



**8<sup>th</sup> INTERNATIONAL GEM-IWG CONFERENCE**  
**ENGENDERING MACROECONOMICS AND INTERNATIONAL**  
**ECONOMICS**

**July 20- 22, 2007**

**Organized by GEM- IWG in Collaboration with**  
**The Levy Economics Institute**  
**Department of Economics, University of Utah, Salt Lake City**

**With Support From**

**The Ford Foundation**

**Gender, Informality and Employment Adjustment in**  
**Latin America**

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## Gender, Informality and Employment Adjustment in Latin America

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*1. Introduction.* Informal employment is commonly thought to serve as a buffer for formal employment over the course of business cycles (Cf. Carneiro 1997; Maloney 1997). Knowing the extent to which this is so and how this differs for men and women would provide a better understanding of the basic workings of labour markets in developing countries, specifically as regards so-called numerical or external flexibility with respect to changes in employment. This depends, in turn, on the comparative cyclic movement of different types of formal and informal employment as well as how men and women are concentrated in these types of employment. There is not, however, a great deal of systematic empirical evidence for the buffer hypothesis. Neither are there unambiguous *a priori* arguments, for there are a number of determinants of the direction and magnitude of the cyclicity of formal and informal employment, both of which contain diverse types of employment.

The basic logic of the buffer hypothesis is that those who fall out of formal employment during cyclic downswings have little choice but to take up informal employment. The extent of this choice depends, though, on the strength of a country's unemployment insurance system. We study Latin America, which in spite of having high shares of informal employment is in many respects the most developed of developing regions, with comparatively high levels of per capita income and (at least for a number of countries in the region) comparatively strong social safety nets, including unemployment benefits (Botero *et al.* 2004). Consistent with this, there is a good deal of movement in Latin American countries into and out of open unemployment, and thus it is unemployment that serves to a significant extent as a buffer for formal employment (Table 1). Yet there has also been a trend increase in unemployment in a number of Latin American countries in recent years, suggesting a changing dynamic among formal and informal employment and open unemployment.

There are, moreover, a number of determinants of formal employment volatility in the face of a given output volatility. For example, there is consistent empirical evidence for Latin America countries of stronger employment protection legislation associated with less formal employment volatility, thus lessening the need for informal employment to serve as a buffer.<sup>2</sup> Worth noting in this regard is that employment protection legislation weakened in a number of Latin American countries in the 1990s (the period we study), potentially increasing the volatility of formal employment and thus, all else equal, increasing the need for informal employment to serve as a buffer (Heckman and Pagés-Serra 2000; Frisoni and Kongolo 2002). It is also reasonable to expect greater stability in public sector than private sector formal employment, with the volatility of total formal employment then depending on the relative size of public and private sectors. And the share of public sector employment declined in Latin America in the 1990s, also potentially increasing the volatility of total formal employment and the need for informal employment to serve as a buffer. In addition, adjustments to changes in output can be not only through changes in employment but also changes in hours worked, thus dampening the volatility

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<sup>1</sup> The authors would like to thank colleagues at ILO-SIAL (Information System and Labour Analysis) in Panama, who provided the data used in this paper, without which it could not have been written. We would particularly like to thank Bolivar Pino at ILO-SIAL. We are also very grateful to Tita Prada de Mesa for facilitating the contact with ILO-SIAL. For their helpful comments, the authors would like to thank Marie-Thérèse Chica and Susan Hayter.

<sup>2</sup> Cf. Hopenhayn 2000; Kugler 2000; Márquez and Pagés 1998; Micco and Pagés 2004; Paes de Barros and Corseuil 2000; and Saavedra and Torero 2000.

of employment. Our study looks only at changes in employment, though, and it is these changes – particularly shifts into and out of informal employment – that are relevant to the buffer hypothesis.

The above discussion pertains to the magnitude of the procyclicality of formal employment rather than the direction with cyclicity. As with formal employment, there are similar factors affecting the magnitude of volatility of informal employment. For instance, informal workers may also become openly unemployed in downswings, as one study of Mexico finds (Calderon-Madrid 2000). It is also reasonable to expect that much labour adjustment in informal employment occurs through changes in hours worked rather than changes in employment.

In contrast with formal employment, however, for informal employment there are a number of determinants not only of the magnitude of cyclicity but also, more fundamentally, of the direction of cyclicity. Useful in this regard is Portes' classification of types of informal employment into "survival," "independent" and "subordinate" informal employment, which he describes as follows.

In terms of their functions, at least three types of informal "sectors" could be distinguished. First, there was an informality of "*survival*," most visible and best publicized, whose sole function was the physical reproduction of those involved. Invented self-employment at the margins of the urban economy such as begging, shoe shining and casual street vending represent examples of these activities. Second, there was a vast sector of *independent* informal enterprises catering to the needs of the low-income urban population. These activities stretched all the way from the production and sale of foodstuffs to the repair and reconditioning of TV sets, other appliances and even automobiles.... Third, there was a sector of enterprises *subordinate* to formal firms through various subcontracting arrangements which helped supply the high-income market.... [T]hese subcontracting chains benefited directly the large formal producers by increasing their labour flexibility and lowering their costs (Portes 1994, pp. 165-167, italics added).

A variation of "subordinate" informal employment is off-the-books hiring of workers directly by formal firms and working within these firms (Portes and Shauffler 1993).

*Survival informal employment* corresponds to the archetypal informal employment of the buffer hypothesis which we thus expect to move countercyclically.

