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# Informal Employment in Sri Lanka: Nature, Probability of Employment, and Determinants of Wages

Ramani Gunatilaka

October 2008

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First published 2008

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**Informal Employment in Sri Lanka: Nature, Probability of Employment, and Determinants of Wages**  
Subregional Office New Delhi 2008

ISBN: 978-92-2-121787-9 (print)

ISBN: 978-92-2-121788-6 (web pdf)

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Printed in India

# Executive Summary

## Objectives

This paper looks at the nature of informal employment in Sri Lanka along three dimensions: its extent and nature; the characteristics of workers that increase the probability of engaging in informal employment, rather than in formal employment; and the determinants of informal employees' wages when compared with formal employees' wages. It is the first study in Sri Lanka that looks at informality in employment arrangements in terms of occupations or jobs as well as in terms of production units. Hence, it uses the broader and internationally accepted definition of informality determined by the 15th International Conference of Labour Statisticians, which takes into account changes in employment relations that have occurred worldwide during the last 20 years.

## Extent of informal employment

This study found 66 per cent of all employed people working in informal work arrangements. Nearly 28 per cent of total employment was made up of agricultural informal employment. Non-agricultural informal employment accounted for 39 per cent of total employment. Formal employment accounted for 34 per cent of total employment: 13 per cent from the public sector, and 20 per cent of the total consisting of private formal employment. The gender bias in informal employment appears to favour males (69 per cent of total employment) rather than females (61 per cent of total employment).

Insecurity is characteristic of informal employment. A little less than half of all informal workers are own-account workers, while 15 per cent are family workers; only 29 per cent are employees in informal enterprises or households. Of the employees in informal enterprises or households, only 6 per cent have permanent tenure, the rest are mainly temporary, casual, or without a permanent employer. Moreover, 45 per cent of informal employees are in firms with less than five workers.

## Determinants of probability of informal employment

Males are more likely to be informally employed, as are young people and older workers. Informal workers are more likely to be ethnic Moors than of the reference category, Sinhalese. The more educated one is, the less likely one is to be informally employed, and the relationship is monotonic. Likewise, the better educated and skilled employees are less likely to be in informal employment than in formal employment. Managers and other skilled occupation categories are less likely to be informally engaged relative to production workers, the reference category. Only service and agricultural workers are more likely to be informally employed.

Informal workers are also more likely to be employed in the manufacturing and services sectors, rather than in agriculture, the reference category. They are also significantly more likely to be resident in urban areas, rather than in rural or estate areas. Residents of Central, Southern, North-Western, and Sabaragamuwa Province are more likely to be informally employed than residents of Western Province.

In the informal sector, as firm size increased, employees were less likely to be informally employed. Temporary or casual tenure, relative to permanent tenure, significantly increases the likelihood of being an informal employee in either a formal or informal enterprise.

## **Determinants of wages**

Males get higher wages in both the formal and informal sectors. Youth and seniority also make for higher returns. Ethnicity is not a significant determinant of wages, other than for the ethnic 'Other' category, which commands higher wages in formal employment than the reference group, Sinhalese. Thus, there is no evidence of ethnic discrimination in wages. But greater educational attainment leads to significantly higher wages in formal employment, while the results are not significant for informal employees. Higher skilled occupations in formal work also result in higher wages compared to production workers, and workers in agricultural and elementary occupations earn less than production workers. The results are not significant for informal employees. Employees in manufacturing and services all earn more than employees in agriculture, but the results are both significant and larger for formal employees.

The firm-size related variables are, by and large, not significant, other than for the 100 employees plus group, which earns significantly more than employees in microenterprises in the formal sector, and significantly less than employees in microenterprises in informal employment. Temporary and casual workers earn significantly less than permanent employees in formal employment. However, formal employees, who are not attached to any specific institution, earn the most. On the whole, the spatial variables are not significant, except that formal employees in Central, North-Western, and Sabaragamuwa Province earn significantly less than formal employees in Western Province. But informal employees in Southern Province earn significantly more than employees in Western Province, while informal employees in Sabaragamuwa earn significantly less than employees in Western Province.

## **Implications for research and policy formulation**

The fact that almost two-thirds of total employment in Sri Lanka is informal is cause for serious concern. That so many Sri Lankans are still engaged in agriculture and informal employment, confirms that the economy's rate of structural transformation since economic liberalization has been less than optimal. This fact, taken together with the study's finding that better education and skills are poorly rewarded in informal work, underlines the observation that Sri Lanka has been unable to reap the benefits of its superior education policies because the economy has been unable to generate the kind of jobs that can pay educated workers a good wage.

Formal job creation in Sri Lanka is probably constrained by labour regulations that raise labour costs; certain clauses in the Inland Revenue Act operating as a growth trap for businesses; the impact of the secessionist conflict and high rates of inflation on business confidence; and serious infrastructure constraints in terms of electricity generation and transport. Nevertheless, Sri Lanka's experience has parallels in other parts of South Asia and it has been argued that increasing returns to scale and the nature of technological progress in recent times have also constrained the movement of workers out of low-productivity employment in agriculture.

While informal employment may be something that Sri Lanka may have to learn to live with, policy needs to concentrate on ensuring decent work standards in informal jobs, particularly on implementing measures that improve productivity and incomes, enforce regulations relating to occupational safety and health, and strengthen social insurance, assistance, and welfare schemes. At the same time, regulations and procedures relating to enterprises may need to be simplified and incentives such as credit offered, in order to encourage informal enterprises to seek legal recognition.

Potential areas for research arising from the heterogeneity of informal employment are:

- (1) Investigating the nature of own-account work:
  - (a) Which of the segments of own-account work has the potential for expansion into microenterprises, and what are the constraints that prevent them from achieving this potential?
  - (b) Which segments of own-account workers are more suited to work as employees rather than proprietors?
- (2) The impediments to formal job creation:
  - (a) What are the costs (e.g. greater visibility in terms of law enforcement) and benefits of formalization (access to credit, technology, economies of scale)?
  - (b) Do certain policy reforms and other interventions have the potential to change the incentive structure to favour formalization?
  - (c) What are the factors that constrain the expansion of formal employment in formal enterprises?

Future research needs to be facilitated by more comprehensive data. The Department of Census and Statistics' Household Income and Expenditure Survey may be a more suitable instrument for collecting data related to informal employment because it includes earnings data for all types of employed persons, not just employees. Sri Lanka also needs longitudinal panel data on enterprises, particularly microenterprises, which would enable the monitoring of the growth of firms and identifying the factors that ensure their survival or precipitate their dissolution. Quantitative data collection and analyses need to be complemented by in-depth qualitative studies that can capture information about the power relations, networks, and aspirations that determine the employment chances of individuals and the survival and expansion rates of businesses.



# Foreword

A distinguishing characteristic of labour markets of developing countries is the predominance of informal activities, which have been described as the informal sector or the informal economy. Workers in the informal economy face serious deficits in decent work: They are engaged in poor quality jobs, with low productivity and incomes, poor working conditions and occupational health and safety standards, and limited access to knowledge, technology, finance, and markets. Since they are normally outside the legislative regulatory framework and are not covered in official statistical enumeration, they are unrecognized, unregistered, unprotected, and socially excluded. Their problems are compounded by their lack of organization and lack of voice at work.

The absence of an appropriate framework for the governance of markets in general, and labour markets in particular, creates an environment of insecurity, which prevents the accumulation of physical, financial, human, and social capital. Without a strategy for the gradual extension of formal regulations to meet the needs of informal workers and enterprises in the developing world, the productive potential of the world's working poor will remain untapped, acting as a brake on growth and creating a source of increasing social tension. Policies must be based on the reality that most people live and work in the informal economy, not by choice, but out of a need to survive.

In response to numerous requests by the social partners to carry out a comprehensive study of the informal economy, the International Labour Organization (ILO) commissioned this study to identify the critical issues that need to be addressed in order to provide decent working conditions for those employed in the informal economy. This study attempts to look at the extent of informal employment and the informal economy in Sri Lanka; analyse the determinants of wages in the economy at large and the role played by employment in the informal sector, or informal employment, in determining wages; analyse the determinants of wages in the informal sector relative to the factors that determine employment in the formal sector; and assess the factors that determine the probability of an individual being employed in the informal sector.

The findings of the study show that the majority of the employed in Sri Lanka are working in informal work arrangements. The employment conditions are precarious and only about 6 per cent have permanent tenure. Compared to females, males comprise a larger portion of the employed in the informal economy. It is also evident that informal job creation has had a direct impact on reducing unemployment by generating more employment opportunities than formal job creation.

Further, the study points out the necessity to instil decent work standards in informal jobs, the enforcement of occupational safety and health, and the promotion and provision of social insurance, assistance, welfare schemes, and credit. The simplification of rigid regulations with regard to starting up enterprises and obtaining credit would be a welcome initiative for most of the own-account workers and microenterprises vying for legal recognition. The author articulates the necessity to undertake more comprehensive research on the informal economy to strengthen the existing knowledge base, as outlined in the ILO Sri Lanka's Decent Work Country Programme 2008–12.

The study was commissioned and financed by the ILO office in Colombo, with technical backstopping by the Sri Lanka office and the Senior Employment Specialist, SRO, New Delhi. It makes an important

contribution to the understanding of the informal economy in Sri Lanka, its estimates and determinants and is also a valuable analysis of the dynamics of informality and development in South Asia.

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## Acknowledgements

Insightful comments on earlier versions of this paper by Nisha Arunatilake, Johanna Boestel, Sukti Dasgupta, Tine Staermose, Shafinaz Hassendeen, Brett Inder, Sangheon Lee, Shyamali Ranaraja, Chandra Rodrigo, Paul Vandenberg, Pramodini Weerasekera, and Ravi Samithadasa are gratefully acknowledged. The paper also benefited from the comments of participants at the tripartite workshop at which the findings were presented. The usual disclaimers apply.

## 1. Introduction

This paper looks at the nature of informal employment in Sri Lanka along three dimensions: its extent and nature; the characteristics of workers that increase the probability of engaging in informal employment, rather than in formal employment; and the determinants of informal employees' wages when compared with formal employees' wages. It is the first study in Sri Lanka that looks at informality in employment arrangements in terms of occupations or jobs as well as in terms of production units. As a result, it uses a broader and more internationally accepted definition of informality, which takes into account changes in employment relations that have occurred worldwide during the last 20 years, than has been hitherto possible.

The conventional approach to informality hinges on a dualistic model of the economy. The structuralist interpretation of this dualism sees development as a structural transformation of the economy, in which labour moves from a traditional sector, where labour productivity is low, to an expanding modern sector, where labour productivity is high, as in Lewis' (1954) model of economic development with unlimited supplies of labour. In this model, informal employment is regarded as a transitory phase and the traditional sector is expected to contract as labour transfers to the modern, formal sector.

However, the legalist approach to informality commonly favoured by neoclassical economists based at the World Bank argues that this process of labour transfer can be constrained if the modern sector is subject to restrictive job security legislation, which hampers the growth of that sector. This can force the majority of workers into 'unprotected', poor quality, informal employment in exploitative work relations (for e.g., see Heltberg and Vodopivec, 2004; Rama, 1994). At the same time, governmental institutions and regulations can force entrepreneurs into the informal sector in order to establish and run their businesses in a timely and profitable way. Thus, the informal sector is regarded as a repository of economic dynamism prevented from reaching its full potential by government regulations (de Soto, 1989).

In such an environment, trade liberalization can actually increase informalization: On the one hand, foreign competition forces domestic firms to become more competitive and reduce costs by subcontracting to the informal sector; by firing workers who are, in turn, forced to turn to informal employment; or by hiring workers in informal work arrangements (Attanasio et al., 2004). On the other hand, the growth of formal employment need not necessarily imply a contraction of informal employment if the two complement each other, rather than act as substitutes for each other. Firms may well cut costs by subcontracting uncongenial tasks, such as sewing garments or washing dishes, to the informal sector and invest the savings in equipment and infrastructure and employ higher skilled workers, such as fashion designers or chefs (Marcelli, 2004). This is the marginalist characterization of informal employment, which focuses on production processes, employment relationships, and linkages with larger national and global economies.

Indeed, from the mid-1980s onwards, unprotected, precarious employment conditions have been proliferating in formal sector enterprises and production chains, requiring a widening of the concept of informality to cover the formal sector as well. The resulting concept of informal economy adopted by the International Labour Organization (ILO)<sup>1</sup> includes the informal sector as well as workers employed

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<sup>1</sup> See the "Resolution concerning statistics of employment in the informal sector", adopted in 1993 by the 15th International Conference of Labour Statisticians, <http://www.ilo.org/public/english/bureau/stat/res/index.htm>

on a precarious basis, directly or indirectly, by formal sector enterprises. Accordingly, all workers whose employment relations are not subject to conditions set by labour legislation regarding taxation, social security contributions, and social protection are regarded as informal (Tokman, 2007). This broad definition of informality requires additional information about whether workers receive benefits such as social security, a widely accepted distinction between formal and informal employment (Attanasio et al., 2004).

Yet, while informal employment has been conventionally associated with poor quality and low wage employment, there is recent evidence of high incomes and growth of incomes among those working in the sector in developing countries. For example, Pratap and Quintin (2006) show that the wage premium that formal employment appears to enjoy over informal employment in Argentina disappears once semiparametric techniques are used to control for individual and employer characteristics. Dasgupta's (2003) study of informal service employment in New Delhi also suggests that earnings in the informal service sector were not the lowest. Nor were they comparable to wages in the urban formal unskilled sector.

Heterogeneity is certainly a hallmark of informal employment, as different economic processes give rise to a spectrum of different economic activities with different income generating potential (Dasgupta, 2003). Different interpretations of these processes, in turn, give rise to different policy prescriptions. For example, reform of job security regulations, increased social security coverage, and enforcement of decent work standards are prescribed to address the ills of labour market segmentation, poor labour standards, and the low productivity and stagnation associated with informal employment. At the same time, policies such as credit schemes and technical training are prescribed to tap the productive potential and dynamism of informal enterprises. In fact, the microenterprise approach to the informal sector is a policy based approach that recognizes that self-employed micro proprietors account for the major part of the informal sector and need help to become growing, self-sustaining businesses that contribute significantly to economic growth, productive employment creation, and poverty reduction (Mead and Liedholm, 1998; Pisani and Patrick, 2002).

