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**Distortion and Protection
in the Mexican Labor
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by

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1. Introduction

The Mexican labor market is characterized by two dramatic features: a very large share of the work force is informal, defined as workers in firms of under six employees who do not enjoy labor protections; and labor turnover is very high. After synthesizing research emerging over the last few years, I offer a view of the dynamics of the market substantially at odds with more traditional views that see severe government or union intervention in wage setting as segmenting the markets into good “formal jobs” and inferior informal jobs. This turns out to have important implications, both for what types of labor market “reform” are desirable and for how we use these two features as diagnostics of labor market distortion and rigidity.

In Mexico, roughly 25 percent of the work force is self-employed or owners of small informal firms, 13 percent are salaried workers in these firms, and 9 percent work by contract, or on a piecework basis, all largely uncovered by labor benefits. A rough comparison of self-employment suggests that not only Mexico, but also the region has shares far higher than found in OECD countries (see Table 1). The literature tends to view these workers as the disadvantaged sector of a segmented market² who are thought to earn wages below their formal counterparts, engage in precarious activities, and by their sheer number, offer convincing evidence of wage rigidities. However, I hope to show that most of the arguments supporting this view are unconvincing and will, instead, emphasize the entrepreneurial dimension of self-employment and treat the issue of “formality” largely as a secondary characteristic. In fact, the poor design and inefficiency of many formal benefits programs arguably create incentives for workers to avoid paying the implicit “taxes” attending them by moving to the formal sector.

Table 1

Table 1 suggests that labor turnover, a common measure of rigidity (see Nickell 1997) is also high in the region, seemingly contradicting³ assertions that high firing costs and excessive

² See Harris and Todaro (1970) for an early presentation of this view and Ozorio de Almeida(1994) for its application to Mexico. See Fields (1990) for an overview of theory on informality. In practice, the definition employed here leads to a formal/informal breakdown that is similar to the ILO definition as workers in firms with six workers or less.

³ See Maloney (1995) for Mexico, Gonzaga (1996) for Brazil, Anderson Shaffner (1997) for Colombia, Márquez and Pagés (1998) more generally. See Hopenhayn and Rogerson (1993) for a recent theoretical discussion.

benefits in the formal sector prevent the efficient allocation of workers among jobs.⁴ Average tenure, a proxy inversely related to turnover, is *shorter*, and a larger fraction of the work force has been employed in their current position for less than two years in Latin America than in the OECD. By conventional measures, Latin America appears extremely flexible.

Mexico does not tabulate a statistic exactly comparable to those in Table 1 based on household surveys, but the available statistics suggest a similar story. Firm level data on formal sector firms suggests that average tenure in manufacturing is very low, with a cautious estimate putting the number at perhaps half of that of the OECD. Across a six-month period, roughly 26 percent of unskilled workers and 9 percent of skilled workers are reported as leaving firms. *Of equal importance, roughly 85 percent of these are quits, rather than fires.* Household level panel data tells a compatible story. The implicit tenure of all formal sector workers derived from the rate of turnover between the beginning and the end of a 15 month period is roughly 5.5 years comparable to roughly 7.6 years in the U.S. using similar data. Further, since this method misses all turnover occurring within the period, implicit tenure is probably substantially even lower for Mexico.

Finally, consistent with the high percentage of quits in manufacturing turnover, motivational surveys of those transitioning to self-employment from formal sector firms suggest that roughly 70 percent are voluntary.⁵ This provides a critical link between the two stylized facts about the Mexican market.

2. Are Mexican Labor Markets Segmented? Rounding Up the Usual Suspects.

There is some plausible evidence of segmentation in the Mexican labor market. Workers with comparable measured human capital may earn greatly different wages: those in firms of over 500 workers earn on average double those in firms of 16 to 50 workers.⁶ Further, roughly 30 percent of those operating urban micro-firms report being in the sector involuntarily and

⁴ See for example Burki and Perry (1997) *The Long March*.

⁵ See Maloney (1999).

⁶ Similar results are found in other LDCs. See, for example, Mizala, A and P. Romaguera (1998), Velenchik (1996), Funkhauser (1998).

many of these because they cannot get a formal sector job.⁷ An argument could be made that that formal sector wages are above market clearing.

Recent evidence suggests that, consistent with Bell (1997), minimum wages are not the culprit. Both the kernel density and cumulative distribution plots in Figure 1 suggest some distortion of the wage distribution among informal salaried workers (the curve to the left), but very little among formal salaried workers.⁸

Figure 1

This leaves unions as the obvious remaining source. Mexico has a long tradition of unionization dating back to the Revolution. Estimates of coverage range from about 10 percent to 25 percent of the total work force of roughly 32 million.⁹ The 1992 National Survey of Employment, Salaries, Technology and Training (ENESTYC) shows that among manufacturing firms, 18 percent have no union representation, and the rest have a median unionization rate of 70 percent. However, drawing on quantile analysis of these data Maloney and Ribeiro (1998) find that this union presence does not translate into higher wages, but does have strong positive impacts on employment.¹⁰ This “featherbedding” offers another way of transferring firm profits to workers through the creation of unnecessary positions, rather than wages. These bargains are clearly not efficient from a production point of view: more workers are being hired than the firm would hire in the absence of a union, but they do not lead to segmentation.¹² Only for the lowest decile, those earning far below the median given their observable characteristics, was there suggestion of upward wage pressure.

⁷ See Cunningham and Maloney (2001)

⁸ See Maloney, Nunez and others (2001). This is consistent with Bell’s (1997) findings of no impact of the minimum wage.

⁹ Statistics from Brooks and Cason (1998).

¹⁰ While much of the literature postulates a union that sets a wage higher than market clearing and allows the firm to choose quantity hired from their demand curve, unions may also display what is termed “efficient bargaining behavior” where they negotiate over the wage and/or total employment. Though an extreme case, it is entirely possible that union power would be directed toward forcing firms to hire more workers than it would at a given wage (featherbedding), rather than raising the wage. In this case, unions could not be held responsible for segmentation, although the adverse impact on productivity growth would merit the attention of policy makers.

¹¹ This finding is somewhat at odds with Panagides and Patrinos (1995) who found union impacts on the wage. However, they did not have information on the firm characteristics that might account for wage differentials as they appear to here.

¹² Theoretically, they may lead to more employment overall in the economy despite their possibly adverse dynamic effects on productivity growth. See, for example, Layard and Nickell, (1990).

As Pencavel (1997) notes, such behavior is not unusual in the developing world, and several institutional and economic features of Mexico cause both union objectives and bargaining power to differ from those in industrialized countries and make these findings plausible. First, as is the case with most of its neighbors, Mexico has no system of unemployment insurance and employment stability may therefore be more highly valued than higher wages. Second, like much of Latin America during the 1980's and 1990's, job generation has been slow relative to population growth. Third, the massive Labor Congress (CT) which embraces the Confederation of Mexican Workers (CTM, 2-6 million workers), the Revolutionary Federation of Workers and Peasants (CROC, 1-4 million workers), the Federation of Government Workers (FSTSE, 2 million workers) and roughly 38 other labor organizations has had a longstanding and close relationship with the governing Revolutionary Institutional Party (PRI). Particularly since 1987 with the inception of the *Pacto Social*—a joint agreement of labor, business and the government to promote price stability—unions closely coordinated wage demands with national stabilization objectives.¹³ These three factors—no unemployment safety net, slow job growth, and the unique political economy of union power—taken together lead to an emphasis on employment creation, relative to pushing up wages.