*Independent informal employment* we expect to vary in the same direction as the income of low-income urban dwellers and, on these grounds, to move procyclically. Within informal employment is the category of relatively well-paid self-employment, commonly desired by workers in both formal and informal employment and corresponding most closely to independent informal employment. Studies on El Salvador, Mexico and Peru finds that self-employed workers tend to be older than average, which the authors' argue results from life-cycle patterns in which younger workers continue as wage earners (in formal and informal employment) until they have accumulated enough capital to set up their own businesses, for which conditions are likely to be most favorable during upswings (Maloney 1999; Marcouiller *et al.* 1997). This too argues for independent informal employment moving procyclically.

*Subordinate informal employment* can move either procyclically or countercyclically. In the procyclical scenario, formal firms using subordinate informal employment might, for a number of reasons (e.g., because of strong employment protection or to endeavor to maintain favorable relations with regular employees) adjust to downswings with subcontracted and off-the-

books workers rather than formal employees. On the other hand, formal firms might substitute subordinate informal workers for formal employees as a cost-cutting measure during downswings (or as part of a trend), thus creating countercyclical patterns of subordinate informal employment.

Considering survival, independent and subordinate employment together, therefore, it is difficult to have a clearcut expectation as to whether informal employment as a whole moves procyclically or countercyclically. One complication we encounter is that informal employment data are not available with these three breakdowns, resulting in somewhat of a mismatch between these motivating hypotheses and our empirical findings.

By including gender in the analysis, however, one might pick up part of the distinction among types of informal activities insofar as men and women are concentrated in them differently. Of course these gender differences are important in their own right, and indeed there is a sizeable theoretical and empirical literature on the role of women as a buffer workforce, though this focuses more on developed countries and thus corresponds more closely to formal than informal employment in developing countries (e.g., Rubery 1988; Kucera 2001). As regards men and women's employment, the buffer hypothesis posits that women tend to be last hired and first fired and thus that their employment is more procyclically volatile than men's. This literature also hypothesizes, however, that women (being generally paid less) may be substituted for men during downswings as a cost-cutting measure, resulting in a countercyclical pattern of women's employment. The possibility of such a countercyclical pattern is referred to in the literature as the substitution hypothesis, in contrast to the buffer hypothesis, and is analogous to the discussion above regarding the substitution of subordinate informal employment for formal employees during downswings.

Women may also be disproportionately concentrated in sectors (e.g., services) or occupations (e.g., clerical) that are less vulnerable to job loss during downswings, providing them with a measure of job stability over business cycles. Conversely, in some sectors (e.g., apparel) women may be disproportionately concentrated in production jobs, which are generally more vulnerable to job loss during downswings. In this sense, patterns of gender segregation by sector and occupation are closely linked to patterns of men and women's relative employment volatility.<sup>3</sup>

Though the literature on the role of women as a buffer workforce largely addresses formal employment in developed countries, similar considerations apply for informal employment regarding the link between patterns of segregation and patterns of men and women's relative employment volatility, depending on how men and women are concentrated in survival, independent and subordinate informal employment. Some authors suggest, for instance, that women are likely to be disproportionately concentrated in subordinate informal employment. The rationale is that women constitute the bulk of the workforce of labour-intensive export-oriented manufacturing industries. In these industries, it is argued that intense competition pushes companies to cut labour costs by decreasing the number of permanent employees and increasing the number of casual and home workers, of whom a large share are women, such as through subcontracting with smaller informal establishments (Carr and Chen, 2004).<sup>4</sup>

Note that in these discussions of informal employment and women's employment as business cycle buffers, informal employment is hypothesized to move countercyclically and

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<sup>3</sup> Relevant in this regard is a study of Costa Rica, Ecuador and Uruguay showing strong and persistent patterns of occupational segregation by gender over the 1989 to 1997 period (Deutsch *et al.* 2002).

<sup>4</sup> The point is illustrated by Portes (1989, p. 29), who reports that in the Uruguayan leather export industry, women accounted for more than two-thirds of skilled home workers and sweatshop labourers.

women's employment procyclically – that is, in opposite directions. Regarding informal employment, the buffer functions through a change in employment status, with formal workers *becoming* informal workers in downswings and vice versa in upswings. In this sense, formal jobs are more vulnerable in downswings than informal jobs, with the latter assumed to be there for the taking even in the face of weak aggregate demand. Regarding men and women's relative employment volatility, in contrast, no analogous change of status is hypothesized. The hypothesis is rather that women workers are more vulnerable than men workers in downswings, resulting in the greater procyclical volatility of women's employment. Of course, women may be disproportionately concentrated among informal employment, thus conflating the hypotheses of informal employment and women's employment as business cycle buffers. In describing our empirical results, however, we follow the convention of regarding the countercyclical movement of informal employment and the greater procyclicality of women than men's employment as providing evidence for the two respective buffer hypotheses.

We have presented various hypotheses regarding whether informal employment as well as women's employment function as buffers over business cycles. We use a unique dataset that enables us to empirically test these hypotheses as well as to evaluate trends and patterns of men and women's representation in various types of formal and informal employment, for three different definitions of informality.

The remainder of this paper is structured as follows. Section 2 surveys the relevant empirical literature. Section 3 discusses the data on and definitions of formal and informal employment. Section 4 describes trends in formal and informal employment and men and women's representation in different types of formal and informal employment. Section 5 provides main empirical results regarding informal employment as a buffer and men and women's relative employment volatility. Section 6 concludes.