Thus, while a broad definition of informality is essential to take into account this heterogeneity, the different processes that give rise to it, and the most appropriate policy responses, Sri Lanka has thus far lacked the data necessary to analyse the informal economy in such generic terms. Previous studies have been based on small sample surveys of particular localities that have offered immensely rich insights about the diversity of informal employment and the social, political, and economic processes associated with it (for e.g., see Hettige, 1989; Marga Institute, 1979; Sandaratne, 1989, 2002). The few quantitative analyses using nationwide data sets that have been carried out have been forced to look at the informality associated with the lower ends of the wage distribution or with the lower ends of the occupation scale because of data limitations. For example, the limitations of the SLIS 1999-2000 data and the Quarterly Labour Force Survey (QLFS) data of 1997-2003 confined Arunatilake and Jayawardena (2005) to a definition of informality which was based on jobs – own-account workers, unpaid family workers, and daily paid private sector employees – and which did not include informal work arrangements in formal or informal production units (sector). Lack of information about receipt of social security benefits – a widely accepted distinction between formal and informal work – is likely to have been a key constraint. Dissanayake (2005), similarly hampered by the limitations of the QLFS 2003, used a jobs based

definition that included own-account workers, unpaid family workers, and paid employees in elementary occupations.

In contrast, the present study has been able to use the QLFS 2006 data, which has benefited from the Department of Census and Statistics' 2006 revision of the QLFS schedule. This data set is amenable to an analysis that uses a broad definition of informal employment. An enterprise based definition of informality, which includes employment in the informal sector as well as other forms of informal employment (outside the informal sector), is now possible. Hence, this study aims to fully exploit this new data set and carry out a baseline analysis of the extent, nature, and determinants of employment and wages in the informal economy, which will help policy makers monitor changes and develop appropriate policy options in the future.

This paper is structured as follows. Section 2 discusses the definition of informal employment adopted, the data used, the methodology applied, and the variables defined. Section 3 presents an overview of informal employment in terms of size, characteristics, and the mean earnings of formal and informal workers. Section 4 investigates the determinants of the probability of being informally employed, given the characteristics of individuals and production units. Section 5 presents the results of the analysis on the determinants of earnings of formal and informal employees. Section 6 concludes and draws the implications of the analysis for policy and future research.

## **2. Definitions, data, and methodology**

### **2.1 Definition of informal employment**

In the broadest terms, informal employment denotes engagement in economic activities that take place beyond the legal purview of the state. This may be because there is no legislation covering these activities or, even where there are laws, they are not enforced due to a combination of factors such as deliberate evasion and/or lack of monitoring and enforcing capacity by the state.

The 15th International Conference of Labour Statisticians (15th ICLS) adopted a conceptual framework of informal employment in terms of characteristics of enterprises or production units (sector) as well as in terms of the characteristics of persons employed (jobs). The production units of the informal sector were defined as unincorporated enterprises owned by households as well as units that are owned and operated by single individuals working on their own account as self-employed persons, either alone or with the help of unpaid family members. In particular, these units were to be characterized by three criteria: (a) non-registration of the enterprise; (b) small size in terms of employment; and (c) non-registration of the employees of the enterprise. The 15th ICLS also recommended the exclusion from the informal sector of units exclusively engaged in the production of goods or services for own final consumption or own fixed capital formation and the exclusion of agricultural activities. It recommended the inclusion or exclusion of enterprises engaged in the production of professional or technical services rendered by self-employed persons on the same basis as other enterprises and the option to include or exclude paid domestic workers engaged in households, depending upon national circumstances.

Table 1 presents in matrix form the conceptual framework of informal employment developed by the 15th ICLS. Note that the rows denote production units set out as observation units, while the columns denote jobs as observation units. According to this conceptualization, informal employment

includes the total number of informal jobs, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period. Hence, it includes the following types of jobs:

- (a) Own-account workers employed in their own informal sector enterprises (Cell 3);
- (b) Employers working in their own informal sector enterprises (Cell 4);
- (c) Contributing family workers, irrespective of whether they work in formal or informal sector enterprises (Cells 1 and 5);
- (d) Members of informal producers' cooperatives (Cell 8);
- (e) Employees holding informal jobs in formal sector enterprises, informal sector enterprises, or as paid domestic workers employed by households (Cells 2, 6, and 10). Informal jobs are defined as those in law or practice not subject to national labour legislation, income taxation, social protection, or entitlement to certain employment benefits such as severance pay and paid annual leave; and
- (f) Own-account workers engaged in the production of goods exclusively for their own final use by their own household (Cell 9), if considered employed.

The present study uses a definition of informal employment based on this broad conceptual framework, but with certain modifications to suit Sri Lankan conditions. The modifications were based primarily on the decisions taken by the study's tripartite working group and the availability of data.

First, contrary to the recommendations of the 15th ICLS, it was decided to include agricultural activities in the analysis. As a developing economy, Sri Lanka is going through a process of structural transformation, where its agricultural sector can be regarded as part of the 'traditional' sector in Lewis' (1954) model of economic transformation. It is necessary to monitor the dynamics of this transformation to develop appropriate policy responses. The sector also employs at least a third of the country's workforce. Of these workers, many are small landholders in peasant or market gardening, others are casual agricultural labourers, and the rest work in the formal plantations sector. Poverty is strongly associated with agricultural work: 40 per cent of households whose heads were engaged in agriculture in 2002 were poor; the figure is twice that for manufacturing and even more than that for services (World Bank, 2005). Hence, an analysis of informal work, with a view to deriving policy implications for poverty reduction, needs to include the agricultural sector.

Second, registration of the production unit under the Employees' Provident Fund Act or the Inland Revenue Department, or contribution by the employer to a pension scheme or provident fund on the worker's behalf, were deemed as sufficient criteria to determine whether a production unit was formal or not.

Third, while schooling is compulsory for those less than 16 years of age, some youngsters aged less than 16 years are engaged in informal employment. Hence, while members of the working group suggested an age threshold of 14 years, following comments by the Director of the Sample Survey Division of the Department of Census and Statistics, it was decided to lower the threshold further to 10 years, in keeping with the department's own experience and practice. No upper age limit was specified.

Fourth, domestic service workers were included in informal employment.

Fifth, the large number of Sri Lankan migrant workers in foreign countries was not included in the analysis, even though this was recommended by two of the working group members. There were two reasons for the exclusion: Firstly, unlike previous QLFS survey schedules, the schedule of 2006 did not ask for any information about household members working abroad. This is an unfortunate omission as these workers contribute significantly to the economy of their households and of the country at large, and information about them would be useful. Nevertheless, accepted practice worldwide is to consider overseas employment as that taking place within the national boundaries of the host country, rather than in the employee's country of origin. Hence, the definition used in this study excludes Sri Lankans working overseas.

Sixth, the QLFS 2006 has no information that allows one to distinguish between members of producers' cooperatives and other jobs by status of employment. Hence, it is not possible to identify those in the category of Cell 8 separately from the rest. Similarly, the data does not allow one to distinguish own-account workers or employees in household based production units relative to formal and informal sector enterprises, except in the case of domestic servants. Since it would be misleading to include only domestic servants in Cell 10, we have decided to include them under Cell 6 and disregard households as production units, as no other information is available about them.

Accordingly, this study defines informal employment as the aggregate of Cell 1 through to Cell 6, with the possible contents of Cells 9 and 10 included in Cells 3 and 6, respectively. The criteria used to identify workers belonging to these categories are set out clearly in Table 2. A person is considered employed if he or she has worked as a paid employee, employer, own-account worker, or unpaid family worker in the week preceding the week of the survey. It includes those with a job, but not at work during the previous week. This is the standard definition used by the Department of Census and Statistics, Sri Lanka.

However, while a quantitative analysis of this nature requires clear-cut definitions as discussed above, it must be admitted that such definitions tend to oversimplify the nature of the process that we are trying to study. For example, while we assume in our analysis that informal employment begins at the point that formal employment ends, based on our limited criteria of jobs (family workers and own-account workers) and production units (EPF coverage), these are distinctions that we impose on the data to enable its analysis. Real life is rarely this simple and it is also much richer. This can be best expressed in Hettige's (1989) words about the informal urban economy in Colombo:

The lines separating the urban informal economy from the formally organized economy are not clear and there is, in fact, some kind of transition zone between the two. As some informal enterprises grow, they acquire the attributes of the formally organized enterprises, such as permanent location, formal recognition, state supervision, direct dealings with formal enterprises such as banks and wholesale dealers, and so on. Some informal enterprises and activists operate in collaboration with formal enterprises either as sub-contractors or service providers. Washers who undertake washing for hotels and hospitals and retailers who purchase their wares from large firms are cases in point (pp. 83-4).

A quantitative analysis, such as the present study, cannot hope to fully capture the complexity of informal employment as the quantitative methodology imposes its own limitations. Nevertheless, it can still provide a much needed overview of informal employment in terms of certain measurable

characteristics that can serve as a baseline for more in-depth analyses. It is in this spirit that we proceed to discuss the data and methodology used for the analysis in the next sections.

## 2.2 Data

The analysis draws data from the QLFS 2006 conducted by the Department of Census and Statistics, Sri Lanka. The QLFS 2006 does not include data from Northern and Eastern Province because the conflict situation precluded data collection in these areas. Hence, the present analysis relates only to the seven provinces outside the aforementioned provinces. This population accounts for about 85 per cent of Sri Lanka's population of roughly 19 million people. The total sample of 22,000 households of the QLFS 2006 was selected using a two step stratified sampling procedure. The full sample was distributed into 12 months from January to December 2006. Details of the survey can be found in the *Annual Report of the Sri Lanka Labour Force Survey 2007* (see Department of Census and Statistics, 2007).

While the survey includes information on demographic characteristics, education, occupation, and industry for all employed persons, information on size of production unit, earnings, and hours of work is available only for employees. This is an important limitation of the data and, in turn, of the present analysis. The vast majority of informal workers are own-account workers and, if this type of information was available, it would have enriched the analysis substantially. As it is, the data analysis to follow has had to distinguish between the full sample of employed persons and the sample of employees for whom there is a richer data set. The analysis of earnings is also restricted by necessity to employees. Moreover, unlike in earlier survey years, information about vocational and technical training and job experience is restricted to unemployed persons. Once again, this is an unfortunate gap in the available data that constrains the present analysis of informal employment.

It is also important to note that the spatial information available in the survey is related to the sector or administrative district of residence, and not of employment. Therefore, we cannot draw inferences about jobs and earnings in relation to the geographic area in which both are generated, but only in relation to the area in which the employees live.

According to the definition of employment used, a total of 27,720 individuals in the sample were found to be employed. However, only 23,424 individuals of this sample could be identified as being engaged in formal or informal employment using the criteria discussed in Section 2.1. The nature of employment, in terms of formal or informal, for the remainder could not be identified as the necessary information was missing for these observations. Of this number, amounting to 16 per cent of the entire sample, the large majority – some 4,228 individuals – were employees. Since this study is particularly interested in the extent of informal employment, it was decided to impute the missing values, rather than drop the missing observations of employees. Values were imputed using Royston's (2004) user-written Stata ado programme, Imputation by Chained Equations (ICE), which assumes that the missing observations are missing at random.

## 2.3 Methodology and variables

Descriptive statistics about the sample are set out in the overview of informal employment in Sri Lanka in Section 3. The analysis also deploys several summary measures of inequality to measure wage inequality among all employees, and among public, formal, and informal employees separately.

These measures of inequality are certain key percentile ratios, the Gini Coefficient, Generalized Entropy Indices and the Atkinson Index. Jenkins (2006) sets out the bases on which these measures are calculated.

We also use kernel density estimation methods to observe the levels, modalities, and spreads of the wage distributions of public and private formal and informal employees. Details of the procedure can be found in Van Kerm (2003).

The regression analysis in this study looks at two specific issues: the determinants of the probability of informal employment (in Section 4) and the determinants of public, formal, and informal wages (in Section 5). Following Heckman's (1979) seminal insight, economists routinely implement selectivity bias correction methods when estimating wage equations over an endogenously selected population. This is because only a subsample of all working age persons are employed and able to report earnings, and selectivity bias could arise if an analysis were based only on the observed earnings of this subset. Therefore, the appropriate model to determine the probability of employment in each type of employment and the determination of wages ideally needs to correct for sample selection bias at the labour force participation, employment, and employment sector stages in a cascading sequence, before modelling the determination of wages. The only accurate way to do this is to formulate the rather complex likelihood for this four-variable multivariate system. However, this is a non-trivial programming exercise, which cannot be carried out in Stata, the statistical package used for the econometric analysis in this study. In fact, Stata has only two procedures to correct for sample selection bias and both involve collapsing the participation selection model into just two stages, with the second stage dealing with the determination of wages.

Therefore, in this study, we break up the sequential decision making model into two parts. We first correct for selectivity bias in just the first of the probability of employment models in Section 4. We do this by collapsing the participation, employment, and employment sector stages into just two phases by including unemployment as an employment outcome along with sector based outcomes, such as public employment, private formal employment, and informal employment (see Maddala, 1983). The remaining two probability of employment models, which look at different informal employment categories and employee categories, are not corrected for selectivity bias: the first because that would involve far more employment outcome categories than would be practically possible in a multinomial logistic analysis, and the second because it would mean excluding many of the job related variables, including firm size, which are available only for employees in private formal and informal employment.

We deal with the issue of selectivity bias again in Section 5, where we look at the factors that determine public formal and informal wages. Here again, we collapse the decision making process into just two stages: employment outcome and determination of wages, using Fournier and Gurgand's (2002) user-written SELMLOG Stata programme, which corrects for sample selection bias with the multinomial logistic regression model (see Bourguignon, Fournier, and Gurgand, 2007).

Let us first consider the models used to investigate the determinants of the probability of informal employment in Section 4. Three kinds of sector participation choice models are estimated using a maximum-likelihood multinomial logistic model, based on the following linear functional form:

$$s_{ij} = \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki} + \varepsilon_{ij} \quad (1)$$

The dependent variable  $s_{ij}$  denotes the employment outcome  $j$  of individual  $i$ . Subscript  $j$  takes different values with no natural ordering for different employment outcomes.

In the first model we run using the full sample of labour force participants, the dependent variable  $s_{ij}$  is a multinomial variable, where  $j$  takes different values based on four different employment outcomes. The outcomes are: (a) unemployment; (b) public employment; (c) private formal employment; and (d) informal employment. Unemployment is considered an option in order to correct for sample selection bias. The independent variables  $x_{ki}$  represent personal, labour market, and job related attributes that determine the kind of employment in which an individual is likely to be. We define five groups of such variables, demographic, education, occupation, industry, and spatial characteristics, which will be discussed below. Thus,  $s_{ij}$  is the outcome of conditions related to personal choice, individual attributes, labour market conditions, and employer preferences, which determine the individual's employment. The term  $\varepsilon_{ij}$  is the error term, which has a logistic distribution.