In sum, neither of these two traditional sources appears to be able to generate the kind of rigidity necessary to ration nearly half the work force into inferior jobs. The question then becomes, what is the *raison de ser* of the informal sector?

3. Informal Self-Employment as a Desirable Destination

The literature, beginning with Harris and Todaro (1970), that sees the informal self-employed workers unprotected by labor legislation as those rationed out of protected or “formal” salaried jobs sector jobs by above market clearing remuneration in the protected sector has been bolstered by four principal observations. First, almost by definition, the informal sector lacks the

¹³ Though in November of 1997, the New Union of Workers (UNT, .7-1.5 million workers) split from the CTM largely over what was perceived to be excessive responsiveness to government initiatives, across the period analyzed here, some analysts have seen a decline in union influence both within the PRI and overall since the change in government. For discussions of the historical evolution of union power see Collier and Collier (1991), Cook (1995), Brooks and Cason (1998). The imprecision arises from the difference between what each organization

benefits and protection of formal employment. Second, often it is found that mean informal salaries are below those in the formal sector as would be expected if informal workers were the disadvantaged sector of a segmented labor market. Third, informal work appears precarious compared to formal sector work. Informal firms show high mortality rates and often appear unprofitable. Finally, informal work for some serves as the safety net for unemployed workers during downturns.

These stylized facts are either wrong or need to be seriously qualified. Previous research on Mexico suggests that it is not generally true that informal workers earn less than their formal sector counterparts, either looking at conditional wage comparisons (Marcouiller et al. 1997) or wage differentials of workers transitioning among sectors (Maloney 1997). Consistent with these findings Figure 2 shows that the median wages of informal self-employed and contract workers (those doing piecework or on fixed contract) generally lie above those of the formal salaried. In 1992, a period of relative prosperity, the self-employed and contract workers earned roughly 25 percent more upon leaving formal employment. It is also true that, consistent with the graph above, informal salaried workers gained roughly 15 percent entering formal employment. The fact that this would be the case even in a time when unemployment was the lowest in 15 years suggests that this differential cannot be taken necessarily as evidence of segmentation.

Figure 2

In fact, such conditional wage comparisons are misleading and should not be used to establish segmentation. The specific characteristics of work that pertain to or even define the formal and informal sectors affect the earnings paid in each sector and make it unclear what the magnitude or sign of the differential should be even in an unsegmented market. Informal earnings should rise above formal wages to compensate for the expected value of benefits foregone, but should fall below by the amount of taxation that is often evaded. Earnings in self-employment may reflect a premium for risk, a more independent lifestyle, and the implicit costs of capital invested, and the value of unpaid work by family members that the 1992 micro-enterprise survey suggests comprise 34 percent of micro-firm employees. This also applies to the

claims as its membership, a measure of its bargaining power, and what independent observers estimate.

informal salaried who appear to earn less than formal salaried workers. These are among the youngest workers and the micro-enterprise survey reports that roughly 30 percent are related to their employer. Their reported earnings may therefore incorporate training or unobserved payments in-kind that would explain the differential in earnings without implying anything about segmentation. In sum, without having reliable measures of all of these factors, earnings comparisons are unreliable measures of segmentation.¹⁴

Looking at the covariance of relative earnings and relative sector sizes provides more trustworthy evidence on the nature of the sector. Figure 3 shows the evolution of both formal and informal self-employment sectors as a fraction of the economically active population. As is clear, as the economy moved from recession in 1987 into a moderate boom in 1990-92, self-employment expanded while formal salaried employment contracted, concomitant with the rise in relative self-employed earnings.¹⁵ This is exactly the opposite of what would be expected from the view that informality is purely comprised of workers rationed out of the formal sector. Informal self-employment appears to have been a more attractive job option during this period.

Figure 3

In fact, the data in the two graphs can be combined and presented along with the real exchange rate series to enter in the debate on the roots of the post-reform appreciation in from 1987-1994. Figure 4 plots the relative formal salaried/informal self employed wage, and sector size. What is immediately clear is that from 1987-1990, the two series positively co-move—exactly the opposite of what more dualistic models would predict. Further, the fact that the relative informal income and sector size is rising concomitant with the real exchange rate appreciation is consistent with a view that all three comovements are due to perhaps a demand shock to the non-tradable sector. Fiess, Fugazza and Maloney (2001) argue that until 1994, it cannot be rejected that these series are cointegrated and they find no statistical evidence of segmentation, a negative comovement of the relative wage and sector size series, until after 1995. Eyeballing the graph suggests that a period of segmentation may have begun earlier. But

¹⁴ See MacIsaac and Rama (1997) and Maloney (1995, 1997a.)

¹⁵ Fiess, Fugazza and Maloney (2000) confirm this statistically finding that relative earnings, relative sector sizes, and the real exchange rate are cointegrated across the period 1987-1995. Since the informal tend to be found in the non-tradeables sector, this suggests that the real exchange rate appreciation across this period was due to the boom in non-tradeables spending and not by rigidities in the labor market.

the point remains, the large increase in informality prior to 1992 must be considered largely “voluntary.”

As a first approximation, it may be reasonable to treat the informal sector as the non-tradable sector of standard small economy “Australian” style macro-model and reserve the theoretical imposition of a formal sector (tradable sector) nominal rigidity for cases where the empirical evidence clearly suggests it.

Figure 4

The Benefits of Informality for Workers

In fact, we can make a case that the industrial country literature on self-employment as a desirable and more flexible alternative to wage work is also relevant in LDCs. The sociologists Balán, Browning, and Jelin (1973) et al. in their longitudinal interviews with workers in Monterrey find that being one's own boss was well regarded and that movements into self-employment from salaried positions often represented an improvement in job status. This is supported by findings using the 1992 National Survey of Micro-enterprises (ENAMIN) that roughly 70 percent of those entering informal self employment from formal salaried work reported doing so either to increase their pay or because they wanted more flexibility (Maloney 1997a, Cunningham and Maloney 2001). Though a substantial share of the sector, perhaps 30 percent, may correspond to the more traditional view, it is also the case that roughly a similar proportion of separations in the US are involuntary and, hence, the surveys would yield a roughly equal number of involuntary entries into the new jobs. In sum it is likely that the sector is a desirable destination for many workers.¹⁶

In addition, the benefits of labor protections may, for many workers, have been overstated, even for the informal salaried worker. In a market with downwardly flexible wages, the costs of providing workers benefits comes at the cost of lower wages: workers pay for the benefits received. If workers value the benefits less than the implicit “tax,” they have every

¹⁶ See Maloney (1997b). Carmen Pages-Serra at the IDB has identified pro-cyclical movement in Chilean Self-employment. Paes de Barros finds no cyclical movement in Brazil. Saavedra in Peru finds a broadly countercyclical movement.

reason to work where they can avoid paying for them. Three examples suggest that this is not obviously a minor issue.

Since the medical benefits program in Mexico covers a worker's entire family, the marginal value of benefits to the second formal sector worker in a family is zero. This would seem particularly important for informally employed workers in households whose principal bread winner may be formally employed: There is no reason to pay again the implicit tax for benefits already received. Second, administrative overhead costs are high and the benefits may be of low value given their cost. Third, rapid rates of turnover mean that leaving does not necessarily imply the loss of nominally very generous separation benefits and pensions since as Balán et. al (1973, p. 212) found “many change enterprises quite often and thus they cannot benefit from the seniority accumulated in each of them.”