## *2. Prior Empirical Evidence for Latin America.*

*2.1 Informal Employment as a Buffer.* There is not a wealth of systematic evidence of the cyclical movement of informal employment, for Latin America at least. For instance, no studies were found that compared patterns across a sizeable number of countries. Neither do many studies evaluate an extended period of time and thus complete business cycles, limiting the ability to distinguish between cycle and trend. However, the available studies, using varying definitions and evaluating both shares and raw numbers of formal and informal employment, suggest on balance a countercyclical pattern of informal employment.

Some studies note the decrease in numbers of those formally employed and increase in those informally employed during the mid-1980s economic crisis in several Latin American cities, for instance Portes (1989) on Bogotá, Montevideo and Santiago and Franks (1994) and Pradhan and van Soest (1995) on urban Bolivia. A study also evaluating the numbers of those formally and informally employed finds the same pattern for Sao Paulo during the late-1980s to early-1990s recession in Brazil (Carneiro and Henley 1998). A study of formal and informal employment shares in Peru for 1990 to 1995 found a generally countercyclical movement of informal employment shares, with the share increasing overall during the downturn up to 1992 and then declining for two of the three upturn years thereafter (Saavedra and Chong 1999). Another study for Peru also found a generally procyclical movement of both numbers of formal employees and shares of formal employment from 1987 to 1997 (Saavedra and Torero 2000). This movement was more strongly procyclical later in the period, which the authors attribute to weakening job security regulations in the 1990s.

Maloney examines employment shares of formal salaried, self-employed, informal salaried, contract and unpaid workers for urban Mexico from 1987 to 1993, during which 1990 was a peak year (Maloney 1997). Regarding categories of informal employment, Maloney finds a *procyclical* movement of self-employment shares, which provides evidence for his life-cycle view of self-employment, in which workers from other employment categories, including formal employment, would be expected to enter into self-employment when times are good. However, the movement of shares of contract and unpaid workers is countercyclical while the share of informal salaried workers shows an overall upward trend. Looking at the movements of shares of formal salaried employment provides a summary sense of the relative cyclicity of formal and informal employment. The share of formal salaried employment is quite flat over the 1987 to 1990 upturn but is downward over the 1991 to 1993 years of slower growth. This suggests that, on balance, the movement of formal employment tends to be procyclical and thus that of informal employment to be countercyclical. This is consistent with the evidence provided in a study on Mexico by Calderon-Madrid (2000), which shows procyclical movements of workers from informal into formal employment.

*2.2. Gender and Informality.* Very few empirical studies on Latin American countries analyze movements of formal and informal employment over time separately for male and female workers. Interestingly, however, the few available gender-disaggregated studies find strong differences between male and female workers in formal and informal employment.

In a study of formal and informal employment in El Salvadoran urban areas, Funkhouser evaluates movements of individual male and female workers within and between formal and informal employment from 1991 to 1992, a period of rapid GDP growth in El Salvador, as well as how such movements are associated with changes in earnings (Funkhouser 1997).<sup>5</sup> The study finds a fair amount of mobility between formal and informal employment for males but considerably less for females, especially regarding movement from informal to formal employment. For males initially in informal employment, 7.3% moved into formal employment over the period; for males initially in formal employment, 4.7% moved into informal employment. For females initially in informal employment, only 2.1% moved into formal employment, well under the rate for males; for females initially in formal employment, 3.3% moved into informal employment.<sup>6</sup> The author finds that those less likely to move are the better educated, those with more work experience, heads of households and married women, which is attributed to the greater ease with which these workers are able to achieve a match between jobs and their personal characteristics.

For those who changed jobs between 1991 and 1992, main results on changes in nominal earnings are as follows. For males, roughly the same earnings increases are observed for those moving from informal to formal employment as for those changing jobs within formal or

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<sup>5</sup> With informal employment defined to include the self-employed, family workers, domestic workers, and employees in firms of four or fewer employees, excepting professional and technical employees, and with formal employment defined to other employees. Employers are excluded from both categories.

<sup>6</sup> Looking at those who have changed jobs either within or between formal and informal employment, a similar picture emerges regarding male-female differences. For males, of the 19% of who were in informal employment in 1991 and subsequently changed jobs, 40% moved into formal employment (the rest moving within informal employment); of the 16% of who were in formal employment in 1991 and subsequently changed jobs, about 29% moved into informal employment. For females, of the 12% of who were in informal employment in 1991 and subsequently changed jobs, only 17% moved into formal employment; of the 12% of who were in formal employment in 1991 and subsequently changed jobs, 28% moved into informal employment.

informal employment. For males in formal employment in 1991, however, moving into informal employment resulted in much smaller earnings increases (about one-tenth) than males moving from informal to formal employment or changing jobs within formal or informal employment. As for females, moving from informal to formal employment resulted in much higher earnings increases than changing jobs within either formal or informal employment. And for females in formal employment in 1991, moving into informal employment resulted in very substantial earnings declines. For both males and females, then, moving from informal to formal employment resulted in much larger earnings increases than moving from formal to informal employment.<sup>7</sup>

Taking these results on mobility and earnings together, the author argues that they do not provide strong evidence of labour market segmentation for males, whereas such evidence is stronger for females. The author also suggests that important aspects of segmentation are determined largely prior to entry into the labour market. He writes, “Though there may not be pervasive segmentation in the Salvadoran labor market within educational groups, it is likely that the ability to change one’s educational status is restricted by educational policy or economic need. Indeed, segmentation within the labor market may be the result of restricted access to pre-labor-market characteristics. This finding is more pronounced for females” (*ibid.*, p. 151).