In the second model we apply to the sample of employed persons, the dependent variable  $s_{ij}$  is a multinomial variable, where  $j$  takes different values based on six different employment outcomes. This model does not correct for sample selection bias because there would be too many employment outcome categories. The employment outcome categories used in this model are based on the conceptual framework of Table 1: (a) formal employment in public and private organizations; (b) family workers in formal and informal enterprises (Cells 1 and 5); (c) informal employees in formal enterprises (Cell 2); (d) own-account workers in informal enterprises or households (Cells 3 and 9); (e) employers in informal enterprises (Cell 4); and (f) employees in informal enterprises or households (Cells 6 and 10). The base outcome category is formal employment (a) and the categories (b) through to (f) make up the different types of informal employment.

In the third model we apply to the sample of employees outside the public sector, the dependent variable  $s_{ij}$  is a multinomial variable, where  $j$  takes different values based on three different employment outcomes of employees. They are: (a) formal employees in private formal enterprises; (b) informal employees in formal enterprises (Cell 2); and (c) employees in informal enterprises or households (Cells 6 and 10). The base outcome category is formal employees. Public employees are excluded because the job related variables, such as firm size, do not apply to the public sector. This model does not correct for sample selection bias either.

To correct for sample selection bias when investigating the determinants of wages in Section 5, we use Gurgand and Fournier's (2004) user-written SELMLOG programme to first estimate a multinomial logistic regression model as the latent employment function. Standard errors are derived from 100 bootstrap replications. The model has five outcomes: (a) unemployment; (b) all non-employees in formal and informal work; (c) public employees; (d) formal private employees; and (e) informal employees. To the standard list of explanatory variables used in the probability of employment models described above, we add socioeconomic and demographic variables that help explain the employment sector outcomes. Thereafter, SELMLOG includes the consistent estimators of conditional expected values of the residuals derived from the multinomial logistic model as additional variables in estimating the following wage function:

(2)

In this equation, the dependent variable  $w_{ij}$  is the log of hourly wage of employee  $i$  in employment outcome  $j$ . The independent variables  $x_{ki}$  are personal, labour market, and job related attributes that determine the hourly wage that an employee gets. The variables  $z_{ji}$  are the consistent estimators of conditional expected values of the residuals for each employment outcome  $j$  derived from the multinomial logistic model. The term  $\varepsilon_{ij}$  is the error term. The three hourly wage outcomes we estimate are for public employees, formal private employees, and informal employees.

To derive the log of hourly wages of employee  $i$  in the main occupation, hourly wages were calculated as earnings in the last month from the main occupation, divided by the hours usually worked in a month. This worked out as 30/7 times the hours usually worked in a given week, as demonstrated in Gunewardena (2006). The independent variables  $x_1, \dots, x_k$  influence the hourly wage the individual earns. They are classed as six groups: demographic, education, occupation, industry, job related variables, and spatial characteristics.

The independent variables used in the logistic regression analysis of the probability of employment, as well as in the analysis of the determinants of hourly wages, are defined as follows.

There are eight demographic variables. Male denotes male gender (reference category is female), Married denotes civil status, Age denotes age in years, and Age Squared is self-explanatory. The minimum threshold is 10 years, there is no upper limit. There are four ethnic dummies: Sri Lankan Tamil dummy, Indian Tamil dummy, Ethnic Moor dummy, and Ethnic Other dummy. The majority Sinhalese ethnic group is the reference group.

The impact of education is captured in terms of three dummies: Junior Secondary, Senior Secondary, and Tertiary. The reference category is Primary or Less.

There are seven occupation variables defined according to the one digit classification of the International Standard Classification of Occupation: Managerial, Professional, Technical, Clerical, Service, Agricultural, and Elementary. Product Workers and Those Not Classified Elsewhere are the reference group.

The industrial sector of employment is captured by two dummy variables: Manufacturing and Services. Manufacturing includes the manufacture of food, beverages and tobacco, textiles, wearing apparel and leather goods, wood and wood products, paper and paper products, printing and publishing, manufacture of chemicals, petroleum, rubber, and plastic products, basic metal goods, and fabricated metal products, machinery, and equipment. Services includes wholesale and retail trade, hotels, transport, finance and real estate, electricity, gas and steam, water works and supply, construction, public administration and defence, sanitary and similar services, social and related community services, recreational and cultural services, personal and household services, and services not adequately defined. The reference category is Agriculture, which includes all cultivation activities and livestock production, hunting, fishing, forestry and logging, and mining and quarrying.

There are 12 job related variables. Of them, seven relate to firm type in terms of the number of employees: Between Five and Nine, Between 10 and 15, Between 16 and 49, Between 50 and 99, More than 100 Employees, No Specific Institution, and No Regular Employees. The reference category is firms with less than five employees. Of the five remaining variables, Temporary, Casual, and No Permanent Employer are related to job tenure; the reference category is Permanent Tenure. Informal

Employee is a dummy variable, which takes the value 1 if the employee is in informal employment as defined in Section 2.2. Public Employee is also a dummy, which takes 1 if the employee is in the public sector, and 0 if not.

Spatial variables consist of sectoral and provincial dummies. There are two sectoral variables, Rural and Estates, and the reference category is Urban. The six provincial dummies are Central Province, Southern Province, North-Western Province, North Central Province, Uva Province, and Sabaragamuwa Province. Western Province is the reference group.

For the sample selection correction model of wage determination, we use eight socioeconomic and demographic variables that affect the individual's propensity to be employed. They are the Number of Employed Household Members; Married; Marriage interacted with Male Gender; the Number of Children in the household nine years or less; parenting interacted with gender as in Mother, Head of Household; the availability of Domestic Help, and the presence in the household of Elderly Parents (70 years and older). The number of employed household members can influence the decision to participate in the labour market, with compulsion to find work greater when there are relatively fewer income earners in the household. Different factors are likely to influence men and women to seek and become employed. Being married and having young children and elderly parents is likely to reduce the propensity of females to both participate in the labour market and be employed. Nevertheless, the availability of domestic help can enable mothers to go out to work. In contrast, being married, being heads of households, and having children and elderly parents are likely to compel males to participate in the labour market.

In the next section, we present an overview of informal employment in Sri Lanka by focussing on extent and characteristics.

### **3. Overview of informal employment**

#### **3.1 Extent and nature**

Table 3 sets out the extent of informal employment in Sri Lanka in terms of the categories of informal employment discussed in Section 2.1 and set out in Tables 1 and 2.

Of a total of 27,724 employed persons enumerated in the survey, two-thirds, or 66 per cent, were informal workers in 2006. The vast majority of them – 92 per cent – were engaged in informal work in production units defined as informal in the informal sector. The remaining minority of 8 per cent worked in formal sector enterprises, almost all of whom were employees in informal jobs in formal enterprises. These are workers who are employed in production units registered with either the Employees' Provident Fund or the Inland Revenue Department, but whose employers do not contribute to a pension or provident fund on their behalf.

Own-account workers make up the bulk of informal employment in the informal sector (45 per cent), followed by employees in informal enterprises or households (29 per cent), and family workers in informal enterprises (15 per cent). Urban informal employment accounts for 11 per cent of total informal employment. Note that the total number of informal workers includes workers in the agricultural sector, accounting for 42 per cent of total informal employment, or a little more than a fourth of all employment. This makes the share of non-agricultural informal workers in total employment 39 per cent. Thus, the share of non-agricultural informal employment in total employment gives only

a partial view of a country's level of structural transformation, and the results vindicate our decision to include agricultural workers in the definition of informal work used for this study.

Private formal employment accounts for 20 per cent of total employment and public employment accounts for 13 per cent.

These results are almost identical with the findings of previous studies. Arunatilake and Jayawardena (2005) found that the informal sector in 2003 consisted of own-account workers, unpaid family workers, and daily paid, private sector employees. The three categories together accounted for a little more than two-thirds of total employment. A total of 48 per cent were own-account workers, 36 per cent were private employees, while the remaining 16 per cent were unpaid family workers. They found that the composition of the informal sector has remained more or less constant since 1997. The present study suggests that little has changed since then. Dissanayaka (2005) came up with similar figures using the same data set, although she defined informal work slightly differently. Using a jobs based definition that included own-account workers, unpaid family workers, and paid employees in elementary occupations, she found that informal employment accounted for 62 per cent of total employment. Naturally, the disaggregation of total informal employment into its components of own-account workers, private employees, and unpaid family workers was identical to the figures that Arunatilake and Jayawardena (2005) produced.

Table 4 sets out the extent and nature of informal employment in terms of gender. Informal employment accounts for a higher proportion of male employment than female employment. This is in contrast to earlier findings. However, a higher proportion of males than females are in own-account work and are employees in informal enterprises. Significantly, a noticeably larger proportion of females work as contributing family workers.

### 3.2 Characteristics of formal and informal workers

In this section, we look at the characteristics of formal and informal workers in order to motivate the analysis of determinants of the probability of informal employment in Section 4. Table 5 presents the characteristics of informal workers relative to public and formal workers, and the characteristics of informal employees relative to those of employees in private formal work. The characteristics are set out in terms of six groups of variables for all employed persons: demographic, education, occupation, industry, job status, and spatial variables, and the figures in each column denote the proportion of workers in each group that shares the attributes denoted by the variables. The sample of employees has additional information on job related characteristics in terms of firm size and job tenure.

There are proportionately more males than females in informal, formal, and public employment. This is to be expected as males account for roughly two-thirds of the economy's labour force. The public sector appears to favour older workers, with nearly half of all public employees falling into the 40-54 years' age category.

More Sinhalese are represented in public and informal work than in private formal employment. Sri Lankan Tamils and Indian Tamils have greater representation in private formal employment than in the employed population at large. But Indian Tamils are overly represented, probably due to their heavy involvement in plantation agriculture. Furthermore, since the data set excludes Northern and Eastern Province, the figures for formal employment by Sri Lankan Tamils and Moors are probably biased upwards.

The public sector is particularly favoured by better educated workers: 64 per cent have senior secondary education and 17 per cent have tertiary education. In contrast, relatively few private formal and informal workers have tertiary qualifications, and by and large, informal workers are more heavily represented in the lower educational attainment categories than formal workers. The disaggregation of formal and informal employees among education categories follows a similar pattern.

In terms of occupation, professional, technical, and clerical workers are more heavily represented in public employment, whereas production and elementary workers make up the bulk of formal workers. Agricultural and production workers account for 60 per cent of informal workers. The higher proportions of public workers in more skilled occupations are to be expected, considering the more complex and specialized administrative structures in the sector. Among employees, workers in higher skilled occupations predominate in formal employment, but there is a larger representation of informal employees in service and production occupations than of formal employees. However, formal and informal employees are somewhat equally represented in the elementary occupations.

While the majority of informal workers are in the agricultural sector, formal workers predominate in manufacturing.

In terms of job status, the vast majority of formal workers are employees – 90 per cent – and employers and own-account workers of formal production units account for the remainder. In contrast, only 37 per cent of informal workers are employees. As expected, a little less than half of informal workers are own-account workers.

With respect to the geographical area of residence (recall that given data limitations, we are unable to say whether these individuals also work in the areas in which they live), rural workers account for the vast majority of both formal and informal employment commensurate with their preponderance in the general population. But a slightly larger proportion of informal employees live in urban areas than do formal employees. Western Province accounts for the major share of all employment, but a far larger proportion of formal employment than of informal employment, and likewise with employees.

We now examine job related characteristics of employees in formal and informal production units, excluding the public sector. Nearly half of all informal employees work in enterprises employing fewer than five workers and which are usually classified as microenterprises. In contrast, only 7 per cent of non-public formal employees work in such small production units. In fact, a greater proportion of informal employees work in units employing less than 15 workers, whereas 55 per cent of formal employees work in units employing at least 100 workers. Note that 10 per cent of informal employees are working in enterprises with at least 100 workers and it is significant that such large enterprises are able to evade meeting their statutory obligations in relation to provident fund payments. A noteworthy proportion of informal employees either does not belong to any specific institution or belongs to institutions without regular employees.

As expected, the majority of formal employees are in permanent jobs (66 per cent), whereas only 6 per cent of informal employees are permanent. Thus, roughly 94 per cent of informal employees are temporary or casual workers, or without a permanent employer, bearing witness to the precariousness of work for most informal employees.

The next section analyses average hourly wages among formal and informal employees.

### 3.3 Wages of formal and informal employees

Recall from Table 5 that employees make up a little more than a third of total informal employment, but 90 per cent of formal employment. The discussion in this subsection will be limited to this subsample of employed persons, as income related data is available only for this category of workers.

#### *Mean hourly wages*

We investigate the wage gap between public, formal, and informal employees first by looking at mean hourly wages by population group for public, formal, and informal employees in Table 6. The reader who lacks a statistical background should bear in mind that the data on mean wages that are reported denote the average wage of employees who share that particular group attribute (e.g. ethnicity), but who may differ from others in that group in terms of other attributes (e.g. education and occupation). The last two columns set out the share of total formal and informal employees that the particular population subgroups account for by repeating the information in the last two columns of Table 4 for ease of reference. This is so that the reader can get some idea about the importance of a particular subgroup in the population at large.

First, a cursory glance at the columns showing mean hourly wages indicates the following: Women employees on average earn less than men, while older workers earn more, and while Sinhalese earn substantially higher wages than Tamils as formal employees, Moors earn the most. In contrast, the wage gaps between informal employees of the different ethnic groups are insignificant. Better education is associated with higher wages across the board. Mean wages of different occupation groups show a similar pattern, with higher skilled occupations on the whole commanding higher wages. Agriculture is associated with low wages, relative to manufacturing, commerce, and services, but these gaps are considerably smaller among informal employees than among formal employees. Urban employees and residents of Western Province also earn higher wages on average than comparator groups, although here again, the distribution appears more compressed for informal employees. Firm size does not appear to be correlated. Permanency is associated with higher wages, but the premium appears much higher in formal employment.

Second, the column of wage ratios shows that mean hourly wages are higher for formal employees almost across the board, with four out of the seven exceptions possibly associated with plantation agriculture. Note that Indian Tamils, employees in agriculture, and employees in the estates sector working informally have higher mean wages than those working formally. Informal employees in Uva Province earn more than formal employees. The other three groups for which mean wages are higher among informal employees than among formal employees are those with primary education, with junior secondary education, and those in casual employment. Large wage gaps between formal and informal employees exist in almost all other population subgroups.