In each case, the value to workers of formal sector benefits is below their value on paper, and in a market with reasonably flexible wages, what workers implicitly pay. When explicit income taxes are added in, working in the informal sector may become a very compelling alternative. Thinking about how to “formalize” such workers is far closer to Davila’s (1994) model of “crime and punishment” than to the conventional focus on reducing labor market rigidities.

Informality Does Not Imply Precariousness—Micro-firm Dynamics and Formality

Informal work does appear precarious compared to formal sector work: informal firms show high mortality rates and often appear unprofitable. However, as Levenson and Maloney (1997) argue, if two assumptions are made, it can be shown that there is no necessary causal link from informality to these characteristics and further, all are consistent with a healthy and dynamic small firm sector.

First, we assume that formality can be defined as firm’s participation in the numerous institutions of civil society: federal and local treasuries, governmental programs such as social security (including pensions and health care), the legal system, the banking system, health inspection, firm censuses, trade organizations, civic organizations, *etc*, is a *normal* input into

small firm production: firms demand more as they grow. The benefits of formality, while often overlooked, are numerous. They include, but are not limited to enforceable/impersonal contracts and credible signaling, access to capital, access to public risk-pooling mechanisms, or access to the global stock of knowledge. In exchange for this participation, society imposes “taxes” such as reporting requirements,¹⁷ fiscal obligations, or social insurance payments.

Second, micro-firm dynamics, at first glance, are similar to those of small firms in industrialized countries. Lucas’ (1978) argues that the size distribution of firms arises from the distribution of entrepreneurial ability in the population: those with a sufficiently high level of proficiency become entrepreneurs, while the rest become wageworkers. Among the entrepreneurs, those who are more proficient have firms that are larger and/or more successful. Jovanovic (1982) added a dynamic dimension by further assuming that entrepreneurs are uncertain about their true costs of production: their precise entrepreneurial ability or business situation (i.e. location) initially is unknown and can only be learned gradually over time by actually operating a business. They make their best guess of their particular costs and go into business with no certainty that they will prosper or even survive. Many do not. Others will earn unexpectedly high profits, revise downward their estimations of their particular cost structure and expand. Obviously, those firms who survive several years get a more precise idea of their costs and are less likely to go bankrupt. This view is widely accepted precisely because it explains the very high levels of mortality among young firms, and declining mortality rates with firm size and age observed in the United States.

While these working hypotheses may seem extreme, together they generate most of the characteristics of the sector without any connotation of inferiority or disadvantage. First, there is heterogeneity in the degree of formality as the benefits and costs of participation vary across societal institutions, and vary for firms of different size and expected lifetime. Second, small firms are disproportionately informal since they benefit least from participation because of the small scope of their dealings with the public and hired employees. This has the corollary that, third, “inefficient” firms are disproportionately informal. However, in contrast to other formulations, in this case the causality is not necessarily from informality to inefficiency. High

¹⁷ This is particularly relevant for bank financing. The firm may have to become registered when it seeks such financing: the government may require the bank to report the identity of all its loan recipients for tax or other purposes.

cost firms choose less formality because they are small and formality benefits them less than more efficient firms that produce at higher volumes for longer lengths of time. Fourth, young firms are disproportionately informal. This is partly because young firms are more likely to be small. Adjusting for size, the population of young firms contains a disproportionate number that have not received enough signals to figure out whether paying the costs of formality are worthwhile; many eventually will go out of business. Fifth, informal sector firms have relatively high mortality rates due to the fact that they are young. Sixth, firms participate in an increasing number of societal institutions as they grow because they need the services formality provides, not necessarily because monitoring becomes easier.

The National Survey of Micro-Enterprises (ENAMIN) some limited evidence from Mexico that is consistent with this story. However, the ENAMIN is cross sectional and, though it does ask questions about time in business and how the firm was started, it does not allow firms to be followed over time to see how their patterns of birth, death and formality correspond to those of the view outlined above. Nonetheless, several stylized facts do emerge. There is great heterogeneity in degrees of participation, and it is closely correlated with the size of the firm and length of time in business.¹⁸ Further, the observed patterns of firm entry and exit are consistent with those observed in the U.S. and in other developing countries.¹⁹ As in Evans and Leighton the number of entries is relatively flat throughout the life cycle. Yet the fraction of the self-

¹⁸ Though the data set is bounded above at five workers (fifteen in manufacturing), even within this narrow firm size range informality is clearly not an all or nothing proposition. The data suggest that there are high participation rates in societal institutions for even these small firms: 41.7 percent are registered with the federal treasury, 25.2 percent are registered with the local treasury (including Mexico City), 34.6 percent pay some taxes to one or both treasuries, 34.6 percent of firms with paid workers have them registered with IMSS (Mexico's social security administration), 22.5 percent are members of a business guild or association, 15.6 percent pay dues to a business organization, and 33.1 percent of firms that existed in 1989 were enumerated in the Census of that year.

¹⁹ Mansfield (1962) shows that smaller firms have higher and more variable growth rates. Dunne, *et al.* (1989) demonstrate that U.S. manufacturing plant failure rates decline steadily with the age of the plant. Davis, *et al.* (1994) find that net job creation in small U.S. manufacturing firms is not high relative to large businesses, despite inordinately high rates of gross job creation, because of their disproportionately high rates of job destruction. Roberts and Tybout (forthcoming) find that in Colombia, Mexico, and Morocco business births and failures are even more frequent and numerous in those countries than in the United States, accounting for much larger shares of total employment adjustment. New plants are much smaller and less productive than the industry average and the failure rate is highest at young ages. Evans and Leighton's (1989) study of self-employment dynamics in the United States provides the most comparable benchmark for our analysis. They find that inflows into self-employment over the previous year account for about 20 percent of self-employment for men over 35, with an even greater proportion for younger men. This is consistent with a constant rate of entry and older men running more established firms that are less likely to fail. Evans and Leighton also document a sharply decreasing exit rate from self-employment for the United States, with the probability of failure ranging from 15 percent for the oldest of the self-employed to over 50 percent for the youngest of the self-employed.

employed comprised of new entrants declines steadily, commensurate with a sharp increase in average firm age. Together, these patterns suggest that declining exit rates are probably partially responsible for the sharp increase in average firm age in these data. These broad similarities in self-employment dynamics between Mexico and the United States suggest that common determinants of self-employment may be as important as differing institutional factors in explaining the observed patterns of participation.

In sum, most of the characteristics used to show that informality is inferior can be shown to emerge from mainstream models of rational firm behavior and do not imply that the informal micro-firm sector is any way disadvantaged. This is not to deny that some fraction of the sector is rationed out of formal employment, finds itself unproductive, and would close if there were alternative employment. But the critical point is that the patterns we see are consistent with most micro-entrepreneurs voluntarily joining the sector and trying their luck running their own businesses, some successfully, some less so.

The last generally accepted “stylized fact” is that the informal sector offers refuge for those who lose their jobs in the formal sector. This, to some degree is certainly true. However, Arango and Maloney (2000) find that of those who report being unemployed, roughly a majority, 75% are from the informal sector (see Table 2). This is consistent with the idea of the sector primarily as a small-scale entrepreneurs with high rates of mortality.

