban	0.7826	0.6605	0.1221
Another area	0.9027	0.8333	0.0694
Has			
A higher education level	0.6397	0.4982	0.1414
Lower education level	0.8694	0.7894	0.0801

State dependence is the estimated difference between being either socially excluded or not in wave III with previous wave (i.e. wave II). The probability to experience social exclusion in wave III given that the person is excluded in wave II is 0.8658 and it decreases to 0.7860 if the person is not excluded in wave II. Therefore, estimation of state dependence on social exclusion is approximately 0.0798. This implies that, persons experiencing social exclusion in previous period have 7.9% higher chance of being socially excluded in subsequent period compared to those who are not excluded.

For an individual living in urban area, who is also excluded in wave II has a probability of 0.7826 to be excluded in the subsequent period. The probability is much higher if the person is excluded and lives in another area (about 0.9), which means people living in rural areas have higher chances of being socially excluded compared to those living in urban areas. Moreover, for an individual living in urban area and not excluded in wave II, probability of social exclusion is 0.661, but it increases to 0.9027 if the person does not live in urban area. However, estimated state dependence for people living in urban areas is 12% which is much higher than individuals living in other areas (7%). Finally, it can be noted that, probability of being excluded for a male (0.8590) in wave III is somewhat smaller than that of a female (0.8720), and their state dependence are relatively similar although for male is slightly higher. In the same vein, persons with higher education have relatively lower probabilities to be excluded in wave III compared to those with lower education. Same applies for for those individuals who are not excluded in wave II. Nevertheless, estimated dependence is higher for those with higher education compared to those with lower education.

The general message from this analysis is that there is higher probability of experiencing social exclusion in the future for those who are socially excluded today compared to those who are not socially excluded. The impact on the dynamics of the past is also significant, and is more than 6% on average. These results are in conjunction with those found by Poggi (2007), however the magnitude are relatively higher for Tanzania compared to those obtained in Spain. Difference in magnitude makes sense considering difference in economic condition of the two countries.

5 Conclusions

This paper aimed at studying dynamics of social exclusion in Tanzania for the three available National Panel Surveys from 2008 to 2013. Literature discussion on the topic has conflicting explanations for the empirical consistency. It is frequently observed that individuals who experience social exclusion in previous period are prone to experience the same in subsequent periods. One argument is that; probability of experiencing social exclusion is due to true state dependence. Another explanation is that, individuals differ in certain observed and unobserved characteristics, which may influence their chances of experiencing social exclusion.

Using both descriptive and econometric analyses, results show that, social exclusion in Tanzania is relatively high. Over the period of study, about 98% of the sample have experienced social exclusion at least once over the entire period. It's only about 4% of the population under study that has never experienced social exclusion over the period under study. Regardless of this high proportions of individuals experiencing social exclusion, results also show that not all individuals are excluded through their entire period. This suggests that, there is some degree of movement between individuals who become socially excluded and those who move out of social exclusion in Tanzania.

The paper makes a significant contribution to the knowledge base of understanding social exclusion and the mechanisms underlying social exclusion transitions. On the first ground, I bring new applied evidence of social exclusion dynamics from one of the poorest country; Tanzania. In addition, results suggest that social exclusion dynamics in Tanzania is to a large extent triggered by observed characteristics (economic hardships) as compared to unobserved heterogeneity. This study can help to formulate and improve policies which are applied toward poverty reduction and social exclusion. In particular, it can assist in the process of proposing policies which will both help to get people out of social exclusion or prevent people from being socially excluded. In addition, the analyses have shown how different social exclusion processes are related to both policies which imply that there is a need for a right policy mix when addressing social exclusion. Further research in the area can be done by allowing flexible transitions in the model. This can be done by splitting the measure of social exclusion into subgroups where ordinal logit or count data can be used instead.

