

# **Informality in Turkey: Size, Trends, Determinants and Consequences**

## **Background Paper by**

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**for**

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Consequences, Policies**

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## INFORMALITY IN TURKEY: SIZE, TRENDS, DETERMINANTS AND CONSEQUENCES<sup>1</sup>

1.1 Informality is a matter of concern among policymakers and the business community throughout the world. Impacts on productivity and growth, reduction in the tax base and as a consequence in the amount of resources available to invest in the provision of public goods and equity issues related to the existence of unprotected workers are, not necessarily in this order, the main concerns associated with having a significant part of the production and labor force in informality. Businesses tend to be particularly concerned with the unfair competition associated with informality: recent World Bank surveys of firms around the world show that firms tend to rank competition from informal firms as one of their top three obstacles to do business. This can be seen in 14 Latin American countries, where 38.7 percent of the manufacturing firms ranked informality ahead of issues such as tax rates and access to finance (Gonzalez and Lamanna, 2007), as well as in countries as diverse as Vietnam and Mozambique, where this same obstacle was ranked the top constraint for business growth. In the most recent enterprise survey in Turkey, this topic was ranked the 4<sup>th</sup> major constraint for business growth.<sup>2</sup>

1.2 Whereas informality has been defined in a number of different ways in the economic literature, it has been mostly associated with negative economic outcomes, such as unprotected work, low firm productivity and tax evasion. This traditional view on the consequences of informality is also usually associated with a particular view of what drives informality. This view argues that, in general, workers and firms in the informal sector would prefer to be formal (registering with the state, paying taxes, affiliating with social security, etc.), but for reasons related to the state of the economy, the functioning of the labor market, or the regulatory environment, they are prevented from doing so. As argued by Perry et al. (2007), however, there is considerable evidence suggesting that the informal sector is fairly heterogeneous, with workers and firms that have been excluded from the formal economy coexisting with others that have opted out on the basis of implicit cost benefit analysis. This latter concept of “exit” posits that at least some of those in the informal sector are there as a matter of choice. Specifically, some workers and firms, upon making some implicit or explicit assessment of the benefits and costs of formality, choose to opt out of the formal sector. Given existing opportunities and constraints, they actually prefer informality. Since there is a wide range of degrees to which exit or exclusion holds in any economy, these two perspectives are complementary characterizations rather than competing hypotheses.

1.3 Understanding this heterogeneity in the informal sector, as well as the various factors that influence individuals and firms’ decisions to “take their business” to the informal economy, is critical for the design of public policies. Indeed, even in those cases where informality is driven by *exit* and not by *exclusion*, there are good reasons for policy makers to want to move away from a social equilibrium in which a large number of

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<sup>2</sup> The top 3 constraints were access to finance, tax rates and political instability. The survey was carried out in 2008 and a report is expected to be published in 2009.

workers lack protection from negative shocks, where the informal status of many firms limits their productivity and growth potential and where a large informal sector reduces fiscal revenues.

1.4 With this motivation, the present chapter has 3 objectives: the first one is to review evidence from various data sources, both macro and micro, on the incidence of informality in Turkey, providing an overview of informal activities in the country; the second objective is to analyze the role played in the specific case of Turkey of various potential *determinants* of informality among firms and workers, again using different sources of data, including the recent surveys undertaken for this report; third, it aims at illustrating some of the *consequences* that informality appears to have on firm performance.

### ***Defining Informality***

1.5 Informality is a heterogeneous concept, encompassing different situations such as the unregistered small firm, the street vendor and the large, registered, “formal” firm that employs a share of its workers without offering them written contracts with access to benefits and unemployment protection. It is thus difficult to measure and evaluate, and actually impossible to characterize on a one-size-fits-all basis. Participants in the informal sector, whether firms or workers, may have chosen to be there or may have been excluded from the formal sector; some of the formal firms “hide” sales (and thus taxes) and employees (and thus contributions), while informal participants may pay some or no taxes, suggesting that informality can hardly be described as a dichotomous condition. Adding a time dimension does not help much in disentangling the observed behaviors: available evidence suggests that informal participants may stay in the sector for a short or extended period of time. Moreover, the short run relationship between the informal sector and growth varies across countries—there is evidence of pro-cyclicality as well as of counter-cyclicality, depending on specific countries and periods. In the long run, the informal sector may vary in nature according to the phase of the development cycle—as economic opportunities grow, incentives to “start-up” a small business may expand, while the attractiveness of informal wage labor may decline.

1.6 In general terms, the informal sector is broadly defined as the collection of firms, workers, and activities that operate outside the legal and regulatory frameworks. The reality is that different types of informality co-exist and that no one definition is likely to be a self-contained characterization of the sector. There are informal activities that aim, first, at the survival of the individual or household through direct subsistence production or through simple sale of goods and services in the market, while there are others more oriented toward increasing managerial flexibility and decreasing labor costs of formal sector firms through off-the-books hiring and sub-contracting of informal entrepreneurs (Portes and Haller, 2005).