Table 2

4. Turnover, Quitting, and Wage Policies

As noted in the introduction, enterprise survey data suggests that the vast majority of the high number of separations is quits, rather than fires. Krebs and Maloney (1998) find that the pattern of transitions between the formal sector and the informal self-employed sector is consistent with the idea that these separations are voluntary moves into a desirable informal sector. This is supported by Figure 5 that shows that transitions both out of, but even more *into* informal self-employment increased during the “boom” of 1988-1992. More rigorously, the estimation of the “quit function” of workers using the 1987-93 ENEU panels which show that the probability of a worker moving from formal salaried to informal self-employment increases

with average informal incomes and the probability of being hired in the formal sector, and decreases with the average formal sector wage (see Table 4). This is consistent with individuals weighing the relative benefits of being in the self-employed vs. the formal sector, and the possibility of getting another formal sector job if, by chance, their business doesn't survive.

An important literature implies that formal sector firms may respond to this high voluntary turnover by raising wages to prevent the loss of human capital-(training or recruitment costs) and raise the opportunity cost of leaving. (Pencavel, 1972, Stiglitz 1974).²⁰ These effects seem very relevant to Mexico. Firms may absorb a larger share of training costs due to poorly functioning education systems²¹ and the sociological literature suggests that workers enter formal salaried work to accumulate skills and financial capital, and then quit to open their own business. In interviews with Mexican entrepreneurs, roughly 30 percent stated that the resignation of recently trained workers was a problem (Table 3).²² Of those reporting frequent resignations after training, 58 percent do something to raise the total well being of the worker after training, 28 percent raise remuneration without promoting the worker, and 40 percent take measures that increase the wage of the worker, including promotions.

5. An Alternative Framework for Thinking about the Mexican Labor Market.

To recapitulate, there appear to be several new stylized facts about the Mexican labor market that need to be integrated into any framework developed to analyze the sector. First, the informal sector is extremely heterogeneous containing both voluntary and involuntary members. Second, there is little strong evidence of government or union induced distortions of the wage structure. Third, despite this, there is arguably some evidence of "segmentation" both measured

²⁰ For discussions of the theory of efficiency wages see Stiglitz (1974), Shapiro, C. and J. Stiglitz (1984), Krueger and Summers (1988), Esfahani and Salehi Isfahani (1989), Weiss (1990).

²¹ As Marquez and Ros (1990), noted, and has been confirmed by later studies for Peru (Shaffner,1998)and Guatemala (Funkhauser1998), wages of similar workers rise with firm size, much as they do in industrialized countries. Further, Márquez (1990), and Abuhadba and Romaguera (1993) find evidence consistent with efficiency wage effects in the high correlation of sectoral wage differentials among Brazil, Chile, the United States, and Venezuela. This evidence suggests that the conditional wage dispersion (wages adjusted for human capital) may be emerging endogenously and is not due to either government or union intervention.

²² This is almost certainly an understatement for two reasons. First, "recently" may not capture the relevant period of return on the investment in the worker. Second, if the firm is already paying the optimal efficiency wage to prevent workers from leaving, it will not report excessive turnover as a problem.

as differentials in wages given human capital and by workers who claim to be unable to find salaried jobs. Fourth, labor turnover appears surprisingly high for a market that is thought to be very rigid. Most turnover is due to quits, rather than fires and is voluntary and probably results in firms paying higher wages.

Figure 5

Table 3

Capturing these stylized facts requires going beyond the standard dualistic frameworks. If we don't find the evidence for segmentation compelling, we can stop at a simple model of two desirable sectors with lots of movement between them, or one where there is sporadic queuing in recession due to temporary downward rigidity of wages as in Fiess, Fugazza and Maloney. If we desire to explain some ongoing degree of segmentation, one possibility that offers an interesting inversion of the stylized wisdom derives from Stiglitz argument that firms paying "efficiency" wages to prevent turnover, pay above market clearing, and hence generate involuntary unemployment or informality. That is, the segmentation emerges endogenously. The quit function discussed above is consistent with this such a view, as are the Ribeiro and Maloney's labor demand regressions studied earlier. A firm that raises its wage above the market-clearing wage will hire less labor. Therefore, given the wage that the firm pays, increases in either the "outside" or alternative wage, or probability of being hired at that wage should increase the amount of labor hired. In the firm level data set discussed in the section on union effects, both variables enter in union and non-union samples with the expected sign for both wages and employment, consistent with efficiency wage effects are present. Further, there are large size effects in the wage equation as in the industrialized countries: large firms of over 500 workers pay roughly double firms of between 16 and 50 workers for work forces with comparable levels of experience and education. As always, unobserved worker characteristics may be responsible for these differentials: large firms may be more careful in their recruiting or attract better workers and pay them their higher marginal product.

Table 4

Krebs and Maloney build this efficiency wage effect into a general equilibrium model formal sector production, investment, hiring and wage setting decisions, as well as worker

sectoral choice decisions from which the quit function above can be derived.²³ Though relatively simple, this vision captures most of the four stylized facts above. In particular, though much of the informal self-employed sector is attractive, it is also clear that some fraction is trapped there involuntarily—that is the expected byproduct of efficiency wages. **In an inversion of the commonly held view that higher than market clearing wages create informality, it may be that the attractiveness of self-employment is one reason that firms pay above market clearing wages.** This, in fact, does create a subset of the informal sector that is involuntarily self-employed and who are unable to easily move back into the formal sector.²⁴

Though the model abstracts from many elements of Mexican reality, it offers what, at this point, are likely to be defensible guesses of the impacts of various policy interventions or economic innovations in this context as well as back of the envelope estimates of their magnitude. Increases in labor productivity or firm profitability, including technological progress, and of particular interest, a fall in labor taxes, or a reduction in any regulation that adversely affects productivity have the effect of increasing labor demand in the formal sector, the share of the workforce in formal employment, the probability of being hired, the wage *relative to that in the informal sector* required to deter quits, and thus the share of informal workers that is involuntary. Calibrations of the model using the estimates of the quit function suggest that a rise in “formal sector productivity” of 1% has a roughly equivalent impact on the size of the informal sector. The impact on turnover is theoretically ambiguous: both wages and the probability of being hired rise over time with opposing effects although the calibrations suggest that, in the Mexican case, turnover would fall.²⁵

²³ Another common variant of these models arises from the difficulty of monitoring individual workers and the lack of any penalty from being caught “shirking”—any activity, or lack thereof, that might be detrimental to the firm. If wages are market clearing, there is no unemployment, and a worker fired for shirking can simply get another job at the same wage. However, if all firms pay higher than market clearing wages, unemployment will be created in the economy that creates a disincentive to being laid off and hence to shirking.

²⁴ The efficiency wage effects described, and the procyclical patterns of quits are likely to apply equally well to transitions between formal sector jobs. Firms may lose recently trained workers to competitor firms and, again, pay wages above market clearing to prevent it. However, because the ENEU does not permit following transitions within work classes (i.e. formal to formal), this cannot be directly tested.

²⁵ The National Urban Employment Survey (ENEU) conducts extensive quarterly household interviews in the major metropolitan areas and is available from 1987 to 1993. It is structured as a rotating panel where in each quarter, a fifth of the sample is dropped and replaced by individuals who will be interviewed for each of the next five quarters. In 24 overlapping panels spanning 1987-1993, individual workers can be followed as they move among sectors of work. Individuals are matched by position in an identified household, sex, level of education, and age to ensure against generating spurious transitions. The analysis restricts itself to men aged 16-65 with a high school education

Anything that raises the benefit to being self-employed relative to being formally employed, including higher taxes in the formal sector, reductions in costs of being informal, or even mobility restrictions within firms that encourage talented workers to go it alone, can have important impacts. The rate of turnover increases, and for any probability of being hired, the formal wage must rise to offset the increased desirability of the informal sector. The increased cost of retaining workers reduces the demand for labor and reduces the share of workers found in the formal sector, again, with an elasticity of about 1.²⁶

Finally, anything that serves to lower the fixed costs of hiring (lowering recruitment costs, better public education²⁷ that reduces training costs, lower interest rates) reduces the loss involved with a quit and hence the magnitude of efficiency wage effects. Analytically, the results are the same as those of an increase in labor productivity. In the limit where training costs fall to zero, there is no longer any need to pay efficiency wages, no segmentation, and there is an increase in formal sector employment. The impact on turnover could be positive since there is no reason for firms to prevent identical workers from leaving and replacing them with new ones.