A similar study was conducted by Gong and van Soest (2002) for urban Mexico, tracing movements of individual male and female workers between formal and informal employment over five quarters in 1992 and 1993.<sup>8</sup> The authors estimate the probability of working in formal or informal employment controlling for wages and worker characteristics and whether a worker was formal or informal in the previous quarter. They find that a larger wage differential between formal and informal employment leads to a greater probability of working in the formal sector. They also find that for males, working in either the formal or informal sector in the previous quarter does not affect the probability of working in the formal sector in the subsequent quarter. For females, in contrast, the sector previously worked in increases the probability of remaining in the same sector in the subsequent quarter. In the authors’ view these results suggest that for males there are no costs of entry into the formal sector, at odds with the labour market segmentation hypothesis, whereas there is evidence of labour market segmentation for females. This difference between males and females is similar to that found by Funkhouser for El Salvador.

*3. Data and Definitions.* The data on formal and informal employment were constructed for us by ILO-SIAL (Information System and Labour Analysis) in Panama. The data has several advantages over other formal and informal employment data for Latin America published by the ILO, such as in its annual regional report *Panorama Laboral*. Our data is in the form of raw employment numbers (rather than shares by employment categories) and has a breakdown between employees and employers in small firms.

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<sup>7</sup> The study also finds, for both males and females, the highest earnings in 1992 for those who worked continuously between 1991 and 1992 at the same job within formal employment. For both males and females who worked in informal employment at some point in either 1991 or 1992 – including those staying within informal employment or moving in either direction between formal and informal employment – 1992 earnings were highest for those who worked continuously at the same job within informal employment.

<sup>8</sup> Gong and van Soest use two different definitions of informal employment, one based on firm size and the other based on job type, the latter including own-account workers, those who manage a firm without employees, and piece-workers. The authors only present results for the latter definition, but write that “Most of the results based upon the firm size definition are qualitatively similar” (Gong and van Soest 2002, p. 517).

The data also permit different definitions of formality and informality. First is an enterprise-based sectoral definition. For this, informality is defined as the sum of employment in four employment categories: employers in small firms (with fewer than five workers), employees in small firms, employment in domestic service, and self-employment (own-account workers – excluding administrative, professional and technical workers – and unpaid family workers). This basically corresponds to *employment in the informal sector*.<sup>9</sup> Formality is defined as the sum of employment in two employment categories: employment in larger firms (employers and employees in firms with more than five workers) and in the public sector, and corresponds to *employment in the formal sector*.

There has been, however, growing interest in recent years in the phenomena of informal employment in the formal sector (ILO 2002a; 2003; Hussmanns 2004). This is one of the factors leading the ILO to develop a conception of informality defined as *the sum of employment in the informal sector and informal employment in the formal sector*. One useful indicator of informality is the lack of social security coverage. Making use of this breakdown in our data permits us to employ three definitions of formality and informality, all of which have precedents in the literature.

1. The first definition is simply employment in the formal sector and employment in the informal sector, which we refer to as the *enterprise definition*.

2. Corresponding most closely to the ILO's new definition of informal employment, the second definition adds to employment in the informal sector (the first definition of informality) and subtracts from employment in the formal sector those without social security coverage employed in the formal sector. We refer to this as the *total informality definition*.

3. We also define formality by those with social security coverage regardless of whether they work in the formal or informal sector, and we define informality conversely. This definition definition has been used in the literature (e.g., Marcouiller *et al.* 1997; Saavedra and Chong 1999) and is important because a key policy concern regarding informal workers is that they lack social protection. We refer to this as the *social security coverage definition*. Note that the definition of social security coverage varies among countries. For Argentina, this refers to health coverage; for Brazil to contributions to social security; for Costa Rica, Mexico and Venezuela to health and pension coverage; and for Ecuador and Peru to affiliation with a social security system, public or private (ILO 2005, p. 99).

The data are annual and span from 1990 to 2000, though there is a fair amount of missing data. They were provided to us for 10 countries: Argentina, Brazil, Costa Rica, Ecuador, Honduras, Mexico, Panama, Paraguay, Peru and Venezuela. Data on social security coverage were provided to us for seven countries: Argentina, Brazil, Costa Rica, Ecuador, Mexico, Peru and Venezuela. Since all countries in the sample have data for urban employment but only four countries have in addition data for rural (non-agricultural) employment – that is, Costa Rica, Honduras, Panama and Venezuela – we focus our analysis on urban employment, with occasional

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<sup>9</sup> The possible exception is for employment in domestic services. As described in the report of the seventeenth International Conference of Labour Statisticians (ICLS), “The Fifteenth ICLC definition excludes households producing *goods* exclusively for their own final use, but provides an option to include households employing paid domestic workers. The framework presented here does not use this option and, hence, *excludes* households employing paid domestic workers from the informal sector” (ILO 2003, p. 50; Cf. Hussmanns 2004, p. 4). However, as we also evaluate main results for each of the employment categories separately, we opted to include domestic workers in the construction of aggregate employment in the informal sector.

reference to urban-rural comparisons for these four countries.<sup>10</sup> Last, all countries in the sample have data with small firms defined as fewer than five workers but only three countries have in addition data with small firms size defined as having fewer than 10 workers (Costa Rica, Honduras, Panama and Venezuela). Thus we use data for which small firms are defined as having fewer than five workers.

#### 4. *Patterns and Trends of Formal and Informal Employment.*

4.1. *Overall Patterns and Trends.* We evaluate trends and patterns of formality and informality based on the first and third definitions described in the prior section, the enterprise definition referring to employment in the informal sector and the social security definition referring to workers without social security coverage in both the formal and informal sectors. We focus on these two definitions as they are the most dissimilar of the three definitions and from which patterns in the total informality definition (employment in the informal sector plus informal employment in the formal sector) can be largely inferred.