1.7 Informal activities of survival are more associated to developing countries (Portes and Haller, 2005; Gerxhani, 2004). Gerxhani (2004) argues, for instance, that informal activities geared towards survival can broadly be described as both labor-intensive and low-technology. They also bring in modest capital accumulation, if any at all. However

many of the indicators commonly used to measure informality, such as status of labor, unreported income and tax evasion, and GNP accounts, imply that the informal activities being measured are directed towards activities that go beyond just “survival”. Hence informality is more than the sum of the self-employed, and the crude differentiation between the registered and the un-registered firms would not suffice to characterize informality in its multi-faceted totality. By focusing on activities of the registered firms, for instance, the Enterprise Surveys of the World Bank clearly acknowledges informality as *in continuum* rather than as bipolar opposite of the formal. Therefore any research on informality conducted in a country of substantial industrial activity such as Turkey should account for informal activities of the registered firms as well as the unregistered activities of the survival type.

### ***Measuring Informality***<sup>3</sup>

1.8 If defining informality is a complex task, its measurement is an even more daunting one. Given that it is identified with working outside the legal and regulatory frameworks, informality is best described as a hidden, unobserved variable. That is, a variable for which an accurate and complete measurement is not feasible but for which an approximation is possible through indicators reflecting its various aspects. To provide an estimate of the magnitude of informality in a country, it is better to use different indicators which, when taken together, can provide a more robust approximation to informality. Because of the “hidden” nature of the sector and its heterogeneity, this report relies on a combination of indicators to arrive at a sense of the scale of informal activity. These same indicators are used later in the chapter to test different hypotheses regarding the motivations behind decisions to become informal.

1.9 There are essentially two methods to measure informality: the first type is a direct (micro) measurement based on individual surveys, such as the World Bank’s Enterprise Surveys, which explicitly ask the firm’s owner or manager the year when the firm started its operations and the year the firm was legally registered. A discrepancy between the two is typically considered as the time when the firm operated informally. In some household surveys or labor forces surveys, interviewees are asked whether in their current employment they have signed a formal contract, or whether they are affiliated to the social security administration (meaning that they, or their employer are contributing to a pension plan or other protection program). The problem with this measure is that the interviewee’s answer depends heavily on the phrasing of the question, and (in the case of firms for instance) many interviewees will be reluctant to reveal their behavior, so that one has to formulate indirect questions instead, which are likely to be much less accurate. In addition, looking at workers covered by a pension plan, for instance, might be misleading as some countries have recently shifted their participation schemes to include self-employed workers, hence blurring the distinction between pension-plan holders as formal and non-holders as informal.

1.10 The tax-audits method basically takes data from tax audits to determine the percentage of the firms audited that evaded taxes and quantifies the amount of tax

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<sup>3</sup> This section is largely based on Perry and all (2007) and on Oviedo (2008).

underreporting as informal activity (one can also determine the legal status of the firm with tax audits). The shortcoming of this information is that typically tax audits are not conducted randomly and hence the information is not representative of the population of firms.

1.11 Several indirect techniques use aggregate data instead. The first measure estimates the size of the informal economy as the difference between aggregate income and aggregate expenditure from the National Accounts, however, it has been used in a few developed countries only, as it requires independent calculations of aggregate income and expenditure. From the employment perspective, measures include taking the difference between total labor force and total employment, and an index of pension coverage of the population. The latter has the caveat that in recent years, coverage has been expanded in several countries to the overall population regardless of their employment status.

1.12 Other indirect techniques include the physical input approach, which measures the growth of the informal economy as the difference between the growth rate of GDP and the growth rate of electricity consumption. A related measure takes the difference between the fitted values of an estimated money demand equation and the actual amount of cash that circulates in the economy. These measures have several disadvantages. First, they both assume that in the base year of the estimation (chosen arbitrarily according to sample availability) the size of the informal sector is close to zero. Second, they both make unrealistic assumptions about the use of electricity (constant coefficient per unit of GDP, which ignores technological progress) and of money demand (common velocity of circulation in formal and informal sector, and exclusive use of cash in the informal sector). In practice, both measures are highly sensitive to variation in these assumptions: in particular, changing the base year for the estimation of either model produces very different estimates of the size of the informal sector.

1.13 Yet another method that has been used in recent years is the Multiple Indicator-Multiple Cause (MIMIC) model, popularized by Schneider (2004) who applied it for 145 countries. This model assumes that while informal activity is not observable, its magnitude can be represented by a latent variable (in index form), and both its causes and effects can be observed and measured. This latent variable is then used in a set of two equations: in the first, the latent variable is the dependent variable and its causes are the explanatory variables; in the second, the effects of informality are modeled as a function of the latent variable. The set is then simultaneously estimated and the fitted values of the latent variable are used to compute an estimate of the size of the informal sector as a share of GDP. This technique has been criticized because of the lack of theoretical support for the equations supposed to capture the causes and effects of informal activity, and it has also been argued that the estimation results are sensitive to transformations of the data, to measurement units, and to the sample used. Its use, nevertheless, remains widespread, probably as a consequence of the aforementioned difficulties to obtain broad estimates of informality.

1.14 In addition to estimating the size or stock of informal activities, it is also important to measure flows, incorporating the movements into and out of informality that

indeed take place for many individuals and firms throughout their lifetime. A few studies have quantified these movements; among them we can cite Flores et al. (2004) and Maloney (2004) for Mexico, and Perry et al. (2007) for other Latin American countries.