Table 5

or less. It also focuses on formal salaried workers and the “informal” self-employed, including owners of firms under 16 employees who do not have social security or medical benefits and are therefore not protected.²⁵ Only those who begin in formal salaried employment *and move exactly once* over five quarters into self-employment are retained, yielding a sample of 1087 workers. In essence, we are attempting to explain the timing of the decision to move, rather than the decision to move itself.

²⁶ This coincides with existing literature on unemployment in the OECD countries that increasingly focuses on the level and duration of benefits as the key determinant of unemployment. Nickell finds the duration to be the key determinant of long-run unemployment levels while Blanchard and Jimeno (1995) attribute the relatively high Spanish unemployment to the fact that Spaniards get access to benefits of indefinite duration if employed only 6 months of the last 4 years while Portuguese workers must have been working 1.5 of the last two years. Benefits of indefinite duration are similar in principal to self-employment as an alternative to formal work. The absence of unemployment benefits in Mexico, as well as most LDCs has the effect of collapsing both the self-employed and the “unemployed” into one sector.

²⁷ Public education has long been justified on the grounds that it addresses the externality implicit in the efficiency wage story: the private sector will under-invest since the basic skills they pay to impart can be easily transferred elsewhere. To the degree that poor LDC education systems force both training and socialization costs on individual firms, the wage gap between self-employed and formal salaried workers will be larger, segmentation greater and distribution worse, and a larger fraction of the self-employed involuntarily employed. This offers another channel through which improving education may equalize the distribution of income in the economy.

5. Self-Employment and Turnover in International Perspective

The simulations suggest an explanation for the disparities between Mexico and the OECD laid out in Table 1: All things held the same, poor countries will have higher rates of turnover and larger informal sectors. This finding is confirmed in the strong downward relationship between formal sector productivity and size of the self-employed sector in the sample of OECD and Latin American countries shown in Figure 6: a large self-employed sector is not obviously evidence of distortions, but may rather reflect that the opportunity cost of self-employment is lower in poorer countries.

Figure 6

Further, Maloney (2000) shows that simple OLS regressions on this small cross section suggest that labor productivity, the level of education, share of young people, employers social security tax, the real interest rate all enter significantly and of the sign predicted by the theory and had far larger impacts than three explicit labor distortion variables, the tax on salaries, on payroll, and restrictions on hiring and firing. Thus, it is hard to argue that these distortions are responsible for the size of the sector. Results consistent with the admittedly ambiguous theoretical predictions are also found for turnover, measured as the share of the work force with less than two years of job tenure.²⁸ The OECD countries have more stable work forces, but this appears due to the fact that they are educated, rather than rich, effects less easy to simulate in the model above.²⁹

The key lesson is that many economic and demographic factors not directly related to labor market legislation affect both the size of the self-employed sector and rates of turnover. Only by compensating for these variables can more meaningful measures of distortion and rigidity be constructed. Figure 7 attempts, in a rough fashion, to do this. It plots the residuals from the regressions of the self-employment share and tenure on labor productivity, education,

²⁸ Taken at the mean, labor productivity appears to have a *negative* impact on tenure (a positive impact on turnover), consistent with theory, and in conflict with the simulation results. This can be reversed with the exclusion of all other variables, but the inclusion of the share of the population with secondary schooling reverses its sign.

²⁹ Both taxes on social security appear to increase tenure and real interest rates decrease it. Marquez's employment protection variable enters with predicted sign, suggesting that it does negatively affect turnover and importantly. See Heckman and Pages (2000) for a more careful treatment of the relationship between firing costs and labor market variables.

real interest rate, and youth to see if the combination of the two can reveal anything about the functioning of a given labor market. In theory, these residuals capture the impact of all variables not explicitly included in the regression, including other labor market distortions or rigidities.³⁰ Though speculative, these residuals can be interpreted as measuring labor market distortion (self-employment above the predicted value) and rigidity (average tenure above the predicted value).

Figure 7

Despite the crudeness of the technique, the results are broadly plausible. In the North East quadrant of Figure 7 representing more rigid and distorted economies, we find Greece, Italy, and Spain, all European countries renowned for repressive labor codes. Among the most flexible and undistorted, the South West quadrant, we find, unsurprisingly, Canada and the United States. But we also find Mexico.³¹ This is plausible given our previous discussion of that minimum wages are not binding and unions appear not to affect the wage. In fact, the union emphasis on job creation may lead exactly to finding here that the share of self-employment is below that expected. The turnover number must be treated especially carefully since it was culled from an industrial survey instead of the household surveys like the others. But the finding of conditionally high turnover may also be plausible, despite the extreme *official* difficulties of laying off workers for economic reasons if enforcement is lax and, again, most turnover is voluntary. These restrictions are also found in other countries in the region, including several who also show up as not particularly rigid: Bolivia, Panama, and Venezuela in the Western quadrants and Brazil and Panama just over the line.

These results merit very strong caveats both on empirical and conceptual grounds.³² That said, it is clear that the residuals provide far more informative measures than the raw indicators

³⁰ It is absolutely correct to argue that they also include any country specific variables and any error in measuring sector size or turnover, both of which cast doubt on using the residuals for this purpose. However, this critique applies to the use of the raw measures of these variables as well and since they are thought to contain information, then the adjusted values obtained from the residuals are probably more appropriate.

³¹ The results are also not entirely consistent with the indexes of distortion calculated in *The Long March*, a regional reform perspective published by the World Bank, which showed Chile, Colombia, and Peru among the most liberalized and Bolivia, Mexico and perhaps Brazil among the least. This divergence, again, may be due to data problems—Chile may count its self-employed more conscientiously. But it also may be the case that enforcement varies greatly, and that a formally rigid market may, in practice, be quite fluid.

³² The available data is thin and hence the regressions and their residuals must be treated with caution. It also must be remembered that the level of development (formal sector productivity) is not exogenously given, but may itself be affected by labor legislation.³² Since this variable has great explanatory power in both the self-employment and turnover regressions, the measures of distortion above may be understated. Further, many other social programs and

commonly used. While it may be too strong to say that Mexico has a flexible and relatively undistorted labor market, it is absolutely clear that the high share of informal self-employment and rates of turnover in themselves do not offer evidence to the contrary.

6. Policy Implications

What emerge as policy conclusions from this analysis?

First, the emphasis on segmentation frequently found in the literature may not be relevant for Mexico, at least to date. Fiess, Fugazza and Maloney (2001) do find some evidence leading up to the crisis of 1994-95, but this does not appear to be the norm. That said, Mexico, as other countries in the region, has been considering raising the minimum wage and the possible distortionary consequences of this must be borne in mind. This is especially of concern if, as Gonzalez (1996) argues, falling rates of inflation will make nominal readjustments to wages difficult in the future. The dynamics of union behavior over the near term are difficult to predict.