Table 7 sets out the mean hourly wages of public, formal, and informal employees along with the ratio between formal and informal employees' wages. Informal employees include informal workers in formal and informal enterprises and households as denoted by Cells 2, 6, and 10 in Table 1.

It is clear that public employees enjoy the highest mean wages overall and in every wage tercile. As expected, the mean hourly wage of formal employees is substantially higher – by 39 per cent – than

that of informal employees. The biggest differential between formal and informal wages is at the highest tercile, where formal employees earn roughly 50 per cent more than informal employees.

Table 8 sets out mean hourly wages by nature of employment as well as by gender. It can be seen that gender based differentials in each wage tercile, by and large, favour males by a substantial margin. Formal male employees earn on average 50 per cent more than formal female employees. Only in the first and second terciles in public employment do females earn marginally more than males, thereby causing the overall wage differential in public employment to favour females.

We now explore the implications of the differences in wages for overall wage inequality for formal and informal employees.

### *Wage inequality*

Summary measures of wage inequality reported in Table 9 show that inequality among formal employees is noticeably higher than inequality among public employees or informal employees. Wage inequality is lowest among public employees.

While mean wages of the 90th percentile of formal employees is six times that of the 10th percentile, mean wages of the 90th percentile of informal employees is only five times that of the 10th percentile. Mean wages of the 90th percentile of formal employees is 2.7 times that of the median formal employees, whereas mean wage of the 90th percentile of informal employees is only roughly twice that of the median informal employees. The Gini Coefficient is also noticeably higher for formal employees than for informal employees. It is lowest for public employees.

However, normative approaches to measuring inequality that are sensitive towards differences at different segments of the distribution suggest that inequality is higher among informal employees, when greater sensitivity is shown towards income differences at the lower end of the distribution. But if greater sensitivity is shown towards income differences at the top end, then inequality is greater among formal employees than among informal employees.

For example, take the Generalized Entropy Indices first. A larger value for parameter  $a$  shows greater sensitivity towards high wage values and a smaller  $a$  implies greater sensitivity towards low wage values. The estimates in Table 9 show that greater sensitivity to income differences at the higher end (larger  $a$ ) suggests greater inequality among formal employees than informal employees. But greater sensitivity to income differences at the lower end of the distribution (lower  $a$ ) suggests greater inequality among informal employees than formal employees. The difference in inequality is greatest when the index is more sensitive to differences at the lower end (that is, when  $a$  equals -1).

The parameter  $\epsilon$  in the Atkinson index is the inequality aversion parameter, where a larger value for  $\epsilon$  means greater sensitivity towards income differences at the bottom end of the distribution. The estimates of the Atkinson index for different values of  $\epsilon$  set out in Table 9 show that at the largest value of  $\epsilon$ , or the greatest value of inequality aversion, inequality is slightly higher among informal employees. At the lowest value of  $\epsilon$ , inequality is greater among formal employees than among informal employees.

### *Levels, modalities, and spreads*

The measures of inequality in Table 9 summarize its extent by means of a single statistic. But

few distributions with known properties can be completely described by just one parameter as they provide only a partial view of the underlying distribution. In contrast, graphical methods, such as kernel density estimation, enable one to observe a distribution's level, modality, and spread simultaneously. Graphs generated by this estimation procedure reveal differences in the shape of the income distribution that underlie differences in summary indices of income inequality.

Accordingly, we use adaptive kernel density estimation methods with an Epanechnikov kernel to plot empirical wage distribution functions for public, formal, and informal employees in Figure 1 (see Van Kerm, 2003, for details of the procedure). The top panel plots all three wage distributions and the bottom panel plots the difference in the density between formal and informal employees only.

Overall, the evidence suggests that public employees are the most evenly distributed along the income range. There also seems to be a slightly higher concentration of informal employees at lower levels of hourly wages than of formal employees. While both distributions have a similar mode around a wage a little less than Rs 25 per hour, the middle mass is larger for informal employees, suggesting a lower density of low wage (less than Rs 50 per hour) employees in formal employment than in informal employment. There is also a higher density of middle wage earners in formal work than in informal work (wages between Rs 50 and Rs 175 per hour). Furthermore, both formal and informal employees are in almost equal concentrations along the extreme right tail of the distribution, suggesting similar proportions of highly paid employees in both categories.

## **4. Probability of informal employment**

### **4.1 Determinants of probability of informal employment**

In this section, we look at the factors that determine the probability of a worker being employed in informal work. Table 10 presents the marginal effects from the first multinomial logistic regression based on equation (1) in Section 2.3 along with the significance of the coefficients from which they are derived. Recall that this model considers four employment outcome categories: unemployment, public employment, formal employment, and informal employment. Unemployment is considered an outcome in order to correct for sample selection bias. The marginal effects denote the effect of a unit change in each variable on the probability of being in the specified category of employment relative to the base category – that is, unemployment – in the case of continuous variables. For dummy variables, marginal effects are discrete changes in the quantities of interest as the dummy variable changes from 0 to 1.

We only comment on marginal effects relating to informal employment (Column 3) that are statistically significant. Informal workers are more likely to be male than female, but formal workers are more likely to be female. Males may be under greater pressure from their families to become employed, so that they are more likely to take up any employment rather than wait for 'good jobs' in formal employment. Moreover, since education is provided free and families tend to be more protective of female children, girls may be left in school, while older boys are sent out to work and support the family if necessary. The probability of informal employment declines with age, but the positive and significant marginal effect on the age squared variable suggests, as Arunatilake and Jayawardena (2005) have pointed out, that individuals at the two ends of the working age spectrum are more likely to be informally employed. Informal workers are more likely to be ethnic Moors than of the reference category, Sinhalese. The more educated one is, the less likely one is to be informally employed: Note that the

relationship is monotonic, with those in tertiary education least likely to be informally employed. Managers and other skilled occupation categories are less likely to be informally engaged, relative to production workers, the reference category. Only service and agricultural workers are more likely to be informally employed. Note that many of the education and occupation related marginal effects are large, unlike those related to demographic variables.

Informal workers are also more likely to be employed in the manufacturing and services sectors. They are significantly more likely to be urban, rather than resident in rural or estate areas. Of the provincial dummies, the marginal effects relating to Central, Southern, North-Western and Sabaragamuwa Province are positive and significant, suggesting that relative to the residents of Western Province, the residents of these four provinces are more likely to be informally employed and significantly so.

We attempted to repeat this exercise by gender to investigate the determinants of the probability of informal employment among males and among females. Unfortunately, the variance matrix for the model relating to females turned out to be non-symmetric, or highly singular. As a result, standard errors could not be calculated, thereby nullifying the usefulness of the exercise.

#### **4.2 Determinants of probability of different categories of informal employment**

A more nuanced analysis of the determinants of the probability of informal employment is possible if we look at the determinants of probability of different categories of informal employment. The results are set out in Table 11. The base category for this model is public and formal employment. Note that the model does not correct for sample selection bias.

The results show that contributing family workers (Cells 1 and 5) are more likely to be female and married. Thus, family ties and family labour seem to facilitate small businesses. They are more likely to be Sinhalese than Sri Lankan or Indian Tamil, and most likely to be ethnic Moors. Such informal workers are unlikely to be managers, professionals, or technical or clerical workers, but significantly more likely to be service and agricultural workers. They are unlikely to be in either the manufacturing sector or the services sector. Contributing family workers are also less likely to be living in estate areas than in urban areas. They are more likely to be living in provinces outside Western Province.

Informal employees in formal enterprises (Cell 2) are significantly more likely to be male, single, and either young or much older. They are more likely to be Sri Lankan or Indian Tamil, rather than Sinhalese. Better educational attainment reduces the likelihood of being in this informal employment category, although the results are significant only for tertiary education. Such workers are less likely to be managers and agricultural workers than production workers, but more likely to be technical, clerical, service, and elementary workers. They are significantly more likely to be working in manufacturing, rather than agriculture, and are more likely to be urban residents. These workers are also more likely to be from Western Province than from any of the other provinces.

Own-account workers in informal enterprises or households (Cells 3 and 9) are more likely to be males, married, and older. They are significantly less likely to be Sri Lankan or Indian Tamil than the reference category, Sinhalese. However, they are more likely to be Moor than Sinhalese, supporting Weeratunge's (2001) observation that Moors have a stronger entrepreneurial culture than other groups in the small business category. In addition, it is necessary to reiterate that Moors are more likely to be contributing family workers than any other ethnic category. Own-account workers are also more likely

to be relatively less educated. Note the large size of the negative marginal effect of tertiary education on the probability of being own-account workers. Such workers are more likely to be managers and in agricultural occupations, than production workers. They are also more likely to be in the manufacturing sector, and even more likely to be in the services sector, rather than in the agriculture sector. They are more likely to be in the urban sector than in the rural or estate sectors. They are also more likely to be in provinces outside Western Province.

Employers in informal enterprises (Cell 4) are more likely to be male and married. None of the ethnic variables are significant. However, those with secondary education are more likely to be in this employment category than primary employees and those with tertiary education less likely to be so. This suggests that microenterprise and entrepreneurship development programmes may be more successfully targeted at school leavers than graduates. This category of workers is more likely to be in managerial and service occupations and less likely to be in other skill categories. They are also less likely to be in manufacturing and the services sector than in the agricultural sector. Urban workers are more likely to be in this category. Residents of North Central and Uva Province are less likely to be in this category of informal workers, while those of North-Western Province are more likely to be so than Western Province residents.

Informal employees in informal enterprises are more likely to be male and single, and either youthful or much older. They are more likely to be Sri Lankan Tamil compared with the reference category, but less likely to belong to the ethnic 'Other' category. The more educated the worker, the less likely he or she is to belong to this employment category. It is interesting that the relationship between probability of employment and educational attainment is negative and monotonic. Informal employees are more likely to belong to service and elementary occupations and be in agriculture than in manufacturing or services. They are more likely to be urban residents and residents of Western Province than of Uva and North Central Province. However, residents of Central, Southern, and North-Western Province are more likely to be informal employees than residents of Western Province.

Tables 12 and 13 set out the determinants of informal employment by gender. The results for employed males mirror the results for the population of employed persons at large. Relatively few of the results for female workers are significant and there were too few observations relating to female employers (52) to provide any meaningful results.

### **4.3 Job related determinants of probability of being informal employees**

Although we looked at the determinants of probability of employment as informal employees in Table 11, we were unable to investigate the role of job related variables as such information is available only for employees. Hence, the results of a third multinomial logistic model run on the subsample of formal and informal employees for whom such information is available are set out in Table 14.

Marginal effects of Models (1) and (2) in the table are derived from multinomial logistic estimates using a sector participation model as set out in equation (1) of Section 2.3, but where there are only three sectors of employment: (a) employees in private formal employment; (b) informal employees in formal enterprises (Cell 2); and (c) informal employees in informal enterprises (Cells 6 and 10). The base category for the multinomial logistic estimation is (a), or employees in private formal employment. The model has not been corrected for sample selection bias and we comment only on variables excluded

from the previous model and on results that are different from the more parsimonious version of the model in Table 11.

Whereas the model with limited variables in Table 11 showed that managers were less likely to be informal employees in formal enterprises, the extended model in Table 14 does not show significant results pertaining to this variable. In fact, many of the occupation related variables are not significant determinants of informal employee status once the job related variables are included. Similarly, the industry variables turn out not to be significant determinants of the probability of employment as informal employees in informal enterprises. In contrast, the job related variables turn out to be significant determinants of the probability of informal employment. However, even though there does not appear to be a correlation between firm size and probability of informal employment in formal enterprises, the converse seems to be the case in informal enterprises, that is, as firm size increases, the probability of informality declines monotonically, with employees in the largest firms least likely to be informally employed. In addition, note that the absolute marginal effects are much larger for informal enterprises than for formal enterprises. Temporary and casual tenure increase the probability of being informal employees in either formal or informal enterprises, but the marginal effects are much larger in informal enterprises.

We are unable to draw any evidence relating to the impact of job security regulations on the informalization of employment from these results. A threshold effect at 16 plus employees – 15 is the critical size at which the Termination of Employment of Workmen's Act as well as the Payment of Gratuities Act comes into effect – is not discernible.

We repeated the exercise for male and female subsamples of employees. None of the variables turned out to be significant for the female subsample, apart from the variable, No Specific Institution. Hence, we have not reported the gender disaggregated results of the estimation, as they add nothing to the analysis.

## 5. Determinants of wages

In this section, we look at the determinants of hourly wages for public, formal, and informal employees. As set out in Section 2.3, we have deployed Fournier and Gurgand's (2002) user-written SELMLOG Stata programme, which corrects for sample selection bias with the multinomial logistic regression model (see Bourguignon, Fournier, and Gurgand, 2007).

The multinomial logistic model estimates the probability of five employment outcomes: (a) unemployment; (b) workers in formal and informal work who are not employees; (c) public employees; (d) formal private employees; and (e) informal employees. To the standard list of explanatory variables used in the probability of employment models described above, we added socioeconomic and demographic variables that help explain the employment sector outcomes. Thereafter, SELMLOG includes the consistent estimators of conditional expected values of the residuals derived from the multinomial logistic model as additional variables in estimating the wage function.

We report only the results of the wage equations in Table 15. The standard errors are derived from 100 bootstrap replications.

Few of the variables are significant determinants of public sector wages. Hence, we concentrate

on the factors that determine the wages of formal and informal employees. Male gender makes for higher wages for formal and informal employees. Youth and seniority also make for higher returns. Ethnicity is not a significant determinant of wages, other than for the ethnic 'Other' category, which commands higher wages in formal employment than the reference group, Sinhalese. Thus, there is no evidence of ethnic discrimination in wages. But greater educational attainment leads to higher wages in formal employment. The results are not significant for informal employees. Nevertheless, note that the coefficients for senior secondary education and tertiary education for formal employees are at least twice the size of the corresponding coefficients for informal employees. Higher skilled occupations also result in higher wages, compared to production workers and workers in agricultural occupations, and workers in elementary occupations earn less than production workers. But the results are significant only for formal employees. Note in particular the large size of the coefficients. Employees in manufacturing and services all earn more than employees in agriculture, but the results are both larger and more significant for formal employees.

The firm size related variables are by and large not significant other than for the 100 employees plus group, which earns significantly more than employees in microenterprises in the formal sector, and significantly less than employees in microenterprises in informal employment. Temporary and casual workers earn significantly less than permanent employees in formal employment. However, formal employees who are not attached to any specific institution earn the most. The spatial variables are by and large not significant, except that formal employees in Central, North-Western and Sabaragamuwa Province earn significantly less than formal employees in Western Province. But informal employees in Southern Province earn significantly more than employees in Western Province, while informal employees in Sabaragamuwa Province earn significantly less than employees in Western Province.