**Table 1**

<b>Measuring the size of the informal sector</b>			
❖ Direct (micro)	methods	<ul style="list-style-type: none"> <li>• Voluntary surveys</li> <li>• Tax audits</li> </ul>	
		<ul style="list-style-type: none"> <li>• Discrepancy between aggregate income and expenditure</li> <li>• Discrepancy between total labor force and formal employment</li> </ul>	
❖ Indirect (macro)	methods	<ul style="list-style-type: none"> <li>• Monetary methods</li> <li>• Physical input (electricity consumption)</li> </ul>	<ul style="list-style-type: none"> <li>- Velocity of circulation approach</li> <li>- Currency demand approach</li> <li>• Kaufmann-Kaliberda method</li> <li>• Lacko's method</li> </ul>
❖ Model approach		<ul style="list-style-type: none"> <li>• MIMIC and DYMIMIC (macro)</li> </ul>	

Source: Perry *et al.* (2007)

1.15 Pragmatism and taking into account the different dimensions of informality does not diminish the importance of being precise as to what kind of informality one refers to: unregistered firms, unprotected workers or the self-employed. The appropriate policies are likely to differ depending on the type of informality under consideration. Policy analysis and recommendations therefore have to be based on a rigorous and disaggregated investigation of the Turkish informal economy, and how it has evolved over time.

***How large is the Turkish informal sector?***

1.16 After presenting the different definitions and methodologies for measuring informality in this last section, we now move to provide basic estimations of the size of the informal economy in Turkey. We concentrate on a few measures that can be informative both about the breath of informal activity (whether it involves mainly firms or workers) and its actual weight in terms of aggregate production and income. One advantage of the measures presented here is that they are available for a large number of countries, enabling basic comparisons with similar economies<sup>4</sup>. The methodologies used to estimate informality in Turkey include two measures that take the employment view of informality and two that look at informality from the production side.

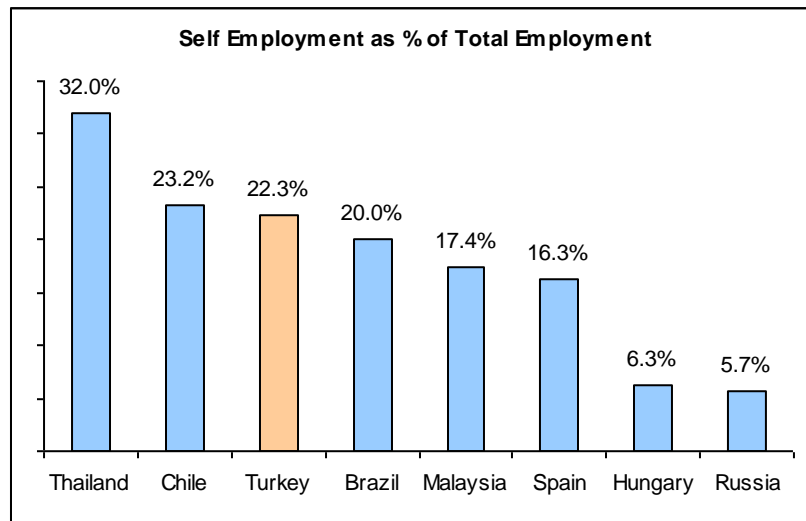
***Informal employment***

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<sup>4</sup> For the analysis presented in this paper, we chose as comparators: the BRIC countries (Brazil, Russia, India and China), countries with similar income levels (Chile, Hungary, Malaysia and Thailand), and OECD countries for a comparison with a developed economy (Spain for most comparisons and USA for the cross-country determinants of informality analysis). All of them subject to data availability for specific indicators.

1.17 The first measure of informality computes the share of self-employed individuals as a percentage of the total labor force, using data from labor force surveys compiled by the International Labor Organization (ILO). In most developing countries, there is a strong association between self-employment and informal activity. The figure below presents self-employment results for the latest available years<sup>5</sup>. By this measure of informality, Turkey presents levels of self-employment that are higher than most other comparator countries<sup>6</sup>.

Figure 1



Source: ILO, various years

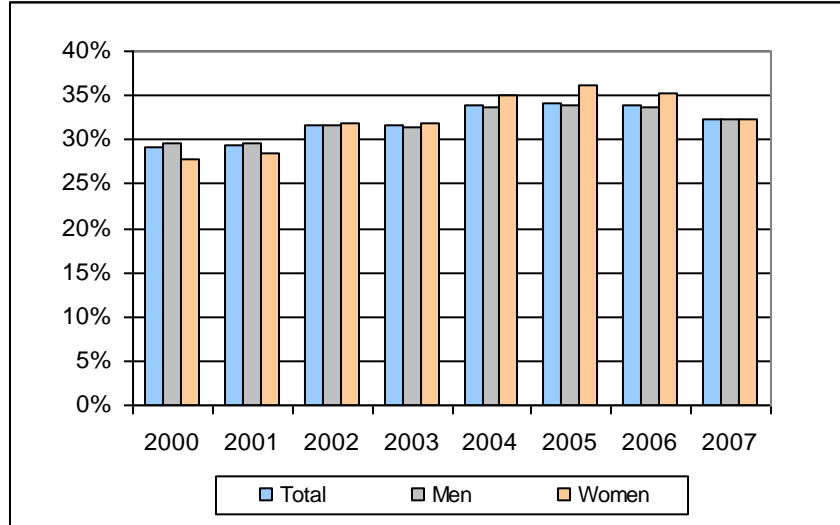
1.18 Next, we look at informal employment as characterized by workers that are not registered in any pension scheme (social security). This data is drawn from Labor Force Surveys conducted by the Turkish Statistical Institute (TurkStat) and from the World Bank’s World Development Indicators. By this measure of informality, roughly a third of non-agricultural employment has no affiliation to social security institutions in Turkey. This figure has come down slightly in recent years, but overall it has not changed significantly in the past seven years (Figure 2). As Figure 3 shows, this percentage varies considerably by economic activity: agriculture and the construction sector, not surprisingly, are characterized by high levels of informality. Looking across countries and using long term averages<sup>7</sup>, Turkey’s average for the percentage of the labor force not covered by pension schemes is again above the averages for Brazil and Malaysia and significantly higher than Spain’s (Figure 4)