Second, this does not imply that there are no inefficiencies in the Mexican labor market. The finding that unions featherbed is immediately suggestive of inefficient production processes. Further, a variety of restrictions on firing, promotion and rotation imply areas for gains in productivity³³ Though the light seems to be better around issues of segmentation, the true action may be in the far more difficult to measure issues of internal efficiency.

Third, the focus of worker protection needs to shift away from that generated by the segmentation view of the informal as involuntarily unprotected. The calculus of the informal worker is more complex. For many, the decision to be an informal micro-entrepreneur is just that, a joint decision to become self-employed and then how much formality to “purchase.” Again, this does not for a moment imply that there are not people who would wish to work as salaried workers with full benefits. But the central theme of this chapter has been that for a majority of those informal, governments need to be concerned about the incentive structures that

labor market institutions also have historically emerged over the course of development that will be correlated with productivity. Since it is not obvious whether these would be more or less distortionary, the direction of bias induced in the residuals cannot be known a priori.

³³ See Maloney (2001) and Davila (2000)

they are setting up to be formal or informal. Anything that drives a wedge between what a formal sector worker pays in labor taxes, and the perceived benefits constitute an incentive to work off the books. To list a few:

High costs of registration: Registering a micro-enterprise is estimated to take between 42-142 working days in Mexico (See Table 6). While not the worst in the region, this is far above Chile, which requires 12 days. This fixed cost of becoming formal is an extreme barrier to formality.

Table 6

Informal Protection and Liquidity Costs: With the exception of medical benefits, virtually all publicly provided protections have an informal substitute. Investing savings in a “changarro” with the idea of selling it, or passing it on to children may be seen as adequate forms of retirement security. Informal lending and borrowing arrangements, maintaining multiple earners in the household may serve as unemployment insurance. When the government implements mandatory retirement schemes or individual accounts that tie up workers money for long periods of time, the implicit liquidity costs may provide a disincentive to being formal. At the extreme, the concern that workers are unprotected by formal mechanisms thus becomes uninteresting. In fact, if one were to re-conceive of the government as offering public services to complement or substitute for those private, we can imagine that the gradations of informality that we observe simply represent the optimal choice of protection options facing micro firms.

Public Goods and Progressive Payroll Taxation: Governments around the world use payroll taxes both to fund public goods and as distributional tools. This immediately provides an incentive for those relatively better off to limit their contributions as much as possible. For high skilled workers, the need to be affiliated with firms with particular capital that might make them easy to monitor means they are essentially captive. However, for the moderately skilled workers who could repair cars for a large firm, or run their own *taller*, the decision to evade may be higher. To some degree, the system of individual accounts for social security introduced by the Zedillo government, and proposed analogous system for severance pay intend to bring benefits in line with taxes and reduce the incentive to evade. However, the issue then emerges, however, if

a progressive tax policy is desirable, are there taxes that are less easy to evade where burden could be shifted.

Subsidies to Informality: The provision of medical benefits at reduced costs and with no requirement of registration in other dimensions of formality is implicitly a subsidy to informality. Davila and Guijarra(1999) acknowledge this in their proposal for health care reform and attempt to link enrollment in health care to enrollment in other programs. Whether this will lead to greater levels of coverage overall, or simply to a loss of medical coverage for those who still find the costs of being formal too high is an empirical question.

Finally, if efficiency wage effects do, indeed, drive the segmentation observed in the labor market, then policies that reduce the costs of investment in skills, and hence the loss due to turnover may have an impact on both efficiency and income inequality. Among these policies would be a radical improvement in the quality of general education, as well as maintaining more moderate interest rates that affect human capital investments as well as others.

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Table 1. Size of Informal Self-Employment and Turnover Rates

	Mexico	LAC	OECD
Percent of workforce in informal self-Employment	26.5	31.5	12.9
Average tenure (manufactures)	5.8*	7.6	10.5
Percent < 2 years seniority (manufactures)	N/A	38.1	24.5

* Generated from firm level survey so not strictly comparable to the other figures based on household surveys.

Table 2: Sector of Origin of the Unemployed

<i>Sector of Origin</i>	<i>All</i>	<i>Paid</i>
Informal Self-Employed	9	40
Salaried Informal	7	35
Formal Salaried	5	25
Previously Unemployed	19	
Previously Out of Labor Force	44	
School Graduates	16	
Total	100%	100%

Arango and Maloney (2000)

Table 3. Measures Taken to Confront the Problem of Recently Trained Workers Who Resign (percent)

	Total	Large	Medium	Small	Micro
Increase wages	23.1	7.1	7.6	9.5	29.2
Increase other remunerations	4.6	17.5	17	14	0.1
Promote those trained	12.7	39.6	32.8	24.3	6.1
Reduce the number of those trained	8.4	0.2	1.3	1.3	11.5
Reduce the training offered	0.2	0.5	0	0	0.3
Give non-monetary recognition	8.5	12.8	9.8	7.3	8.4
None	33.5	15.5	26.1	35	34.7
Don't know	1.2	2.3	0.7	5.2	0
Others	7.8	3.9	4.1	3.2	9.7

Source. 1992 ENESTYC

Table 4: Determinants of Probability of Moving to Informal Self-Employment from Formal Salaried Work.

Probit Regression						
	Unconstrained		Symmetry Imposed		Summary Statistics	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Mean	Std. Err.
move					.0245	.1545
log w	-1.3153	.3895			1.674	.05319
log b	.8879	.1965			1.857	.1060
log w - log b			-.6436	.1522	-.183	.06625
p	.3122	.05647	.3650	.04801	.6310	.1866
school	-.08249	0.01231	-.08253	0.01231	7.302	2.808
(school)	.004241	0.000968	.004232	0.000978	61.204	37.02
experience	.03200	.002887	.03200	.002886	21.612	13.00
(experience)	-.000535	.0000556	-.000536	.0000556	636.327	683.9
constant	-1.6167	.3860	-2.3195	.06131		
Nobs	100978		100978			
Significance	$\Pi^2(6)=440.8$	$p=0.00$	$\Pi^2(5)=440.7$	$p=0.00$		
Test of $\nabla_w = -\nabla_b$			$\Pi^2(1)=3.41$	$p=.065$		

Source: Krebs and Maloney (1998). Move is a 0,1 indicator of whether a formal sector worker moves to the informal self-employed sector, w the formal sector wage, b reported informal sector income, p the probability of being hired in the formal sector.

Figure 1: Kernel Density and Cumulative Distribution Plots of Impact of Minimum Wage on Wage Distribution in Mexico