Based on the enterprise definition for the 1990-2000 period on average, the share of informal employment ranges between just over 30% for Costa Rica and Panama to around 55% for Ecuador, Paraguay and Peru (Table 2, Figure 1).<sup>11</sup> Based on the social security coverage definition, the share of informal employment ranges from around 30% in Costa Rica and Venezuela to over 60% in Ecuador and Peru. In other words, for the seven countries for which we have data for both definitions, we see similar countries having highest and lowest shares of informality by both definitions.<sup>12</sup> Further comparing the enterprise and social security coverage definitions for Latin America, we see that for the 1990-2000 period on average, informal employment shares are higher by the enterprise definition for Argentina, Brazil, Costa Rica and Venezuela and higher by the social security coverage definition for Ecuador, Mexico and Peru.

It is instructive in this regard to consider the share of workers in the informal and formal sectors with social security coverage, that is, the share of workers who are *formal* by the definition, within either informal or formal establishments (Appendix Table 2). For the informal sector as a whole for the 1990-2000 period on average, the share ranges from around 15% or less in Ecuador and Mexico to around 25% in Brazil and Venezuela, 30% in Argentina, and 40% in Costa Rica. At least for some Latin America countries, then, a non-negligible share of workers in the informal sector do have some form of social protection. For the formal sector as a whole, the share of workers with social security coverage ranges from around 60% in Ecuador and Peru to 80% or higher in Brazil and Costa Rica. The share of workers with social security coverage by six employment categories for the 1990-2000 period on average is shown in Table 3. For the average of four countries for which we have data for all six employment categories, these rank in order of coverage by employment in the public sector (88.2%), employment in larger firms

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<sup>10</sup> For Argentina, the data refers to 28 urban areas, for Mexico, 32 urban areas, for Peru, metropolitan Lima, with the data remainder of countries providing national urban coverage (ILO 2005, p. 95).

<sup>11</sup> Formal and informal employment shares by employment category and sex for the enterprise definition are shown in Appendix Table 1.

<sup>12</sup> Note, however, that the question on social security coverage was not asked of the self-employed and employers in small firms in Argentina and Venezuela. We adjust the denominator accordingly for informal employment shares based on the social security definition by leaving out the self-employed and employers in small firms, but not for the enterprise and total informality definitions.

(73.3%), employers in small firms (36.9%), employees in small firms (31.2%), domestic services (22.1%) and self-employment (17.5%).<sup>13</sup>

Overall, we do not see strong trend changes in informal employment shares for the 1990-2000 period. First consider the three countries for which we have data only for the enterprise definition, Honduras, Panama and Paraguay. For the first two countries, informal employment shares were roughly the same in the beginning and end of the period, with a fair amount of volatility in the shares in intervening years, especially for Honduras. Paraguay experienced an overall decline in informal employment shares by the enterprise definition.

For the seven countries having data with both the enterprise and social security coverage definitions, the shares are quite flat overall for Mexico and Peru. For Costa Rica, there are upward trends for both definitions of informality from 1992 on, but the shares as of 2000 were only slightly higher than in 1991. For Ecuador and Venezuela, there is somewhat of an upward trend for the social security coverage definition while the share by the enterprise definition is flatter.

Brazil is the one country of this group of seven showing overall increases in informal employment shares by both definitions of informality. The increase in informality for Brazil by the social security coverage definition is driven both by the overall decline in social security coverage in the formal sector (from 82.7 to 80.3% from 1992 to 1999) as well as the compositional shift in employment from the formal to informal sectors, with somewhat under one-third as many workers in the informal sector having social security coverage (Appendix Table 2). It is worth noting in this regard that since the share of workers with social security coverage is considerably higher in the formal than informal sectors for all our countries, a change in the share of informal employment by the enterprise definition will be associated, *ceteris paribus*, with a change in the share of informal employment in the same direction by the social security coverage definition.

For Argentina, we see a trend decline in the informal employment share by the enterprise definition and a trend increase by the social security coverage definition. The share of workers with social security coverage declined in both the formal and informal sectors in Argentina, from 35.4 to 25.8% in the informal sector and from 77.5 to 73.7% in the formal sector from 1990 to 1997 (Appendix Table 2).

It is worth noting that the year-to-year fluctuations in informal employment shares for the enterprise and social security coverage definitions move roughly in parallel for all seven countries for which we have these data. This suggests that results on informal employment as a buffer for formal employment should be broadly similar regardless of which definition of informality one uses.

Urban-rural (non-agricultural) comparisons of informal employment shares for the enterprise definition are shown in Figure 2 for Costa Rica, Honduras, Panama and Venezuela. Note that these shares are a good deal higher in rural areas for all four countries, indeed about 20 percentage points higher in Honduras and Panama. Comparing employment shares by six employment categories enables use to determine what is driving the difference between urban and rural areas in this regard (Table 4). For Costa Rica, the biggest difference is the smaller share of employment in the public sector in rural areas; for Honduras, Panama and Venezuela alike, the

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<sup>13</sup> Though we also have these data for Ecuador, we regard them as problematically discontinuous within employment categories (particularly for employees in small firms and employment in the public sector and in larger firms), and so leave them out of this table. However, average results across these employment categories are quite similar with or without Ecuador. Note that in any case Ecuador drops out of the regression analysis, as a result of missing data.

biggest differences are the higher shares of self-employment and the smaller shares of employment in larger firms in rural areas, a pattern also shown to a lesser extent in Costa Rica.