<sup>5</sup> Self-employment refers to ILO status of employment definition #2 “Own-account workers”. Data for all countries refers to 2007 figures, with the exception of Brazil, where figures are for 2004.

<sup>6</sup> Self-employment figures for Hungary and Russia need to be taken with caution since, as highlighted by Loayza and Rigolini (2006), self-employment in these countries appear to still be in transition to market-economy levels, and remains substantially lower than in non Eastern European countries.

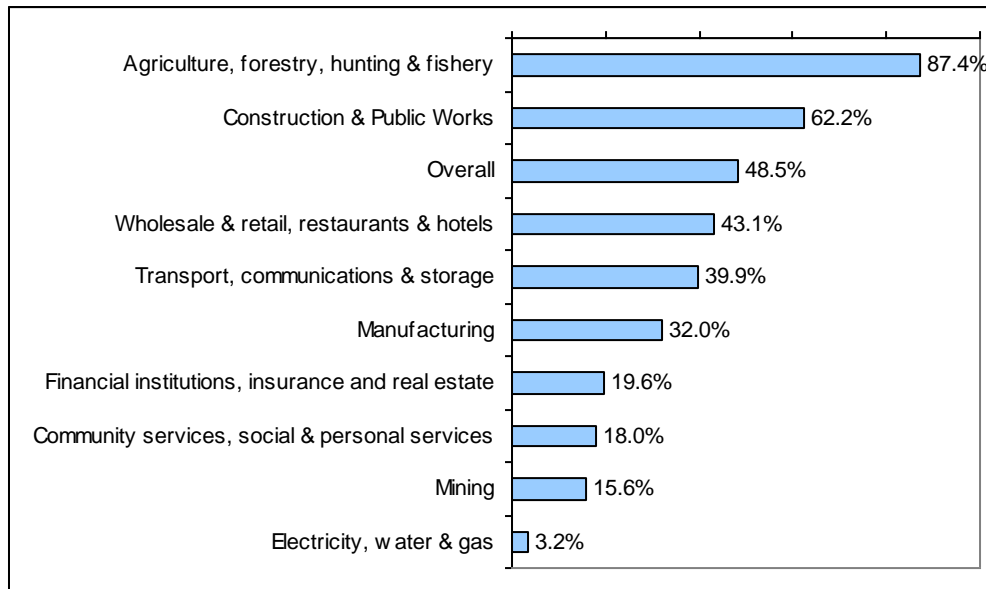
<sup>7</sup> This number for labor force not contributing to a pension scheme is an average of the figure for the years 1993 to 2005. Data from Loayza (2009).

**Figure 2 Non-Agriculture Informal Employment (no pension coverage) as % of Total Non-Agriculture Employment**



Source: TurkStat

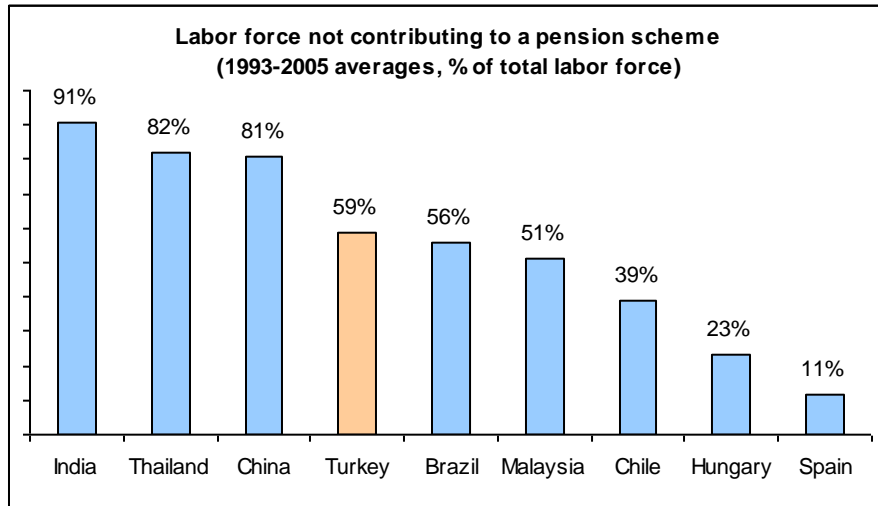
**Figure 3 Informal Employment (no pension coverage) as % of Total Employment, by Sector**