Tables 16 and 17 repeat the exercise for the subsamples of male and female employees. In this case, too, the model does not appear to explain satisfactorily the determination of public sector wages either for males or females. The results for formal male employees closely mirror the results for the entire sample. Results worth noting are the large and significant positive coefficients on firm sizes, 16-49 and 50-99, for informal female employees. At the moment, there is no satisfactory explanation for this phenomenon.

## **6. Conclusions**

### **6.1 Overview of findings**

This analysis of informal employment in Sri Lanka yielded some interesting findings, which can provide a useful baseline for future research and analysis in the area.

This study found 66 per cent of all employed working in informal work arrangements. Nearly 28 per cent of total employment was made up of agricultural informal employment. This left non-agricultural informal employment accounting for 39 per cent of total employment. Thus, formal employment accounted for 34 per cent of total employment: 13 per cent from the public sector, and private formal employment accounting for only a fifth of total employment.

The gender bias in informal employment appears to favour males (69 per cent of total employment), rather than females (61 per cent of total employment). This contrasts with the findings

presented by Arunatilake and Jayawardene (2005), who found 69 per cent of females informally employed in 2003, in comparison to 62 per cent of males.

The study confirms that precariousness is characteristic of informal employment. A little less than half of all informal workers are own-account workers, while 15 per cent are family workers and only 29 per cent are employees in informal enterprises or households. Of the employees in informal enterprises or households, only 6 per cent have permanent tenure, the rest being mainly temporary, casual, or without a permanent employer. Moreover, 45 per cent of informal employees are in firms with less than five workers.

Informal employees on average also earn substantially less than formal employees. However, wage inequality among formal employees is higher than among informal employees. Kernel density estimates show that while public employees are most evenly distributed along the income range, there is a higher concentration of informal employees at lower levels of hourly wages than there is of formal employees. The gender wage differential in both formal and informal work strongly favours males, but marginally favours females in the public sector.

The study also investigated the determinants of the probability of informal employment. It found that males are more likely to be informally employed as are young people and older workers. Informal workers are more likely to be ethnic Moors, than of the reference category, Sinhalese. The more educated one is, the less likely one is to be informally employed, and the relationship is monotonic. Likewise, better educated and skilled employees are less likely to be in informal employment than in formal employment. Managers and other skilled occupation categories are less likely to be informally engaged relative to production workers, the reference category. Only service and agricultural workers are more likely to be informally employed.

Informal workers are also more likely to be employed in the manufacturing and services sectors, rather than in agriculture, the reference category. They are also significantly more likely to be resident in urban areas, rather than in rural or estate areas. Residents of Central, Southern, North-Western, and Sabaragamuwa Province are more likely to be informally employed than residents of Western Province.

We found no evidence that formal enterprises were more likely to employ informal workers as they expanded: Probability of employment was not correlated with firm size in formal enterprises. However, in the informal sector, as firm size increased, employees were less likely to be informally employed. Temporary or casual tenure, relative to permanent tenure, significantly increases the likelihood of being an informal employee in either a formal or informal enterprise.

The investigation of the determinants of wages among formal and informal employees revealed that the male gender makes for higher wages in both sectors. Youth and seniority also make for higher returns. Ethnicity is not a significant determinant of wages other than for the ethnic 'Other' category, which commands higher wages in formal employment than the reference group, Sinhalese. Thus, there is no evidence of ethnic discrimination in wages. But greater educational attainment leads to significantly higher wages in formal employment, while the results are not significant for informal employees. Higher skilled occupations in formal work also result in higher wages compared to production workers, and workers in agricultural and elementary occupations earn less than production workers. The results are not significant for informal employees. Employees in manufacturing and services all earn more than employees in agriculture, but the results are both significant and larger for formal employees.

The firm size related variables are, by and large, not significant, other than for the 100 employees plus group, which earns significantly more than employees in microenterprises in the formal sector, and significantly less than employees in microenterprises in informal employment. Temporary and casual workers earn significantly less than permanent employees in formal employment. However, formal employees who are not attached to any specific institution earn the most. On the whole, the spatial variables are not significant, except that formal employees in Central, North-Western, and Sabaragamuwa Province earn significantly less than formal employees in Western Province. But informal employees in Southern Province earn significantly more than employees in Western Province, while informal employees in Sabaragamuwa Province earn significantly less than employees in Western Province.

## 6.2 Implications for research and policy formulation

All formal work is not better than informal work – some informal employees earn as much as employees in formal work, as our kernel density analysis of wage distributions revealed, and conditions of work in certain formal enterprises may be extremely poor. But formal work certainly appears to be more desirable than informal work as informal employment is precarious, generating relatively poor returns for most people engaged in it, and failing to reward skills at levels comparable with those offered by formal employment.

Hence, the fact that almost two-thirds of total employment in Sri Lanka is informal, as revealed by this study, is cause for serious concern. The fact that so many Sri Lankans are still engaged in agriculture and informal employment confirms that the economy's rate of structural transformation since economic liberalization has been less than optimal: Although we lack the data to prove it, formal job creation rates must have been disappointingly low if, even three decades after liberalization, private formal employment only accounts for a fifth of the employed workforce. While demographic changes and emigration is likely to have contributed to lower unemployment levels during these years, informal job creation appears to have contributed more towards the reduction in unemployment levels than formal job creation. This last finding has to be seen together with this study's finding that better education and skills are poorly rewarded in informal work: If better educated young people cannot find jobs in formal work because of low job creation rates there, then they are forced into informal work, which does not offer returns commensurate with their skills. This finding underlines the observation that Sri Lanka has been unable to reap the benefits of its superior education policies because the economy has been unable to generate the kind of jobs that can pay educated workers a good wage.

It is certainly possible that formal job creation is constrained by labour regulations that raise labour costs, as the World Bank argues. Certain clauses in the Inland Revenue Act may also act as a growth trap for businesses, as firms prefer to remain small and informal in order to avoid coming under the purview of the regulations. The secessionist conflict and high rates of inflation also exact their toll on business confidence and impede the start-up and expansion of enterprises, as do serious infrastructure constraints in terms of electricity generation and transport (World Bank and Asian Development Bank, 2005). The infrastructure constraints also geographically segment labour and product markets, with economically backward rural areas and peripheral provinces integrating only weakly with the more dynamic urban areas that offer more diverse means of employment.

Nevertheless, the presence of large numbers of informal workers is not something that is peculiar to the Sri Lankan labour market. Felipe and Hasan (2006) find this a phenomenon widely prevalent

in South Asia. Unlike the earlier generation of newly industrializing economies, such as Hong Kong, South Korea, Singapore, and Taiwan, which generated 'good jobs' in the industrial and services sectors, in other parts of Asia, economic growth has not been accompanied by correspondingly high employment growth rates. The movement of workers out of low productivity employment in agriculture has been prolonged and many of the new jobs in South Asia, in particular, are being generated in the informal sector. The authors argue that increasing returns to scale and the nature of technological progress in recent times are responsible for this outcome, with productivity increases through technological progress leading to lower employment than experienced earlier.

If labour market regulations governing hiring and firing and minimum wage laws are not the binding constraint on employment generation, as has been the case in India, Indonesia, the Philippines, and Viet Nam, then across the board labour market reforms may not yield the desired growth rates in formal jobs (*ibid.*). If the growth in informal employment is indeed driven by technological progress, as Felipe and Hasan (2006) argue, informal employment is probably here to stay and we may have to learn to live with it. However, that does not mean that we must accept the lower working conditions associated with informal work. Instead, policy should perhaps concentrate on ensuring decent work standards in informal jobs, particularly measures that improve productivity and incomes, enforce regulations relating to occupational safety and health, and strengthen social insurance, assistance, and welfare schemes. At the same time, regulations and procedures relating to enterprises may need to be simplified and incentives such as credit offered in order to encourage informal enterprises to seek legal recognition.

While policy may be broadly formulated along these lines, at a more immediate and practical level, there are three potential areas for action arising from the heterogeneity of informal employment that may be discerned from the study's findings. Two of them may be regarded as relating to two different stages in the growth continuum of firms.

Research needs to focus on the nature of own-account work – identifying the employment preferences of own-account workers and the constraints that prevent them from accessing the jobs that they would like. The first avenue of inquiry could be to assess which of the segments of own-account work have the potential for expansion into microenterprises and the constraints that come in the way of achieving this potential. The second avenue of inquiry could focus on which segments are more suited to work as employees rather than proprietors. Many who are engaged in own-account work do so because they are unable to access better jobs, in turn due to the low rates of better job creation, or because of transport inefficiencies and the high cost of housing in economically dynamic regions with better jobs. Such people may also lack certain skills and the social networks necessary to access formal jobs. The impact of the public sector as employer of the last resort in skewing people's aspirations is also a factor, encouraging young people to queue up for better jobs in the public sector (Rama, 2003).

Policy also needs to address the issue of job creation in terms of impediments to the expansion and upgrading of microenterprises, which currently account for half of all informal employees. In particular, research needs to focus on the costs (for e.g., greater visibility in terms of law enforcement) and benefits of formalization (access to credit, technology, economies of scale), and address the question whether certain policy reforms and other interventions can change the incentive structure to favour formalization. At the same time, research and policy need to address the factors that constrain the

expansion of formal employment in formal enterprises. Here again, the impact of infrastructure constraints and labour regulations merits attention.

Future research needs to be facilitated by more comprehensive data. For example, the present analysis of informal wages was based solely on employees' earnings information. Informal employees make up only a little less than a third of total informal employment. There is no information in the QLFS about the earnings of other categories of informal workers, particularly about the earnings of own-account workers and employers in informal enterprises. Since it is not practically possible to collect this data from the QLFS, we may need to explore alternative mechanisms. The Department of Census and Statistics already collects information about the earnings of own-account workers and employees through the Household Income and Expenditure Survey (HIES), which is carried out once every five years. It can consider including a few key questions that would yield information necessary to identify informal work in that survey as well. If this is possible, then we would be able to obtain vital earnings information about own-account workers, who make up nearly half of informal employment, and compare it with the earnings of workers in other types of formal and informal employment. Moreover, given the slow rate of change in informal employment figures (see Arunatilake and Jayawardena, 2005), data collection and analysis every five years may be more practical and cost-effective than collecting this information every year.

On the other hand, it is recommended that the present QLFS schedule be revised to enable the collection of information about the technical and vocational skills training of all labour force participants, not only of those who are unemployed and looking for work. Questions about job experience, which used to be available in earlier surveys, would also enable useful analyses. The present survey questionnaire includes questions about whether the individual would like to work longer hours at the same job or in another job, and in the preparatory work for this analysis, we tried to use this information as an indicator of job satisfaction. Unfortunately, we could not use this as, to begin with, few wanted to work longer hours. A more direct question eliciting the subjective perceptions of employed individuals on job satisfaction based on show cards, with different shades representing different levels of job satisfaction, could be converted into ordinal values and used in future analyses.

Sri Lanka also needs longitudinal panel data on enterprises, particularly microenterprises, which would enable the monitoring of the growth of firms and identifying the factors that ensure their survival or precipitate their dissolution. While the mechanism is costly to implement, panel data is essential to analyse the dynamics of business. The setting up of a trust fund to finance such a mechanism will help overcome the constraints imposed by budgetary cycles of donors and other organizations in funding such an exercise. Alternatively, it should be possible to build up such a panel through an SMI credit scheme operated through a consortium of lending institutions. Such a scheme may also be linked to the offer of business development services. Admittedly, one would not have a control group of enterprises – that is, a group which did not receive financial and other support. Nevertheless, creative and cost-effective ways, such as these, of collecting the necessary longitudinal data need to be explored

Quantitative data collection and analyses need to be complemented by in-depth qualitative studies that can capture information about power relations, networks, and aspirations that determine the employment chances of individuals and the survival and expansion rates of businesses.

There is also more analysis that can be done with existing data. For example, the present study's

analysis of the determinants of wage levels of public, formal, and informal employees is only a preliminary exploration. It should be possible to decompose wage differences between formal and informal employees into contributory factors to enable a clearer understanding of the reasons why formal and informal wage levels differ. Likewise, existing data can be used to decompose wage inequality among all employees into contributory factors to investigate the contribution of informality – relative to other factors – to wage inequality.

It is hoped that the present study will provide a useful baseline for much needed research and policy formulation about informal employment in Sri Lanka.