Our data also enable urban-rural comparisons of informal employment shares based on the social security coverage definition for Costa Rica and Venezuela. Here too we find informal employment shares higher in rural than urban areas. For Costa Rica, the informal employment shares by the social security coverage definition are 29.2 and 33.8% for urban and rural areas, respectively; for Venezuela, these shares are 31.6 and 47.7% for urban and rural areas, respectively (period averages).

*4. 2. Gender Differences in Patterns and Trends.* It is commonly stated that women are disproportionately concentrated – or over-represented – in informal employment, including in Latin America (Sethuraman 1998; ILO 2002b). We examine this issue by constructing ratios of the female propensity of informal employment, defined as the female percentage of informal employment divided by the female percentage of total employment, based on both the enterprise and social security coverage definitions of informality. A ratio of greater than one indicates over-representation and of less than one indicates under-representation. Based on the enterprise definition, we also evaluate breakdowns for six employment categories – that is, for self-employment, domestic services, and employers and employees in small firms (the informal sector); and for the public sector and employment in larger firms (the formal sector).

For the enterprise definition of informality, the ratios are shown in Figure 3 for the 1990 to 2000 period on average, with and without workers in domestic services (in numerators and denominators). Including domestic services, we see that the female propensity ratio is greater than one for nine of 10 countries, the exception being Venezuela. The average (unweighted) female propensity ratio for the 10 countries is 1.10. Excluding domestic services, however, the female propensity ratio is greater than one in just three countries – Ecuador, Honduras and Paraguay – and the average ratio for the 10 countries is 0.96. This difference results of course from the very high shares of women in domestic services, ranging from 88.7% in Mexico to 96.5% in Costa Rica for the 1990 to 2000 period on average. In sum, women are indeed over-represented in informal employment by the enterprise definition for the countries in our sample, a result of their very high representation in domestic services.<sup>14</sup>

We further explore these issues by constructing female propensity ratios for six employment categories, shown in Figure 4. We rank these ratios from high to low for each country based on the 10-country average, shown to the rightmost of the figure. For the 10-country average, we see that women are most over-represented in domestic services, with a ratio of 2.34, but are also over-represented in the public sector, at 1.12, and in self-employment, at 1.05. In contrast, women are under-represented in larger firms, at 0.81, as employees in small firms, at 0.74, and as employers in small firms, at 0.54. These ratios present a clearer sense of women's representation in formal and informal sectors, as we find, that women are most under-represented in two of the four employment categories comprising the informal sector as well as over-represented in the public sector.

Looking at the country level ratios in Figure 4, we see little variation in the female propensity of employment in domestic services, with all ratios greater than two and with Costa Rica and Venezuela exceeding 2.5. The female employment propensities for the public sector

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<sup>14</sup> Worth noting in this regard is that domestic services is *not* included in the definition of employment in the informal sector adopted by the 17<sup>th</sup> International Conference of Labour Statisticians and is referred to as one of four components of “informal employment outside the informal sector” (ILO 2003, p. 14; Cf. Hussmanns 2004).

range from around 0.9 for Argentina and Paraguay to greater than 1.2 in Brazil, Mexico and Venezuela; for self-employment from less than 0.9 in Brazil and Panama to greater than 1.2 in Honduras and Peru; for larger firms from less than 0.75 in Brazil, Honduras and Peru to around 0.9 in Argentina and Mexico; for employees in small firms from less than 0.7 in Ecuador, Honduras, Mexico and Paraguay to around 0.85 in Argentina, Costa Rica and Panama; and, last, for employers in small firms from around 0.4 in Mexico and Venezuela to 0.6 or greater in Ecuador, Panama and Paraguay.

Urban-rural (non-agricultural) comparisons of the female propensity of total informal employment based on the enterprise definition as well as for six employment categories are shown in Table 5 for Costa Rica, Honduras, Panama and Venezuela. For all countries but Honduras, the female propensity of informal employment is greater in rural than urban areas and for all four countries is greater than one in rural areas. For all four countries, there are striking similarities in these ratios across employment categories between urban and rural areas. Constructing correlations coefficients provides a summary sense of this, and these range in value from 0.95 in Panama to 0.99 in Costa Rica. These similarities are perhaps all the more noteworthy in light of the sizeable differences in informal employment shares between urban and rural areas, as shown in Figure 2.

We next look at the female propensity of informal employment using the social security coverage definition (Figure 5). For the seven countries for which we have data, the ratio (unweighted) for the 1990-2000 period on average is 1.04, indicating that women are generally over-represented in informal employment by this definition as well as by the enterprise definition. Female propensities of informal employment are particularly high in Argentina, Brazil and Costa Rica. Women are, in contrast, under-represented in informality by this definition in Mexico and Venezuela. Shown in Table 3 are shares of workers with social security coverage by six employment categories with gender breakdowns. For the average of four countries for which we have data for all six employment categories, the female share is larger than the male share for employment in the public sector and employees in small firms; about the same in larger firms; and is lower than the male share for self-employment, domestic services and employers in small firms.

Urban-rural (non-agricultural) comparisons of the female propensity of informal employment based on the social security coverage definition can be made for Costa Rica and Venezuela. The ratios are considerably higher in rural than urban areas for both countries. For Costa Rica, the female propensities of informal employment based on the social security coverage are 1.15 and 1.29 for urban and rural areas, respectively; for Venezuela, the ratios are 0.87 and 1.05 for urban and rural areas, respectively.