Source: Turkstat (2006)



**Figure 4 Cross Country comparison**

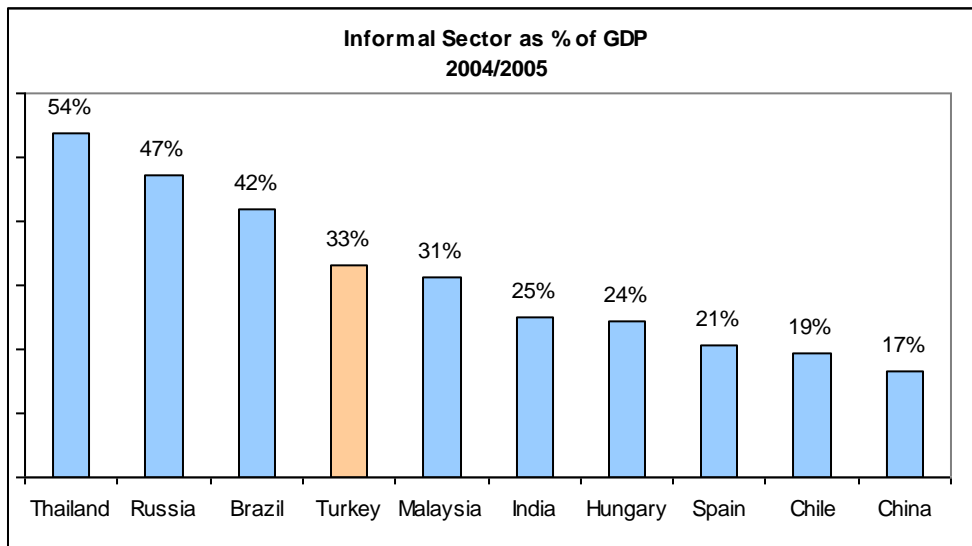


Source: Loayza (2009), based on WDI data.

*Informal economic activity*

1.19 Schneider’s methodology provides an estimation of the size of the informal economy as a percentage of GDP. This methodology combines a latent estimation model approach (DYMIMIC) with a currency demand approach and carries with it several caveats mentioned earlier in this chapter. Results for Turkey show that the informal sector still represents a considerable percentage of economic activity, albeit not as large as in countries such as Thailand, Russia and Brazil<sup>8</sup>.

**Figure 5**

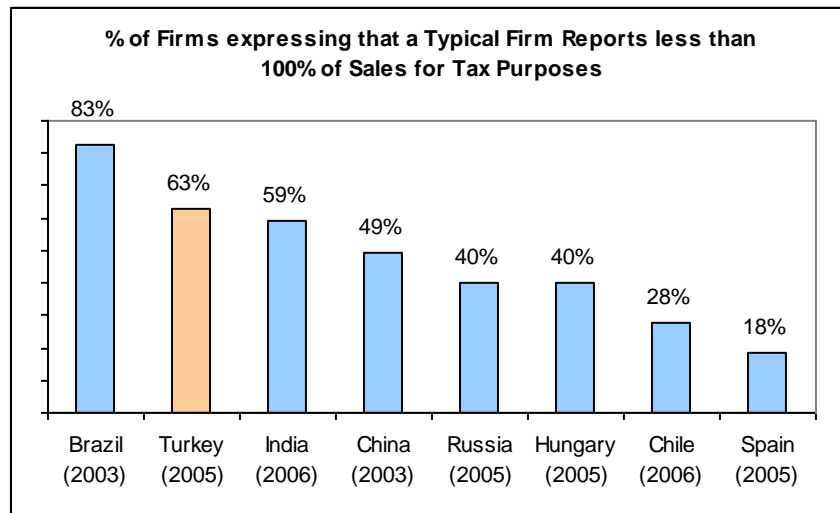


Source: Schneider (2007)

<sup>8</sup> It is worth keeping in mind that estimations of the informal economy can vary greatly. As shown in a recent report on the informal economy prepared by the Government of Turkey, estimates for the size of the informal sector in the country range from 2 to 70% of GDP.

1.20 Next, we look at an additional indicator that can provide a qualitative view of informality. This indicator comes from the Enterprise Surveys conducted by the World Bank for several countries and provides us with the perceptions of formally registered firms regarding tax compliance. The cross country comparison shows that almost two-thirds of firms in Turkey believe that some degree of tax evasion is typical of a firm in Turkey. While not as high as Brazil’s 83 percent number, this figure is nonetheless considerably higher than most other comparator countries and shows that perceived tax evasion is high in Turkey, a point that is reinforced by the qualitative survey conducted in the country for this study.

**Figure 6**



Source: Enterprise Surveys

1.21 The several measures provided here reinforce the view that informality is significant in Turkey. This observation remains valid even when controlling for levels of income. The charts below show that, while the share of the informal economy as % of GDP is at pace with Turkey’s level of development, informality as proxied by the share of self-employed workers is high for its level of development.