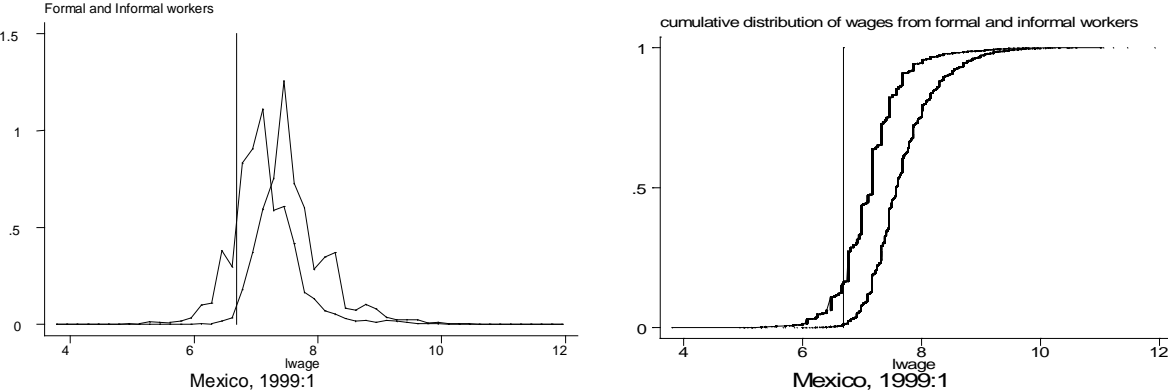


Figure 2: Median Real Hourly Earnings

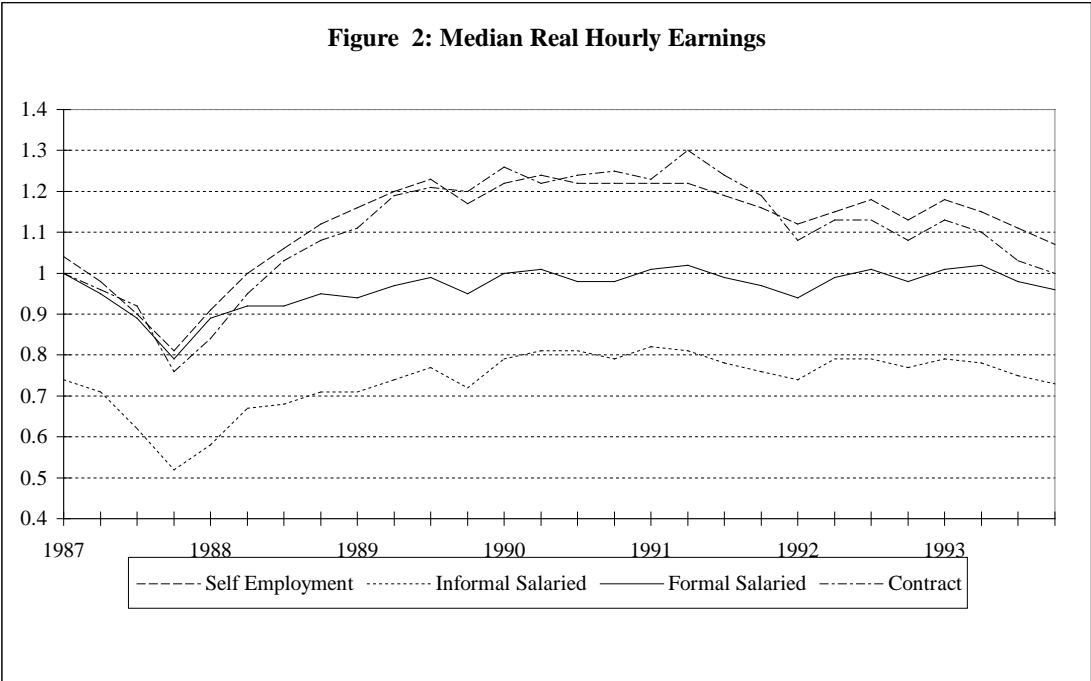


Figure 3: Labor Force Composition

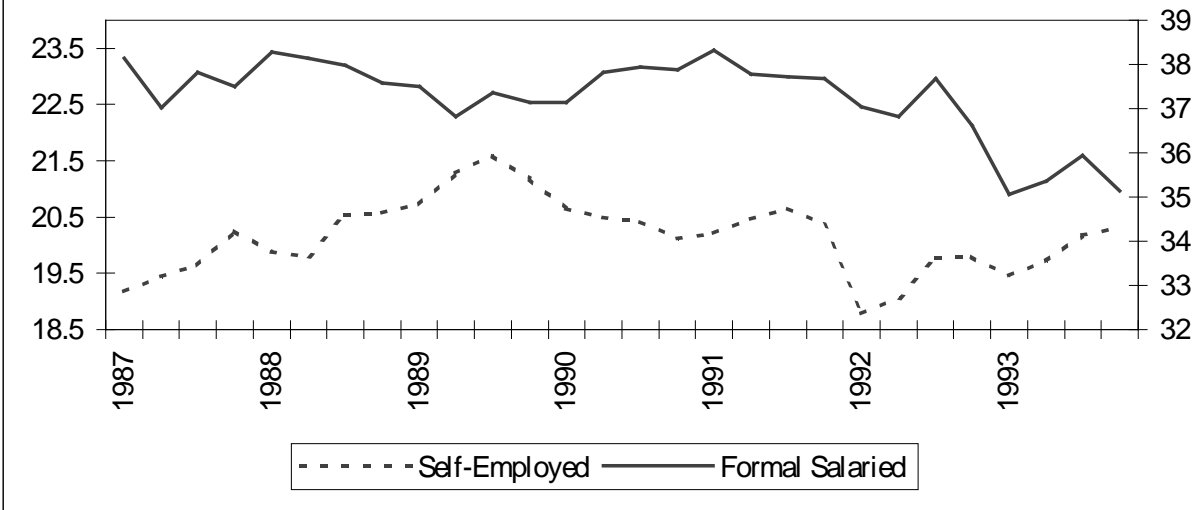


Figure 4

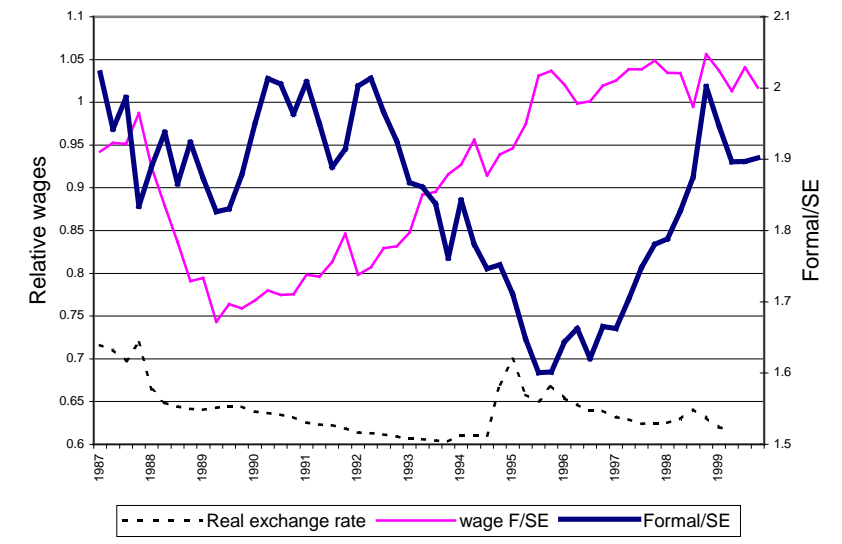


Figure 5: Transition to and from the Formal Sector ($P_{ij}/P_{.j}$) across 5 Quarters