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**Table 1: Conceptual framework of informal employment developed by the 15th International Conference of Labour Statisticians**

Production units by type	Jobs by status in employment								
	Own-account workers		Employers		Contributing family workers	Employees		Members of producers' cooperatives	
	Informal	Formal	Informal	Formal	Informal	Informal	Formal	Informal	Formal
Formal sector enterprises					1	2			
Informal sector enterprises	3		4		5	6	7	8	
Households	9					10			

Source: *Husmanns (2001)*

**Table 2: Definitions of different categories of informal workers**

Cell reference	Definition	Criterion used in this study
Table 1		
Cell 1	Family worker in formal enterprise	Worker is an unpaid family worker employed in a production unit registered with either the Employees' Provident Fund or the Inland Revenue Department
Cell 2	Employee in informal job in formal enterprise	Worker is an employee whose employer does not contribute to a pension or provident fund on his/her behalf, even though the production unit is registered with either the Employees' Provident Fund or the Inland Revenue Department
Cell 3 & 9	Own-account worker in informal enterprise/household	Worker is an own-account worker in a production unit not registered with either the Employees' Provident Fund or the Inland Revenue Department
Cell 4	Employer in informal enterprise	Worker is an employer in a production unit not registered with either the Employees' Provident Fund or the Inland Revenue Department
Cell 5	Family worker in informal enterprise	Worker is an unpaid family worker in a production unit not registered with either the Employees' Provident Fund or the Inland Revenue Department
Cell 6 & 10	Employee in informal enterprise/household	Worker is an employee in a production unit not registered with either the Employees' Provident Fund or the Inland Revenue Department and his/her employer does not contribute to a pension or provident fund on his/her behalf

**Table 3: Extent and nature of informal employment in Sri Lanka,  
all employed (2006)**

<b>Informal employment</b>	<b>Cell reference Table 1</b>	<b>Number of workers</b>	<b>% of total informal employment</b>
<b>Informal employment in formal sector</b>		<b>1 509</b>	<b>8.31</b>
Family worker in formal enterprise	Cell 1	143	0.78
Employee in informal job in formal enterprise	Cell 2	1 366	7.53
<b>Informal employment in informal sector</b>		<b>16 869</b>	<b>91.79</b>
Own-account worker in informal enterprise/household	Cells 3 & 9	8 217	44.71
Employer in informal enterprise	Cell 4	548	2.98
Family worker in informal enterprise	Cell 5	2 754	14.99
Employee in informal enterprise/household	Cells 6 & 10	5 350	29.11
Urban informal employment		1 930	10.50
Total informal employment		18 378	100.00
Total employment		27 720	
<b>Informal employment as % of total employment</b>			<b>66.30</b>
<b>Formal employment</b>		<b>Number of workers</b>	<b>%</b>
Total formal employment		9 342	
Public employment as % of total formal employment		3 723	39.85
<b>Public employment as % of total employment</b>			<b>13.43</b>
Private formal employment as % of total formal employment		5 619	60.15
<b>Private formal employment as % of total employment</b>			<b>20.27</b>
<b>Agriculture in informal employment</b>			
Agricultural informal employment as % of total informal employment		7 694	41.86
Non-agricultural informal employment as % of total informal employment		10 684	58.14
<b>Agricultural informal employment as % of total employment</b>			<b>27.75</b>
<b>Non-agricultural informal employment as % of total employment</b>			<b>38.53</b>

**Table 4: Extent and nature of informal employment in Sri Lanka  
by gender (2006)**

	% of total informal employment	
	Males	Females
<b>Informal employment in formal sector</b>	<b>7.90</b>	<b>8.85</b>
Family worker in formal enterprise	0.43	1.49
Employee in informal job in formal enterprise	7.47	7.36
<b>Informal employment in informal sector</b>	<b>92.10</b>	<b>91.14</b>
Own-account worker in informal enterprise/household	49.10	35.56
Employer in informal enterprise	3.99	0.87
Family worker in informal enterprise	6.03	33.67
Employee in informal enterprise/household	32.98	21.04
Total informal employment (number)	12 424	5 954
Total employment (number)	18 005	9 715
<b>Informal employment as % of total employment</b>	<b>69.00</b>	<b>61.29</b>

**Table 5: Share of employment in public, formal, and informal work by population group (%)**

	All employed persons			Employees only	
	Public	Formal	Informal	Formal	Informal
<b>Demographics</b>					
Male	59.0	60.0	68.0	57.3	74.9
Female	41.0	40.0	32.0	42.7	25.1
Married	82.0	64.0	73.0	62.0	63.6
Age 10-15 years	0.0	0.0	1.0	0.0	0.4
16-20 years	1.0	7.0	6.0	7.8	9.4
21-25 years	6.0	17.0	10.0	18.5	14.7
26-29 years	10.0	13.0	8.0	13.4	9.9
30-39 years	31.0	26.0	22.0	25.3	22.1
40-54 years	44.0	29.0	34.0	27.5	30.2
55 years and above	8.0	9.0	18.0	7.3	13.3
Sinhalese	86.0	74.0	88.0	72.9	82.4
Sri Lankan Tamil	3.0	9.0	3.0	9.1	6.1
Indian Tamil	8.0	13.0	3.0	14.3	5.2
Moor	3.0	4.0	5.0	3.0	6.0
Other	0.0	1.0	0.0	0.7	0.4
<b>Education</b>					
Primary or less	10.0	21.0	26.0	23.3	29.8
Junior secondary	10.0	19.0	29.0	20.0	31.3
Senior secondary	64.0	56.0	43.0	53.7	38.4
Tertiary	17.0	3.0	1.0	2.9	0.6
<b>Occupation</b>					
Managerial	3.0	12.0	9.0	5.0	0.8
Professional	26.0	3.0	2.0	3.5	1.8
Technical	17.0	8.0	2.0	8.1	2.3
Clerical	13.0	6.0	1.0	7.1	2.8
Service	8.0	4.0	8.0	3.9	11.6
Agricultural	0.0	1.0	34.0	0.8	2.1
Production workers	8.0	27.0	26.0	28.4	35.2
Elementary	22.0	39.0	19.0	43.2	43.3
<b>Industry</b>					
Agriculture	11.0	28.0	42.0	29.9	21.3
Manufacturing	5.0	40.0	24.0	42.6	38.5
Services	84.0	32.0	34.0	27.5	40.2
<b>Job status</b>					
Employer	0.0	5.0	3.0		
Own-account worker	0.0	5.0	45.0		
Family worker	0.0	0.0	16.0		
Employee	100.0	90.0	37.0		

	All employed persons			Employees only	
	Public	Formal	Informal	Formal	Informal
<b>Spatial</b>					
Urban	13.0	14.0	11.0	12.6	13.9
Rural	76.0	67.0	86.0	66.4	81.0
Estates	11.0	19.0	3.0	20.9	5.1
Western Province	31.0	41.0	24.0	39.5	30.2
Central Province	20.0	14.0	13.0	15.0	13.2
Southern Province	16.0	13.0	18.0	13.3	18.5
North-Western Province	12.0	8.0	16.0	7.3	16.4
North Central Province	7.0	4.0	9.0	3.7	3.8
Uva Province	6.0	8.0	9.0	9.0	3.7
Sabaragamuwa Province	8.0	12.0	12.0	12.3	14.1
<b>Firm size (employees)</b>					
< 5				7.4	44.9
5-9				5.2	12.5
10-15				6.0	7.3
16-49				12.9	7.6
50-99				11.3	4.3
100 or more				54.9	10.1
No specific institution				1.1	7.6
No regular employees				1.2	5.8
<b>Job tenure</b>					
Permanent				65.7	5.9
Temporary				8.6	44.7
Casual				5.4	22.6
No permanent employer				20.3	26.8
<b>Total (number)</b>	<b>27 724</b>	<b>9 342</b>	<b>18 378</b>	<b>5 033</b>	<b>6 683</b>

**Table 6: Mean hourly wage by population group, employees only (Rs)**

	Mean hourly wage			Ratio:	Share %	
	Public	Formal	Informal	Formal/ informal	Formal	Informal
<b>Demographics</b>						
Male	70.78	51.32	34.11	1.50	57.3	74.9
Female	74.87	33.41	23.57	1.42	42.7	25.1
Married	76.16	47.22	33.48	1.41	62.0	63.6
Age 10-15 years	0.00	0.00	28.84	0.00	0.0	0.4
16-20 years	27.82	28.27	25.24	1.12	7.8	9.4
21-25 years	38.45	37.05	32.08	1.16	18.5	14.7
26-29 years	61.96	46.49	34.43	1.35	13.4	9.9
30-39 years	70.89	50.52	34.41	1.47	25.3	22.1
40-54 years	78.67	43.83	30.93	1.42	27.5	30.2
55 years and above	89.33	47.99	29.47	1.63	7.3	13.3
Sinhalese	77.06	46.88	31.35	1.50	72.9	82.4
Sri Lankan Tamil	44.04	35.59	33.41	1.07	9.1	6.1
Indian Tamil	26.83	24.80	29.39	0.84	14.3	5.2
Moor	89.64	64.69	32.25	2.01	3.0	6.0
Other	85.30	114.15	44.62	2.56	0.7	0.4
<b>Education</b>						
Primary or less	26.96	24.59	26.49	0.93	23.3	29.8
Junior secondary	45.60	29.81	30.08	0.99	20.0	31.3
Senior secondary	73.63	51.36	35.42	1.45	53.7	38.4
Tertiary	111.07	149.60	103.15	1.45	2.9	0.6
<b>Occupation</b>						
Managerial	115.83	143.56	56.95	2.52	5.0	0.8
Professional	103.74	103.24	68.91	1.50	3.5	1.8
Technical	77.91	66.87	49.90	1.34	8.1	2.3
Clerical	67.87	54.72	37.39	1.46	7.1	2.8
Service	58.43	42.17	26.86	1.57	3.9	11.6
Agricultural	28.08	28.72	29.57	0.97	0.8	2.1
Production workers	66.06	36.73	34.51	1.06	28.4	35.2
Elementary	36.37	26.12	26.94	0.97	43.2	43.3
<b>Industry</b>						
Agriculture	24.93	24.22	27.85	0.87	29.9	21.3
Manufacturing	65.51	43.91	32.66	1.34	42.6	38.5
Services	79.03	64.43	32.26	2.00	27.5	40.2
<b>Spatial</b>						
Urban	88.18	74.59	37.41	1.99	12.6	13.9
Rural	76.54	44.04	30.55	1.44	66.4	81.0
Estates	25.25	23.91	29.91	0.80	20.9	5.1

	Mean hourly wage			Ratio: Formal/ informal	Share %	
	Public	Formal	Informal		Formal	Informal
Western Province	80.74	60.93	34.86	1.75	39.5	30.2
Central Province	59.28	32.31	29.93	1.08	15.0	13.2
Southern Province	74.74	35.14	33.68	1.04	13.3	18.5
North-Western Province	77.10	36.20	29.14	1.24	7.3	16.4
North Central Province	73.06	34.77	30.50	1.14	3.7	3.8
Uva Province	65.56	24.30	28.57	0.85	9.0	3.7
Sabaragamuwa Province	67.11	32.66	26.52	1.23	12.3	14.1
<b>Firm size (employees)</b>						
< 5		34.94	30.61	1.14	7.4	44.9
5-9		39.88	31.20	1.28	5.2	12.5
10-15		45.27	31.60	1.43	6.0	7.3
16-49		45.75	35.11	1.30	12.9	7.6
50-99		42.29	34.83	1.21	11.3	4.3
100 or more		44.99	32.80	1.37	54.9	10.1
No specific institution		49.97	31.38	1.59	1.1	7.6
No regular employees		31.56	29.09	1.08	1.2	5.8
<b>Job tenure</b>						
Permanent		49.91	35.57	1.40	65.7	5.9
Temporary		32.35	30.75	1.05	8.6	44.7
Casual		26.96	31.24	0.86	5.4	22.6
No permanent employer		32.71	31.98	1.02	20.3	26.8
<b>All employees</b>	<b>72.45</b>	<b>55.91</b>	<b>31.47</b>			
<b>All employees (number)</b>					<b>5 033</b>	<b>6 683</b>

**Table 7: Mean hourly wages of formal and informal employees (Rs)**

	Public	Formal	Informal	Ratio F/I
Hourly wage (mean)	72.45	43.68	31.47	1.39
Mean hourly wage by wage tercile				
Highest	120.44	84.52	54.69	1.55
Middle	67.26	30.35	26.62	1.14
Lowest	29.46	16.00	13.02	1.23
Total (number)	3 723	5 033	6 683	

**Table 8: Mean hourly wages of formal and informal employees by gender (Rs)**

	Public			Formal			Informal		
	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio
	Hourly wage (mean)	70.78	74.87	0.95	51.32	33.41	1.54	34.11	23.57
Mean hourly wage by wage tercile									
Highest	119.34	120.63	0.99	99.28	61.34	1.62	56.84	42.76	1.33
Middle	62.72	74.64	0.84	36.12	24.85	1.45	30.00	18.37	1.63
Lowest	30.07	29.06	1.03	18.41	13.92	1.32	15.41	9.50	1.62
Total (number)	2 202	1 521		2 886	2 147		5 008	1 675	

**Table 9: Wage inequality measures, employees**

Inequality measure	All employees	Public employees	Formal employees	Informal employees
Percentile ratios				
p90/p10	6.81	5.563	5.904	4.741
p90/p50	2.840	1.840	2.739	1.975
Gini Coefficient	0.426	0.328	0.435	0.360
Generalized Entropy				
GE ( $a = -1$ )	62.246	63.660	37.310	64.091
GE ( $a = 0$ )	0.410	0.270	0.377	0.370
GE ( $a = 1$ ) (Theil)	0.335	0.187	0.376	0.284
Atkinson				
A ( $\epsilon = 0.5$ )	0.154	0.096	0.162	0.128
A ( $\epsilon = 1$ )	0.333	0.236	0.314	0.309
A ( $\epsilon = 2$ )	0.992	0.992	0.987	0.992

*Notes: All inequality measures generated using Jenkins' (2006) INEQDECO: Stata module to calculate inequality indices with decomposition by subgroup, <http://repec.org/software/bocbocode/s366002.htm>. The parameter  $a$  is the income difference sensitivity parameter for the Generalized Entropy Indices. The parameter  $\epsilon$  is the inequality aversion parameter for the Atkinson Indices.*

**Table 10: Determinants of probability of employment in public, formal, and informal employment: Marginal effects of multinomial logistic estimates (all employed)**

Categories of employment	Public (1)	Formal (2)	Informal (3)
<b>Demographics</b>			
Male (d)	-0.0032	-0.0305***	0.0337***
Married (d)	0.0152***	-0.0165***	0.0012
Age	0.0105***	0.0037***	-0.0142***
Age squared	-0.0001***	-0.0001***	0.0002***
Sri Lankan Tamil (d)	-0.0242***	0.0299**	-0.0056
Indian Tamil (d)	-0.0097**	0.0222	-0.0126
Moor (d)	-0.0278***	-0.0366***	0.0644***
Other (d)	-0.0251***	0.0838**	-0.0586
<b>Education</b>			
Junior secondary	0.0138***	0.0206***	-0.0344***
Senior secondary	0.0545***	0.1096***	-0.1641***
Tertiary	0.3291***	0.1990***	-0.5280***
<b>Occupation</b>			
Managerial (d)	-0.0339***	0.1032***	-0.0693***
Professional (d)	0.1560***	0.0974***	-0.2534***
Technical (d)	0.1299***	0.2239***	-0.3538***
Clerical (d)	0.1529***	0.2593***	-0.4121***
Service (d)	-0.0011	-0.0306***	0.0317***
Agricultural (d)	-0.0674***	-0.2641***	0.3316***
Elementary (d)	0.0249***	0.0927***	-0.1176***
<b>Industry</b>			
Manufacturing (d)	-0.0321***	-0.0111	0.0432***
Services (d)	0.0482***	-0.1293***	0.0811***
<b>Spatial</b>			
Rural (d)	0.0104***	0.0091	-0.0195**
Estates (d)	0.2361***	0.2349***	-0.4710***
Central Province (d)	0.0299***	-0.0684***	0.0385***
Southern Province (d)	0.0084***	-0.0646***	0.0562***
North-Western Province (d)	0.0069**	-0.0933***	0.0864***
North Central Province (d)	0.0400***	-0.0345***	-0.0054
Uva Province (d)	0.0137***	-0.0103	-0.0034
Sabaragamuwa Province (d)	-0.0064**	-0.0606***	0.0670***
Pseudo R-squared	0.4394	0.4394	0.4394
Number of observations	27 724	27 724	27 724

Notes:

1. \*\*\*, \*\*, and \* denote statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. (d) for discrete change in dummy variable from 0 to 1.
2. The base category is unemployed.
3. Estimation of marginal effects calculated at mean values using Bartus' (2005) Stata ado <margeff>.