Chart 1

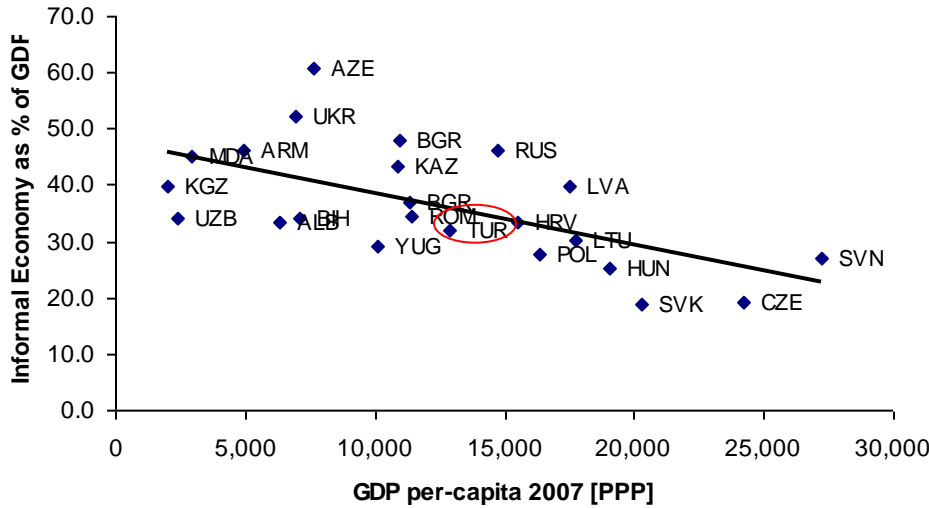
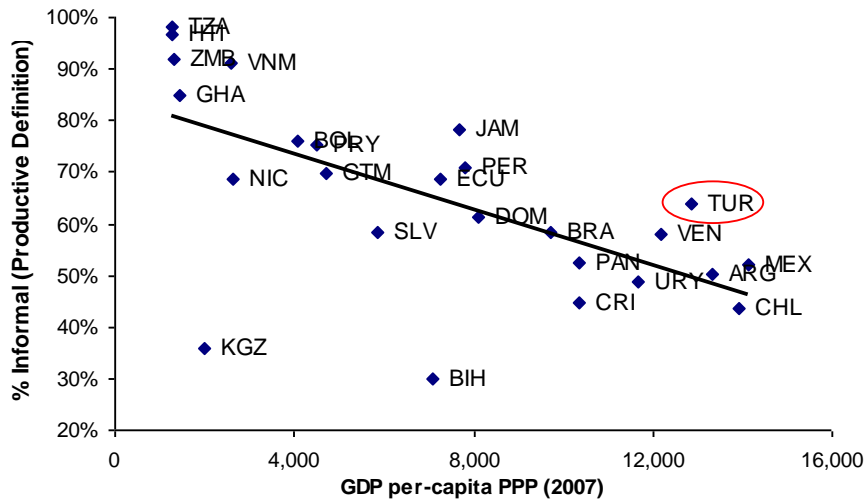


Chart 2



1.22 Finally, a simple exercise can be done to provide an idea of the extent that the significant informality (as defined by self-employment figures) observed in Turkey is associated with the sectoral composition of the Turkish economy, where agriculture still accounts for a large share of employment. We create average employment figures (total and informal) for a group of European countries<sup>9</sup> to characterize a more mature economic structure. The exercise then consists of estimating what the level of informality in Turkey would be if it had the economic structure of this group of European countries. Table 2 below provides the basic numbers used in the calculations. Using the European average employment per economic sector and Turkish informality rates per economic

<sup>9</sup> Countries selected based on availability of comparable data: Austria, Czech Republic, Estonia, France, Hungary, Norway, Poland, Slovakia, Spain and U.K.

sector and assuming no interaction effects, the results show that the Turkish overall informality rate would be 19.7% if its economic structure resembled this European average, about 6 percentage points lower than its current levels (25.9%). Therefore economic structure (level of employment by economic activity) accounts for about 60% of the difference in informality rates between Turkey and this group of European countries. As agriculture gradually reduces its importance in the Turkish economy, we can expect a gradual reduction in informality in Turkey. This simple exercise shows, however, that unless further reductions in informality are obtained in urban sectors, namely in industry and especially in services, the overall level of informality in the country is likely to remain high, at least twice the level observed in Europe.

**Table 2**

	Total Employment by Economic Activity <sup>10</sup>		Informal Employment <sup>11</sup> by Economic Activity	
	Turkey	Europe	Turkey	Europe
Agriculture	31.8%	6.9%	44.9%	45.4%
Industry	23.7%	26.0%	6.4%	3.6%
Construction	6.9%	12.7%	10.9%	11.4%
Services	37.6%	54.5%	24.8%	8.9%
Total	100.0%	100.0%	<b>25.9%</b>	10.4%