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Appendix

Appendix 1 :Correlation matrix between different dimensions

	Basic	Quality	Living	Housing	Income	Work
Basic	1					
Quality	0.2733	1				
Living	-0.049	-0.0485	1			
Housing	0.2127	0.4401	-0.0336	1		
Income	0.0709	0.0218	-0.0095	0.0381	1	
Work	0.0793	-0.01	-0.0094	-0.0809	0.2425	1

Appendix 2 :Extent of social exclusion using different weights

a. Deprivation percentages based on particular dimension and various spells at 40% of mean distribution

	2008	2010	2012
Basic	31%	45%	18%
Quality	27%	27%	45%
Housing	52%	50%	47%
Living	10%	8.5%	5%
Work	44%	31%	15%
Income	64%	56%	55%
SE	84%	84%	69%

Individuals excluded in *j* consecutive years in		Percentage of individuals experiencing the following number of spells				
	Total	One	Two	Three	Four	Five or more
Only 1 year	84%	68%	41%	21%	7.8%	0%
2 years	84%	62%	37%	18%	5.8%	0%
3 years	69%	42%	17%	7%	1.9%	0%

b. Deprivation percentages based on particular dimension and various spells at 60% of mean distribution

	2008	2010	2012
Basic	82%	94%	78%
Quality	97%	84%	92%
Housing	85%	83%	80%
Living	10%	8.5%	5%
Work	89%	72%	66%
Income	97%	96%	96%
SE	99.5%	99.5%	98.6%

Individuals excluded in *j* consecutive years in		Percentage of individuals experiencing the following number of spells				
	Total	One	Two	Three	Four	Five or more
Only 1 year	99%	95%	82%	56%	23.0%	5%
2 years	98%	96%	81%	51%	19.0%	3%
3 years	95%	82%	62%	31%	13.0%	1%

Appendix 3 : Time invariant variables for the time-varying variables of the Model 3

	Model 3		Model 3 (Odds ratios)	
Variables	Coef.	R.Std Err	Coef.	R.Std Err
cc2	-0.0616	0.4717	0.9403	0.4435
cc3	-2.0297***	0.3859	0.1314***	0.0507
cwc2	0.7515	0.7036	2.1201	1.4916
cwc3	-1.9635***	0.5218	0.1404***	0.0732

* p<0.1, ** p<0.05, *** p<0.01
cc2-cc3 and cwc2-cwc3 are respectively, the time invariant variables related to cc and cwc; cc1 and cwc1 are dropped due to collinearity.

Appendix 4 : Dimensions and weights used in Previous Empirical literature on social exclusion

Author	Dimensions	Country	Weights	Identification of Exclusion
Tsakloglou and Papadopoulos (2001)	Income, Living conditions, necessities of life and Social relations	EU member states	Various	Various thresholds
Brandolin and D'Alessio (1998)	Health, Employment, Economic resources, Education and skills, Family and Social integration, Housing, Security of life and property, Recreation and Culture and Political resources	Italy	various	When realisation of the attribute is below the social norm
Poggi, A (2004)	Basic, Quality, Housing, Social, Healthy, Living, Work and Income	Italy	Equal weights	Excluded in at least 1 or more dimensions
Poggi, A (2007)	Basic, Quality, Housing, Social, Healthy, Living, Work and Income	Spain	Equal weights	Excluded in at least 2 or more dimensions
Rosanna Scutella,Roger Wilkins and Weiping Kostenko (2009)	Material resources, Employment, Education and skills, Health and disability, Social, Community and Personal safety	Australia	Equal weights	Average of the exclusion score of all member of the household over 15 years.
Spoor, M (2011)	Economic life, Social services, Civic life and Social networks	Kazakhstan, FYR Macedonia, Moldova, Serbia, Tajikistan and Ukraine	Equal weights	Deprived in at least nine indicators
Cok Vrooman, J and Hoff, J.M (2013)	Material deprivation, Limited social participation, Inadequate access to basic social rights, Lack of normative integration	Netherlands	Non-linear canonical correlation analysis	Deprived in at least one of the indicators