**Table 11: Determinants of probability of different categories of informal employment: Marginal effects of multinomial logistic estimates (all employed)**

Categories of employment	Cells 1 & 5 (1)	Cell 2 (2)	Cells 3 & 9 (3)	Cell 4 (4)	Cells 6 & 10 (5)
<b>Demographics</b>					
Male (d)	-0.1735***	0.0098***	0.0249***	0.0101***	0.1152***
Married (d)	0.0107***	-0.0129***	0.0425***	0.0030**	-0.0418***
Age	-0.0082***	-0.0048***	0.0046**	0.0003	-0.0065***
Age squared	0.0001***	0.0000***	0.0000	0.0000	0.0001***
Sri Lankan Tamil (d)	-0.0362***	0.0267***	-0.0621**	0.0019	0.0459***
Indian Tamil (d)	-0.0338***	0.0627***	-0.0565*	0.0008	-0.0041
Moor (d)	0.0397***	0.0000	0.1214***	0.0022	-0.0106
Other (d)	-0.0153	0.0092	0.0798	-0.0005	-0.0983***
<b>Education</b>					
Junior secondary	0.0030	-0.0052	0.0058	0.0035*	-0.0463***
Senior secondary	-0.0010	-0.0013	-0.0749***	0.0025*	-0.1601***
Tertiary	-0.0088	-0.0140**	-0.3043***	-0.0072***	-0.1733***
<b>Occupation</b>					
Managerial (d)	-0.0265***	-0.0263***	0.0861***	0.1161***	-0.2243***
Professional (d)	-0.0495***	0.005	-0.2745***	-0.0007	-0.1236***
Technical (d)	-0.0412***	0.0130**	-0.2883***	-0.0047**	-0.1431***
Clerical (d)	-0.0386***	0.0293***	-0.3901***	-0.0055**	-0.0987***
Service (d)	0.2032***	0.0352***	-0.2885***	0.0021	0.0505***
Agricultural (d)	0.1765***	-0.0542***	0.5671***	-0.0068***	-0.2135***
Elementary (d)	-0.0199***	0.0386***	-0.3460***	-0.0124***	0.0783***
<b>Industry</b>					
Manufacturing (d)	-0.0228***	0.0267***	0.1086***	-0.0042***	-0.0275***
Services (d)	-0.0194***	0.0037	0.3029***	-0.0179***	-0.0907***
<b>Spatial</b>					
Rural (d)	0.0077	-0.0033	-0.0047	-0.0030*	-0.0263***
Estates (d)	-0.0289***	-0.0288***	-0.2193***	-0.0078***	-0.1523***
Central Province (d)	0.0299***	-0.0220***	0.0031	-0.0015	0.0474***
Southern Province (d)	0.0157***	-0.0161***	0.0429***	-0.0004	0.0443***
North-Western Province (d)	0.0059	-0.0164***	0.0464***	0.0111***	0.0805***
North Central Province (d)	0.0332***	-0.0154***	0.0433**	-0.0047***	-0.0510***
Uva Province (d)	0.0413***	-0.0245***	0.0628***	-0.0048***	-0.0436***
Sabaragamuwa Province (d)	-0.0022	-0.0092***	0.0565***	-0.001	0.0570***
Pseudo R-squared	0.3457	0.3457	0.3457	0.3457	0.3457
Number of observations	27 724	27 724	27 724	27 724	27 724

Notes:

1. \*\*\*, \*\*, and \* denote statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. (d) for discrete change in dummy variable from 0 to 1.
2. Base category is employment in public and formal sectors.
3. Cell definitions as in Table 2. That is, Cell 1: Family worker in formal enterprise; Cell 2: Employee in informal job in formal enterprise; Cells 3 & 9: Own-account worker in informal enterprise/household; Cell 4: Employer in informal enterprise; Cell 5: Family worker in informal enterprise; Cells 6 & 10: Employee in informal enterprise/household.
4. Estimation of marginal effects calculated at mean values using Bartus' (2005) Stata ado <margeff>.

**Table 12: Determinants of probability of different categories of informal employment: Marginal effects of multinomial logistic estimates (employed males)**

Categories of employment	Cells 1 & 5 (1)	Cell 2 (2)	Cells 3 & 9 (3)	Cell 4 (4)	Cells 6 & 10 (5)
<b>Demographics</b>					
Married (d)	-0.0308***	-0.0116***	0.0516***	0.0066***	-0.0311***
Age	-0.0037***	-0.0053***	-0.0037	0.0002	-0.0094***
Age squared	0.0000***	0.0001***	0.0001***	0.0000	0.0001***
Sri Lankan Tamil (d)	-0.0087***	0.0338***	-0.0496*	0.0032	0.0402*
Indian Tamil (d)	-0.0131***	0.1152***	-0.0550	0.0018	-0.0312
Moor (d)	0.0023	0.0097	0.0909***	0.0028	0.0305*
Other (d)	-0.0113***	0.0034	0.0556	-0.0004	-0.1103***
<b>Education</b>					
Junior secondary	-0.0013	-0.0044	-0.0234	0.0050	-0.0437***
Senior secondary	-0.0009	0.0053	-0.1240***	0.0029	-0.1515***
Tertiary	-0.0022	0.0098	-0.3442***	-0.0108***	-0.2013***
<b>Occupation</b>					
Managerial (d)	-0.0091***	-0.0289***	0.0834***	0.1391***	-0.2735***
Professional (d)	-0.0124***	-0.0086	-0.2284***	-0.0012	-0.1491***
Technical (d)	-0.0127***	0.0062	-0.2759***	-0.0071**	-0.1723***
Clerical (d)	-0.0074**	0.0278***	-0.4038***	-0.0101***	-0.1224***
Service (d)	0.0904***	0.0434***	-0.3096***	-0.0015	0.0345**
Agricultural (d)	0.0560***	-0.0557***	0.6754***	-0.0116***	-0.2492***
Elementary (d)	-0.0003	0.0334***	-0.3601***	-0.0203***	0.0672***
<b>Industry</b>					
Manufacturing (d)	-0.0016	0.0271***	0.0468*	-0.0063***	0.0073
Services (d)	-0.0086**	0.0021	0.3050***	-0.0283***	-0.1148***
<b>Spatial</b>					
Rural (d)	-0.0017	0.0025	-0.0151	-0.0053**	-0.0178
Estates (d)	-0.0103***	-0.0309***	-0.2192***	-0.0120***	-0.1500***
Central Province (d)	0.0084**	-0.0284***	0.0117	-0.0020	0.0674***
Southern Province (d)	-0.0013	-0.0210***	0.0331**	-0.0005	0.0669***
North-Western Province (d)	-0.0024	-0.0215***	0.0581***	0.0160***	0.0879***
North Central Province (d)	0.0053*	-0.0181***	0.0636***	-0.0074***	-0.0528***
Uva Province (d)	0.0046	-0.0292***	0.0896***	-0.0081***	-0.0439***
Sabaragamuwa Province (d)	-0.0044**	-0.0137***	0.0834***	-0.0018	0.0624***
Pseudo R-squared	0.3370	0.3370	0.3370	0.3370	0.3370
Number of observations	18 005	18 005	18 005	18 005	18 005

Notes:

1. \*\*\*, \*\*, and \* denote statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. (d) for discrete change in dummy variable from 0 to 1.
2. Base category is employment in public and formal sectors.
3. Cell definitions as in Table 2. That is, Cell 1: Family worker in formal enterprise; Cell 2: Employee in informal job in formal enterprise; Cells 3 & 9: Own-account worker in informal enterprise/household; Cell 4: Employer in informal enterprise; Cell 5: Family worker in informal enterprise; Cells 6 & 10: Employee in informal enterprise/household.
4. Estimation of marginal effects calculated at mean values using Bartus' (2005) Stata ado <margeff>.

**Table 13: Determinants of probability of different categories of informal employment: Marginal effects of multinomial logistic estimates (employed females)**

Categories of employment	Cells 1 & 5 (1)	Cell 2 (2)	Cells 3 & 9 (3)	Cells 6 & 10 (4)
<b>Demographics</b>				
Married	0.1921**	-0.0193	0.0169	-0.072
Age	-0.0125***	-0.0039***	0.0125	-0.0048
Age squared	0.0002***	0.0000***	0.0000	0.0000
Sri Lankan Tamil (d)	-0.1225	0.0134	-0.0781	0.0474
Indian Tamil (d)	-0.0573	0.0022	-0.0359	0.0247
Moor (d)	0.1756*	-0.0215	0.1775**	-0.0706
Other (d)	0.0462	0.0214	0.1187	-0.0747
<b>Education</b>				
Junior secondary	0.0328	-0.0072	0.0536	-0.0461**
Senior secondary	0.0265	-0.0167	0.0397	-0.1631***
Tertiary	-0.0001	-0.0294	-0.1914	-0.136
<b>Occupation</b>				
Managerial (d)	-0.0929	-0.022	0.1981	-0.1551
Professional (d)	-0.1962**	0.0319	-0.2488***	-0.1059***
Technical (d)	-0.1567	0.0306	-0.2521	-0.1045
Clerical (d)	-0.1474**	0.0387	-0.3218*	-0.0777***
Service (d)	0.3691	0.0271	-0.2046	0.0485
Agricultural (d)	0.4040***	-0.0445*	0.3377***	-0.1453*
Elementary (d)	-0.1309	0.0544***	-0.2727	0.1093
<b>Industry</b>				
Manufacturing (d)	-0.0756	0.0394***	0.1622**	-0.0702
Services (d)	-0.0481	0.0102	0.2518	-0.0206
<b>Spatial</b>				
Rural (d)	0.0386	-0.0141**	0.0010	-0.0271
Estates (d)	-0.1211	-0.0215	-0.1926	-0.1488
Central Province (d)	0.1117***	-0.0100	-0.0125	0.0004
Southern Province (d)	0.0968	-0.0076	0.0462	-0.0100
North-Western Province (d)	0.0416	-0.0072	0.0098	0.0589
North Central Province (d)	0.1245***	-0.0091	-0.0063	-0.0549
Uva Province (d)	0.1841***	-0.0149	-0.0016	-0.0664
Sabaragamuwa Province (d)	-0.0052	0.0002	-0.0044	0.0372
Pseudo R-squared	0.3766	0.3766	0.3766	0.3766
Number of observations	9 715	9 715	9 715	9 715

Notes:

1. \*\*\*, \*\*, and \* denote statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. (d) for discrete change in dummy variable from 0 to 1.
2. Base category is employment in public and formal sectors.
3. Cell definitions as in Table 2. That is, Cell 1: Family worker in formal enterprise; Cell 2: Employee in informal job in formal enterprise; Cells 3 & 9: Own-account worker in informal enterprise/household; Cell 4: Employer in informal enterprise; Cell 5: Family worker in informal enterprise; Cells 6 & 10: Employee in informal enterprise/household.
4. Estimation of marginal effects calculated at mean values using Bartus' (2005) Stata ado <margeff>.

**Table 14: Determinants of probability of different categories of employees:  
Marginal effects of multinomial logistic estimates (informal employees)**

Categories of employees	Informal employees in formal enterprises (1)	Informal employees in informal enterprises (2)
<b>Demographics</b>		
Male (d)	0.0222***	0.1280***
Married (d)	0.0015	0.0184
Age	-0.0047***	0.004
Age squared	0.0001***	0.0000
Sri Lankan Tamil (d)	0.0186	-0.0317
Indian Tamil (d)	0.1370***	-0.0603*
Moor (d)	-0.0048	-0.0792**
Other (d)	0.0018	-0.1154
<b>Education</b>		
Junior secondary	-0.0141*	-0.0711***
Senior secondary	-0.0074	-0.2242***
Tertiary	-0.0460***	-0.3301***
<b>Occupation</b>		
Managerial (d)	0.0367	-0.2956***
Professional (d)	0.0700**	-0.1381***
Technical (d)	0.0274	-0.2315***
Clerical (d)	0.0274	-0.2269***
Service (d)	0.0595***	-0.0041
Agricultural (d)	-0.0404	0.1675***
Elementary (d)	0.0168**	-0.0640***
<b>Industry</b>		
Manufacturing (d)	0.0418***	0.0341
Services (d)	0.0870***	0.0127
<b>Job related variables</b>		
Firm size (employees) 5-9 (d)	0.0773***	-0.2261***
10-15 (d)	0.0849***	-0.3353***
16-49 (d)	0.0715***	-0.4080***
50-99 (d)	0.0519***	-0.4272***
100+	0.0590***	-0.5865***
No specific institution (d)	-0.1007***	-0.0125
No regular employees (d)	-0.0849***	-0.0979**
Temporary (d)	0.2000***	0.4378***
Casual (d)	0.1976***	0.3541***
No permanent employer (d)	-0.0318***	0.4648***

Categories of employees	Informal employees in formal enterprises (1)	Informal employees in informal enterprises (2)
<b>Spatial</b>		
Rural (d)	-0.0026	-0.1643***
Estates (d)	-0.0812***	-0.3443***
Central Province (d)	-0.0517***	0.1359***
Southern Province (d)	-0.0242***	0.1354***
North-Western Province (d)	-0.0329***	0.2512***
North Central Province (d)	-0.0330***	-0.0795**
Uva Province (d)	-0.0534***	-0.0115
Sabaragamuwa Province (d)	-0.0246***	0.0837***
Pseudo R-squared	0.4645	0.4645
Number of observations	11 759	11 759

Notes:

1. \*\*\*, \*\*, and \* denote statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. (d) for discrete change in dummy variable from 0 to 1.
2. Base category is formal employees in formal enterprises.
3. Estimation of marginal effects calculated at mean values using Bartus' (2005) Stata ado <margeff>.