**Informality in Turkey  
using the employment  
structure of Europe 19.7%**

Source: ILO statistics for 2007

### ***Trends in Turkish Informality***

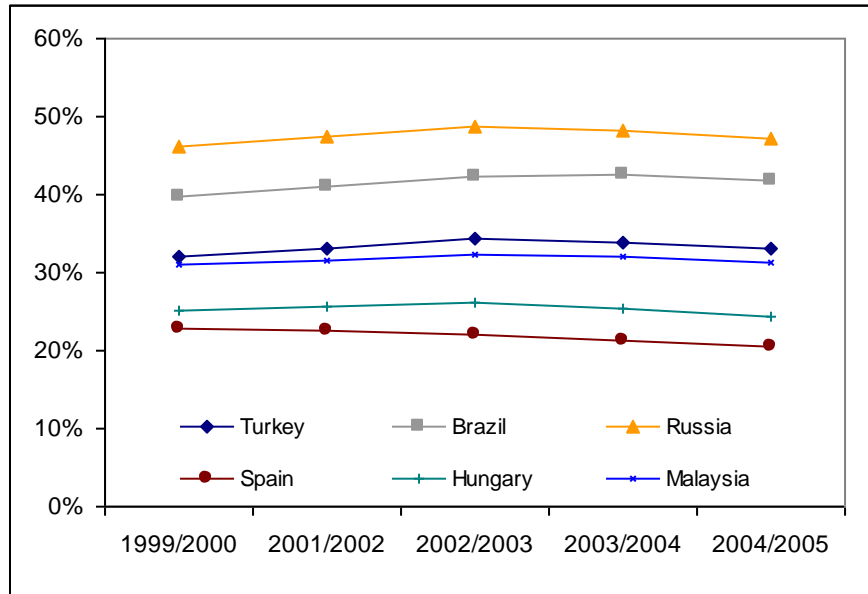
1.23 Equally as challenging as measuring the size of the informal sector is assessing its trends. Besides its shadowy nature making it difficult to quantify, its various definitions make comparisons and identifying patterns tricky. The descriptions below consider a range of measures of informality – including tax compliance and those obtained from labor force surveys – and cover mostly recent years (starting in 2000, when data is available).

1.24 Measures of overall informality show an increase in levels between the beginning of the decade and 2005. The Schneider DYMIMIC and currency demand method yields a slight increase in the size of the informal economy between 1999/2000 and 2004/05, with the peak level occurring in 2002/03. Comparator countries - Russia, Brazil, Hungary and Malaysia - showed similar trends.

<sup>10</sup> The following ILO categories for employment were not included in these calculations: Public Administration and Defence; Compulsory Social Security, Education, Health and Social Work, Other Community, Social and Personal Service Activities, Private Households with Employed Persons, Extra-Territorial Organizations and Bodies, Not classifiable by economic activity.

<sup>11</sup> Informal employment defined as self-employment, using ILO Own-account workers (ICSE-1993) categorization.

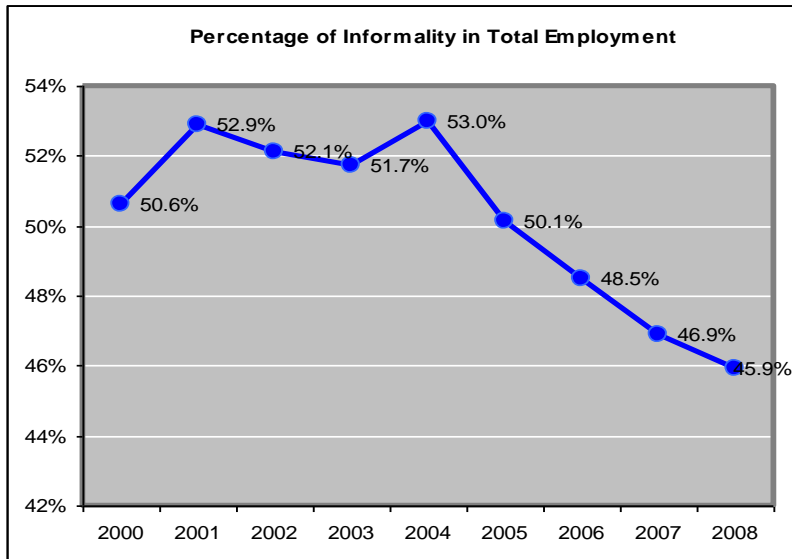
Figure 7 Informality as % of GDP



Source: Schneider (2007)

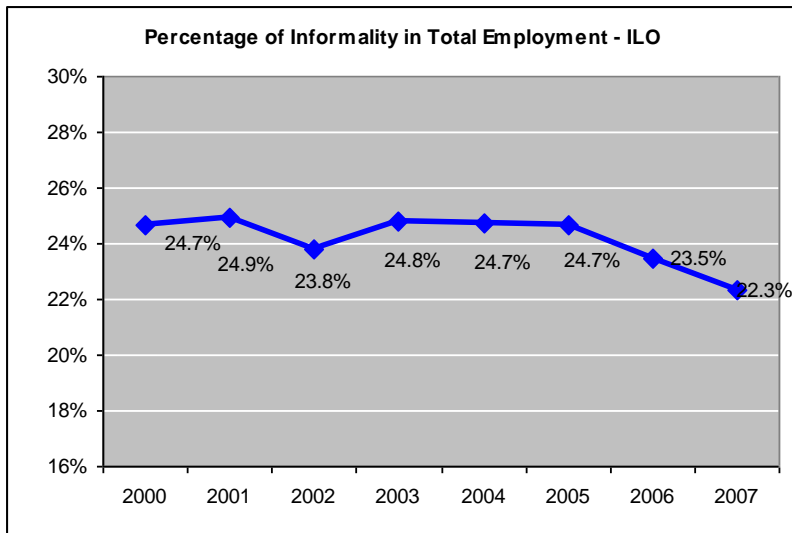
1.25 The most commonly used and perhaps less controversial measure of informality in Turkey and elsewhere is that of informal employment, which the Turkish Statistical Institute (TurkStat) monitors. TurkStat identifies informal workers as those individuals that are employed but not registered with the social security system. As evidenced by the qualitative survey carried out for this report, many firms in Turkey choose not to report all of their workers mostly to avoid perceived burdensome taxes, and to a lesser extent, to avoid regulations. Figure 8 shows that the percentage of workers without social security coverage has been consistently high, peaking in 2004 at 53 percent. Since then, number has decreased, reaching 45.9 percent in September 2008. This same overall pattern, although with much less variation, is observed when an alternative measure of informal employment is used: the proportion of workers that identify themselves as “self-employed.” Figure 9 depicts the trend for this measurement, using data from the International Labor Organization’s Labor Force Surveys.