Figure 6. Self-employment versus Development Level

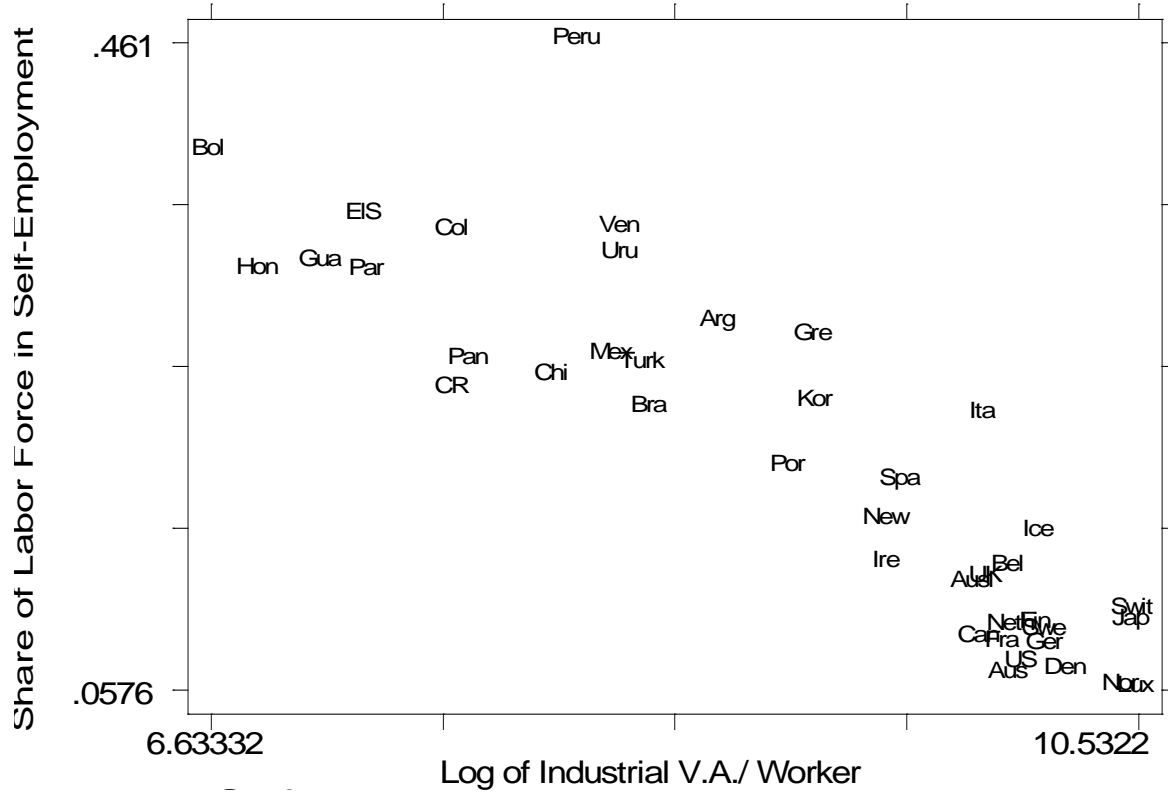
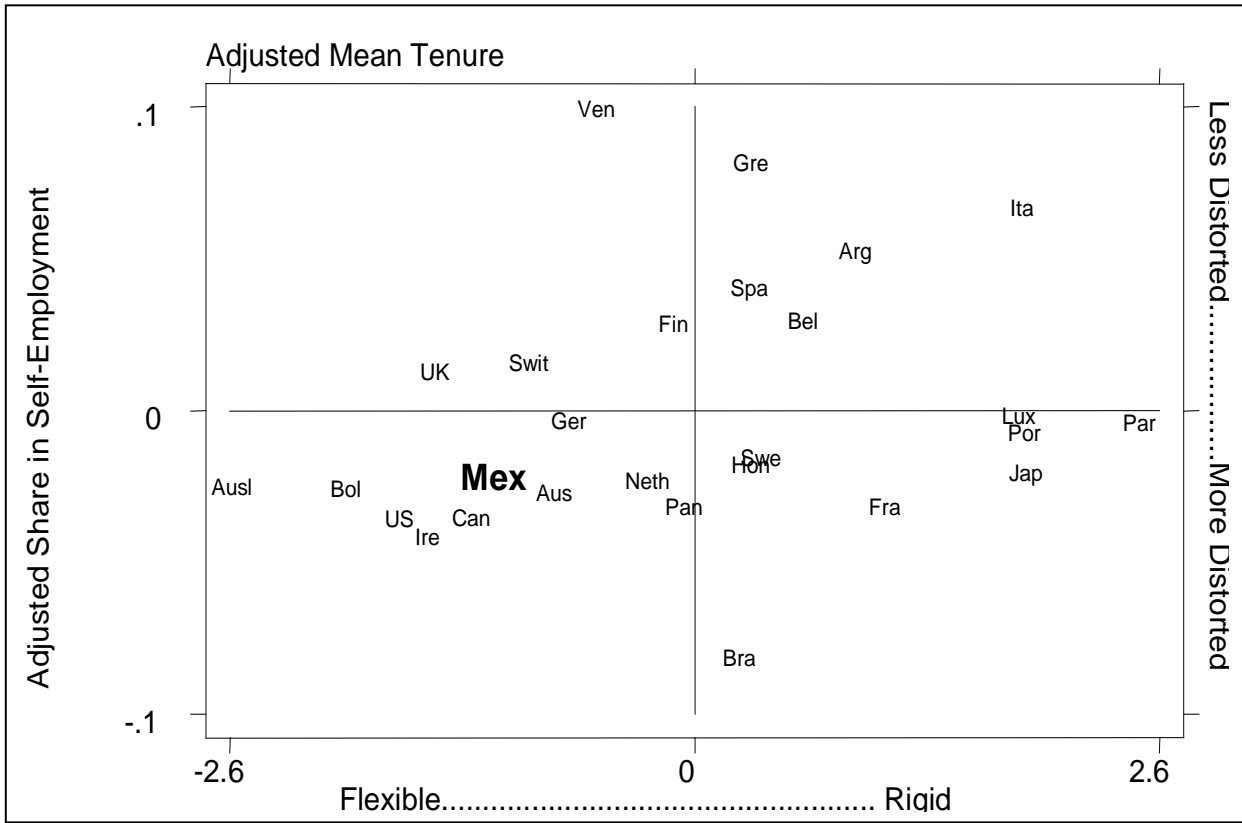


Figure 7: Rigidity and Distortion in the Mexican



Voluntary Decisions to Become Informal: A Life-Cycle View³⁴

Another test of the voluntariness of self-employment arises from studying patterns of entry into the sector from formal work. As the previous section documented, Mexican entrepreneurs also show similarities in this respect as well to their industrialized country counterparts. In both cases, however, these patterns seem theoretically counter-intuitive. Johnson (1978), Jovanovic (1979) and Miller (1984) argue that younger individuals are better able to bear the risk involved and hence should be heavily represented among entrants into self-employment. However, as Evans and Jovanovic note, this is inconsistent with Evans and Leighton's (1989) finding that the probability of moving into self-employment is constant in age, a pattern also found in and in the previous chapter Mexico and in Balan's et al' work. This they attribute to liquidity constraints that dictate that workers require time to build up the capital needed to start a business. That this phenomenon may be exacerbated in the developing world where credit markets are poorly developed emerges strongly in Balan et al's interviews.³⁵ Aroca and Maloney, argue that the problem is similar to that of workers who, perhaps with the idea of opening a business upon their return, migrate to a country that offers the possibility of accumulating wealth more quickly, and return home only when they reach a "target" level of savings (See Piore 1979, Berninghaus and Seifert-Vogt (1993)). They find that the empirical determinants of optimal "switching" time, in the present case, the transition from formal to informal self-employment are consistent with voluntary entry with borrowing constraints.

³⁴ Based on Aroca and Maloney(1998), Logit Analysis in a Rotating Panel Context and an Application to Self-employment Decisions.

³⁵ First, the man must accumulate capital. This is no easy matter when he has a manual job and must provide for a large family, so it generally takes years to accumulate enough capital. There must be sufficient funds not only to set up the business, but also to keep it going during the months or years while it runs at a deficit. . .these kinds of capital requirements are modest enough, but the capital is not easy to come by for the working classes of Monterrey or elsewhere in Mexico. p. 217.