Table 15: Determinants of hourly wages (all employees)

	Public (1)	Formal (2)	Informal (3)
<b>Demographics</b>			
Male	0.0897	0.1749***	0.4272***
Age	0.0786	0.0471***	0.0504***
Age squared	-0.0008	-0.0006***	-0.0006***
Sri Lankan Tamil	0.0839	-0.0395	0.0685
Indian Tamil	0.3483**	-0.0032	0.0208
Moor	0.1735	0.1068	0.0834
Other	0.3622	0.5106***	-0.6192
<b>Education</b>			
Junior secondary	0.1264	0.0523	0.0477
Senior secondary	0.2035	0.2703**	0.1305
Tertiary	0.3438	0.8156**	0.4390
<b>Occupation</b>			
Managerial	0.1448	1.0773**	0.0739
Professional	0.0777	0.6206	0.8182
Technical	-0.1659	0.4403*	0.0453
Clerical	-0.2132	0.3332	0.2141
Service	-0.1630	-0.0689	-0.1304
Agricultural	-0.3271	-0.3351	-0.1105
Elementary	-0.2361	-0.2427*	-0.2136
<b>Industry</b>			
Manufacturing	0.4783*	0.2443***	0.0655
Services	0.2249	0.1420	0.0061
<b>Job related variables</b>			
Firm size (employees)			
5-9		0.0346	-0.0636
10-15		0.0611	-0.0388
16-49		0.1202*	-0.0262
50-99		0.0299	0.1081
100+		0.2031***	-0.1756**
No specific institution		0.3896***	0.0103
No regular employees		-0.0572	-0.1506
Temporary		-0.1819***	0.0661
Casual		-0.1969**	0.0627
No permanent employer		-0.0300	0.1383
<b>Spatial</b>			
Rural	-0.1227	-0.0497	-0.0774
Estates	-0.9098**	0.0857	0.0907
Central Province	-0.0464	-0.2215***	-0.0150
Southern Province	-0.0323	-0.1029	0.1334*

	Public (1)	Formal (2)	Informal (3)
North-Western Province	-0.0785	-0.3300**	-0.0609
North Central Province	-0.2896*	-0.2055	0.0090
Uva Province	-0.1148	-0.0898	0.1095
Sabaragamuwa Province	-0.1299	-0.2875***	-0.2572**
<b>Conditional Expected Values of Residuals</b>			
Outcome 1	-0.4319	-0.1833	0.0772
Outcome 2	0.1651	0.0738	0.2659
Outcome 3	-0.0597	-0.2841	0.2718
Outcome 4	0.1121	0.1410*	0.2888
Outcome 5	0.7573	-0.7131**	-0.0245
<b>Constant</b>	2.4310	1.5218***	2.0987***

Notes:

1. Estimates generated using Gurgand & Fournier's (2004) SELMLOG.ado. Sample selection bias correction based on multinomial logistic model with five employment outcomes: unemployment; employment as own-account workers, contributing family workers, and employers; public employees; formal employees; and informal employees.
2. Standard errors derived from 100 bootstrap replications with \*\*\*, \*\*, and \* denoting statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively.
3. The coefficients on the conditional expected values of the residuals derived from the multinomial logistic model estimate the covariance between the residual in the regression and the residuals (or some function of the residuals) from the multinomial logistic model.

Table 16: Determinants of hourly wages (male employees)

	Public employees (1)	Formal (2)	Informal (3)
<b>Demographics</b>			
Age	0.0762	0.0354**	0.0519***
Age squared	-0.0008	-0.0004**	-0.0006***
Sri Lankan Tamil	0.0057	0.0363	0.0181
Indian Tamil	0.2097	-0.0609	-0.0371
Moor	0.3107	0.1265	0.0794
Other	0.4437	0.5316**	-0.5709
<b>Education</b>			
Junior secondary	0.1291	0.041	0.0432
Senior secondary	0.1938	0.1994	0.1651
Tertiary	0.1736	0.6959	0.8483
<b>Occupation</b>			
Managerial	0.7316	1.1558***	0.3219
Professional	0.0098	0.67	0.6442
Technical	-0.3006	0.3738	-0.174
Clerical	-0.4834	0.1726	0.1567
Service	-0.3801	-0.0924	-0.2064
Agricultural	0.2688	-0.2076	-0.1075
Elementary	-0.4899	-0.3707	-0.2338
<b>Industry</b>			
Manufacturing	0.6240**	0.2604**	0.0356
Services	0.1292	0.2732	0.0149
<b>Job related variables</b>			
Firm size (employees)			
5-9		0.0349	-0.0387
10-15		0.0378	0.0096
16-49		0.1372	-0.1176
50-99		0.0235	-0.0196
100+		0.1798*	-0.1912**
No specific institution		0.3254**	0.0168
No regular employees		-0.1929	-0.0669
Temporary		-0.2573***	0.1195
Casual		-0.2769**	0.1483
No permanent employer		-0.0004	0.1951
Informal employment			
Public employee	-0.1065	-0.0247	-0.0639
<b>Spatial</b>			
Rural	-0.6834	0.0223	0.0565
Estates	-0.1073	-0.1978*	0.0241
	-0.1081	-0.0699	0.138

	<b>Public employees</b> (1)	<b>Formal</b> (2)	<b>Informal</b> (3)
Central Province	-0.1258	-0.2032	-0.0366
Southern Province	-0.3535	-0.1655	0.1526
North-Western Province	-0.0787	-0.0552	0.1745*
North Central Province	-0.1696	-0.3050**	-0.2674*
Uva Province	-0.7846	-0.2573	0.4622
Sabaragamuwa Province	0.6629	0.3113	0.4029
<b>Constant</b>	-0.1708	-0.349	0.3821

*Notes: As for Table 15.*

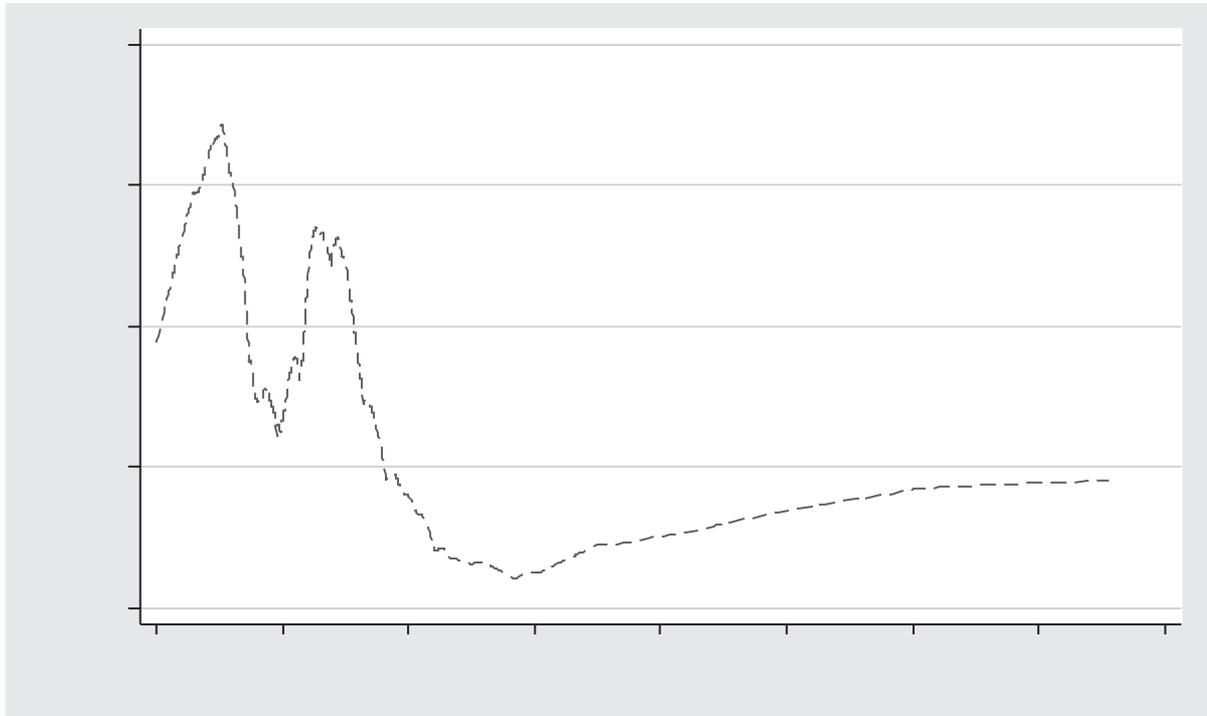
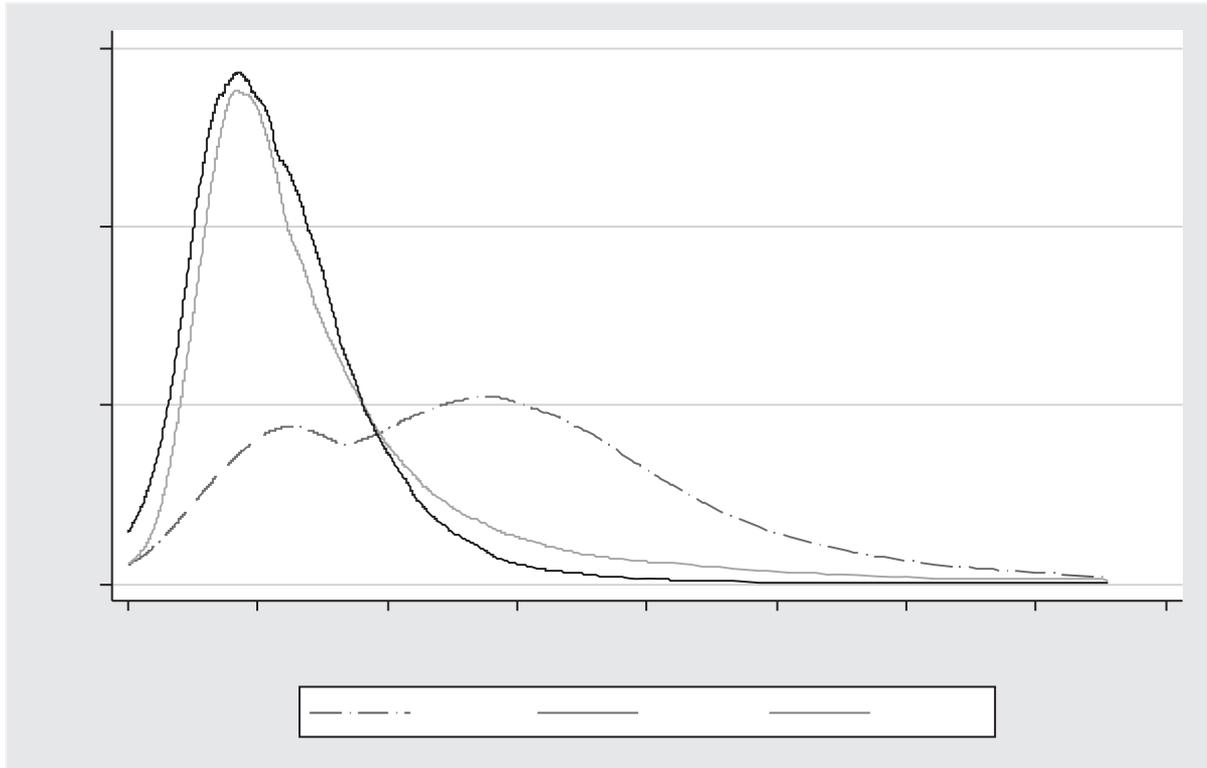
Table 17: Determinants of hourly wages (female employees)

	Public employees (1)	Formal (2)	Informal (3)
<b>Demographics</b>			
Age	0.0466	0.0472*	0.0568**
Age squared	-0.0005	-0.0005	-0.0007**
Sri Lankan Tamil	0.2543	-0.0668	0.2758
Indian Tamil	0.5436	0.0453	0.2745
Moor	0.1204	0.255	-0.1031
Other	0.0000	-0.061	0.7023
<b>Education</b>			
Junior secondary	-0.1587	0.0966	0.0791
Senior secondary	0.401	0.3341*	0.0887
Tertiary	0.9268	0.6857	0.4019
<b>Occupation</b>			
Managerial	-0.1686	1.4805**	0.0000
Professional	1.085	0.0000	0.0000
Technical	0.9411	0.6827**	0.9983*
Clerical	0.8541	0.4527	1.136
Service	-0.3545	0.1136	0.208
Agricultural	-0.8078	0.9188	-0.7601
Elementary	0.3515	-0.1573	0.1586
<b>Industry</b>			
Manufacturing	-0.2122	0.2484	0.0663
Services	0.4511	0.025	-0.1849
<b>Job related variables</b>			
Firm size (employees)			
5-9		0.0963	-0.0853
10-15		-0.0186	-0.1545
16-49		0.1376	0.2065*
50-99		0.0658	0.3929***
100+		0.2574	-0.1013
No specific institution		0.5595*	-0.042
No regular employees		0.2925	-0.4247
Temporary		-0.1394*	0.019
Casual		-0.1333	-0.056
No permanent employer		-0.1181	0.1045
Informal employment			
Public employee	-0.051	-0.088	0.0207
<b>Spatial</b>			
Rural	-0.5054	0.0255	0.6401
Estates	-0.0921	-0.1858	-0.2583
	-0.2685	-0.0384	0.0038

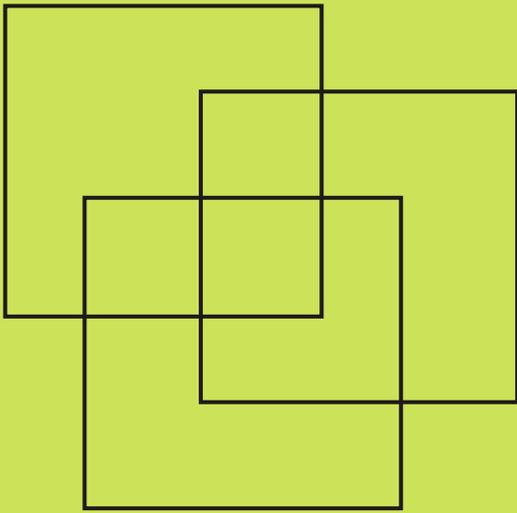
	<b>Public employees</b> (1)	<b>Formal</b> (2)	<b>Informal</b> (3)
Central Province	0.0583	-0.1234	-0.2218
Southern Province	-0.0717	-0.0766	-0.4331
North-Western Province	-0.1993	-0.0878	-0.1842
North Central Province	-0.4114	-0.1623	-0.2548
Uva Province	-0.2556	-0.3398	0.0345
Sabaragamuwa Province	-1.332	-0.1918	-0.1706
<b>Constant</b>	0.0478	-0.5069	0.8084

*Notes: As for Table 15.*

Figure 1: Adaptive kernel density estimation of wage distribution:  
Public, formal, and informal employees (2006)



*Note: The difference in density in the bottom panel denotes the difference in density between the formal and informal wage distributions graphed in the top panel.*



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