To assess trends in the female propensity of informal employment, annual data for the female propensity of informal employment are presented, using the enterprise definition with and without employment in domestic services and also the social security coverage definition (Appendix Table 3). For most countries, it is difficult to discern clearcut trends. The exceptions are Brazil and Honduras, for which there are downward trends for the different definitions of informality.

*5. Informal Employment and Women's Employment as Business Cycle Buffers.* We evaluate the cyclical behaviour of men and women's formal and informal employment for our sample of Latin American countries by estimating employment elasticities relative to output (GDP) with panel data econometric models. In order to focus on cyclic movement – that is, fluctuations around a trend – data are transformed as the difference between the log of variables

and the Hodrick-Prescott (non-linear) trend of the log of variables. We construct the Hodrick-Prescott trend based on at least five continuous observations, and so Ecuador and Venezuela drop out, leaving eight countries in the sample.

Regressions are run with two panel data model specifications: controlling for country-specific fixed effects and controlling for both time and country-specific fixed effects. Country-specific fixed effects represent omitted variables that differ among countries but are constant over time and are correlated with employment and output. Time fixed effects represent omitted variables that are correlated with employment and output and vary over time but that have a common impact on all countries, such as through a regional or global economic shock. It is useful to control for both country-specific and time factors, in order to isolate the output-employment relationship over business cycles within countries. Yet since each restriction removes degrees of freedom from a panel having relatively few observations, we tend to rely on the more parsimonious model (without time fixed effects) in describing main results. In the context of robustness analysis, however, we focus on the more restricted specification that includes both country-specific and time fixed effects. The same set of regressions is run for each of the three definitions of formality and informality – that is, the enterprise, total informality and social security coverage definitions.

*5.1. Enterprise Definition.* Main regression results based on the enterprise definition of formal and informal employment are shown in Table 6.<sup>15</sup> For the model specification without time fixed effects, total (male plus female) employment elasticities are estimated to be positive and statistically significant for both formal and informal employment. Thus these estimates do not provide evidence that informal employment functioned as a buffer over business cycles in the 1990s for our sample of Latin American countries. This evidence suggests, rather, that formal and informal employment moved in parallel, with both increasing in upturns and decreasing in downturns. Gender breakdowns in these elasticities do not reveal a clearcut pattern of differences between males and females, and in any case these differences are not found to be statistically significant, based on confidence interval tests.<sup>16</sup>

Our main test of robustness is to drop one country at a time from the sample while including in the model both country-specific and time fixed effects, and Table 7 follows from Table 6 in this regard.<sup>17</sup> For informal employment based on this specification for the full sample of countries, only the coefficient estimates for total and female employment are statistically significant, but statistical significance for both is lost when we exclude Argentina from the sample. For formal employment based on this specification for the full sample of countries, there is little robustness to test for, since only the coefficient estimate for male employment is found to have any statistical significance, and at just the 10% level. Upon dropping Peru from the sample, this too is lost and indeed the coefficient estimates on total and female formal employment actually become negative.

We also look at the six individual employment categories that provide the basis of the enterprise definition of formality and informality, shown in Table 8. For the four employment categories that comprise informal employment in model specifications without time fixed effects,

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<sup>15</sup> Tables also show regression results for formal and informal employment together, to help situate more disaggregated results, though we do not generally comment on these given the motivating hypotheses of the paper.

<sup>16</sup> Confidence interval tests, do, however, tend to be conservative in establishing the statistical significance of differences. Results of confidence interval tests are available upon request.

<sup>17</sup> Drop country results are also available for regressions including only country-specific fixed effects.

employment elasticities are estimated to be consistently positive but never statistically significant. Next consider results on the two employment categories that comprise formal employment. For employment in larger firms, employment elasticities are estimated to be significantly positive for total (male plus female), male and female employment, though at only the 10% level for female employment. Results are similar in model specifications with or without time fixed effects. For public sector employment, in contrast, employment elasticities are consistently negative, though not statistically significant. It is thus only results for employment in larger firms that merit robustness testing, shown in Table 9. We see, though, that statistical significance is lost for total, male and female employment in larger firms upon dropping Peru from the sample.

*5.2. Total Informality Definition.* The total informality definition requires data on social security coverage in formal establishments, which are not available for Honduras, Panama and Paraguay. These three countries thus drop out, leaving only five in the sample. Main regression results are shown in Table 10. For the sake of comparability, the lower panel of the table shows regressions results using the enterprise definition of formality and informality for this same sample of five countries.

For total (male plus female) formal employment by the total informality definition, elasticities are estimated to be consistently positive and statistically significant, with or without time fixed effects. Elasticities are similar for male and female formal employment by this definition. For informal employment, elasticities are estimated to be large, positive and statistically significant for female employment, positive but smaller and of borderline (10%) significance for total (male plus female) employment, and not significantly different from zero for male employment, with or without time fixed effects. Here, then, we find evidence that women function as a buffer workforce *within* informal employment. However, we do not find these gender differences, sizeable as they are, to be statistically significant based on confidence interval testing, a result of the relatively large standard errors of the estimates. Moreover, elasticity estimates for female informal employment are very similar for this same sample of five countries for the total informality and enterprise definitions, suggesting that the difference between results in Table 6 and Table 10 derives less from the difference in definitions than the difference in samples. The gender differences for informal employment should perhaps not be dismissed out of hand, though, for they remain sizeable throughout the sensitivity analysis of dropping one country at time for the sample and the elasticity estimate for female employment likewise remains consistently large, positive and statistically significant, though reduced to the 10% level upon dropping Argentina from the sample (Table 11).

*5.3 Social Security Coverage Definition.* Results based on the social security coverage definition of informality are shown in Table 12. Regressions are based on data for only four countries, since data for Argentina on social security coverage for self-employment and employers in small firms employers are missing. For the sake of comparability, the lower panel of the table presents results based on the enterprise definition of formality and informality for this same sample of four countries.

For both informal and informal employment by the social security coverage definition, estimates of elasticities are often large but rarely statistically significant, the exception being for formal employment for males in the specification without time fixed effects. For formal employment, the elasticity estimates for male employment are a good deal larger, or more strongly positive, than for female employment. For informal employment, in contrast the

elasticity estimates for female employment are a good deal larger than for male employment and indeed are negative for male employment, broadly consistent with gender differences for informal employment based on the total informality definition noted in Table 10. These gender differences in results hold for specifications with and without time fixed effects. As these results are not generally statistically significant, however, we do not pursue further sensitivity analysis.

*Main Conclusions.* We evaluate trends and patterns of men and women's formal and informal employment for a sample of up to 10 Latin American countries in the 1990s, based on a unique dataset that enables us to consider three different definitions of informality: the enterprise definition (based on employment in formal and informal enterprises), the total informality definition (modifying the enterprise definition by reclassifying workers in formal enterprises without social security coverage as informal) and the social security coverage definition (based on whether workers have social security coverage, independently of enterprise type). Based on the enterprise definition, we also evaluate employment by six enterprise types (or employment categories), four defined as informal and two as formal: namely, self-employment, domestic services, employers in small firms, and employees in small firms (informal) and employment in larger firms and the public sector (formal). The data also allows us, for a smaller sample of countries, to evaluate differences between non-agricultural rural and urban formal and informal employment. In this summary, we refer to results on urban employment except regarding rural-urban comparisons.

We do not find statistically significant evidence that informal employment functioned as a macroeconomic buffer for formal employment – that is, that informal employment moved countercyclically. It is worth noting that during the 1990s in many Latin American countries, employment protection legislation was weakened and the share of the public sector employment declined. We expect these developments to weaken formal employment job security and thus strengthen the tendency for informal employment to serve as a cyclic buffer. At the same time, however, we see a good deal of movement into and out of open unemployment in Latin America as well as trend increases in unemployment rates. Thus the unemployment insurance system in Latin America seems to have provided a more important buffer for formal employment than did informal employment. We have also considered, though, that the expectation of a countercyclical movement of informal employment depends very much on the type of informal employment, and there exist very diverse types. Using Portes' three categories of informal employment, it is only for "survival informal employment" that we have an unambiguous expectation of countercyclicality (Portes 1994). Perhaps more important in Latin America are "independent informal employment," which we expect to move procyclically, and similarly procyclical types of "subordinate informal employment."

We also considered whether women's employment provides a business cycle buffer, more specifically whether women's employment is significantly more procyclical than men's employment. We do not find statistically significant differences between men and women's formal or informal employment in this regard. Based on the total informality definition, however, we find more statistically significant evidence of the procyclicality of women's than men's informal employment. This tentative finding seems worth following up, preferably in a larger sample of countries over a greater span of years.

Perhaps our more interesting results, or at least more clearcut, are based the consideration of other patterns of formal and informal employment. We do not see decisive trend increases in the share of informal employment, with the important exception of Brazil, the most populous country in the region, driven by a compositional shift in employment from formal to informal enterprises

as well as a decline in social security coverage within formal enterprises. We also see that non-negligible shares of workers in informal establishments are protected by social security coverage.

We find that informal employment shares are consistently higher in rural than urban areas, by all definitions of informality, bearing in mind that we address only non-agricultural employment. For the enterprise definition, this difference is largely driven by the higher shares of self-employment and smaller shares of employment in larger firms in rural than urban areas.

Confirming the results of prior studies, we find that women tend to be disproportionately concentrated in informal employment. Based on the enterprise definition, this results from women's very high concentration in domestic services, in both rural and urban areas, for which social security coverage is low. We also find that women tend to be most under-represented in small firms, as employees and particularly as employers, and that they tend to be somewhat over-represented in public sector employment. This finding is noteworthy in that small firms are generally associated with informality and the public sector with formality, and suggests the value of disaggregating results by types of informal and formal establishments. We also find overall declines in women's concentration in informal employment in Brazil and Honduras. Last, we find that women's concentration in informal (non-agricultural) employment tends to be higher in rural than urban areas.

It is hoped that this paper provides insights of policy relevance regarding informal employment in Latin America. Noteworthy in this regard are gender aspects of informality. We have highlighted women's very high concentration in domestic services in all countries for which we have data and that social security coverage is very low in domestic services, even lower for women than men. Most informal workers are self-employed, and here men and women are concentrated roughly equally. However, women may be concentrated among lower quality jobs within self-employment, as suggested by their considerably lower social security coverage within self-employment. The general view that women are concentrated among the more marginal types of informal employment is also suggested by the findings of prior studies on El Salvador (Funkhouser 1997) and Mexico (Gong and van Soest 2002), as well as our finding of women's relative employment volatility within informal employment.

We have also seen that a sizeable share of workers in informal establishments have some form of social security coverage, particularly in Argentina, Brazil, Costa Rica and Venezuela. This is striking, as one of the most pressing concerns about workers in informal establishments is that they lack social protection. This raises the questions of what types of policies provide these workers with social security coverage and the extent to which such social protection is comparable to that enjoyed by workers in formal establishments. It is also worth addressing whether such policies could be used to extend social protection to more workers in informal establishments in these and other countries.

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