**Figure 8**



Source: TUIK, Labor Force Survey.

**Figure 9**



Source: International Labor Organization Statistics

### *Disaggregating Labor Informality Trends<sup>12</sup>*

1.26 We next disaggregate the trends for labor informality by employment sector, education level, profession, employment status and firm size. The goal is to determine the main forces behind the decreasing trend in informality observed in the period 2001 to 2006<sup>13</sup>. We look first at the employment sector breakdown.

<sup>12</sup> The definition for informality used in this section of the report is that of workers without pension coverage (i.e. not registered with any social security institution), unless noted otherwise.

<sup>13</sup> More recently, a drop in non-agricultural informality has been observed. This fall has been concentrated in regular and casual employees, especially women and took place despite a slight increase in informal self-

## Employment Sector

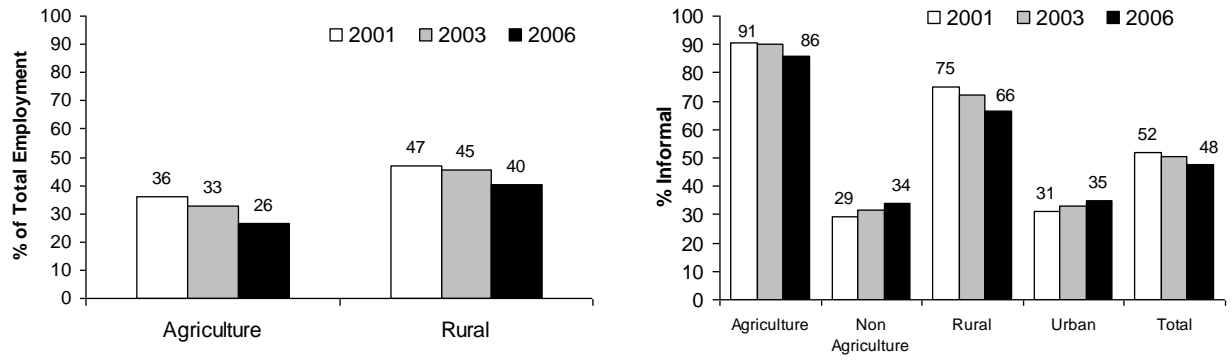
1.27 The main forces behind the decrease in informality between 2001 and 2006 were urbanization, the decrease in agricultural employment and a reduction in informality rates in rural areas and in the agriculture sector. The left panel of Figure 10 indicates that between 2001 and 2006 employment in agriculture decreased from 36 to 26 percent of overall employment (an important decrease). More broadly, the share of rural employment decreased from 47 to 40 percent, due to rapid migration to urban areas during the period. This shift in employment composition likely drove the overall decrease in informality, since agricultural and rural employment present significantly higher (albeit falling) rates of informality than other sectors. As labor shifted to urban areas, urban informality actually increased during this period, as well as informality in non-agriculture activities. Informality rates in the manufacturing, transport, and communications sectors increased by approximately 20 percent between 2001 and 2006. Services, the sector with the highest share of formal employment, displayed the largest deterioration in informality: a 50 percent increase, going from 12% in 2001 to 18% in 2006. However these increases were not large enough to compensate for the decreases in informal employment related to labor moving out of agriculture and rural areas.

1.28 The decrease in rural informality was partly due to the fact that rural households shifted from agricultural employment to non-agricultural employment (mainly into the service sector). According to Dayioglu and Kirdar (2009) the share of household heads engaged in agricultural self-employment decreased from 41.3 percent in 2001 to 30.5 percent in 2006. This was accompanied by an important reduction in unpaid family work and an increase in wage employment. Informality rates among those working in agriculture remained very high but decreased slightly from 91 percent in 2001 to 86 percent in 2006. This may have occurred due to the fact that those who stayed in agriculture, at the margin, displayed higher productivity. According to Dayioglu and Kirdar (2009), the majority of individuals who migrated from rural to urban areas in the period of study (90 percent) had at most attained incomplete secondary education and most of them were engaged in low-productivity self-employment in agriculture (generally working as unpaid family members). On the other hand, Taimaz (2009) highlights important improvements in rural productivity in Turkey during the period of study. As such, less productive (i.e. more rudimentary) agricultural workers may have been more likely to migrate than those with higher productivity (and thus more likely to be formal).

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employed workers. It is still early to assess to what extent this may be reflecting the impact of recent reforms in the pension system.

**Figure 10 Informality Rates and Employment Composition by Employment Sector in Turkey [2001 – 2006]**

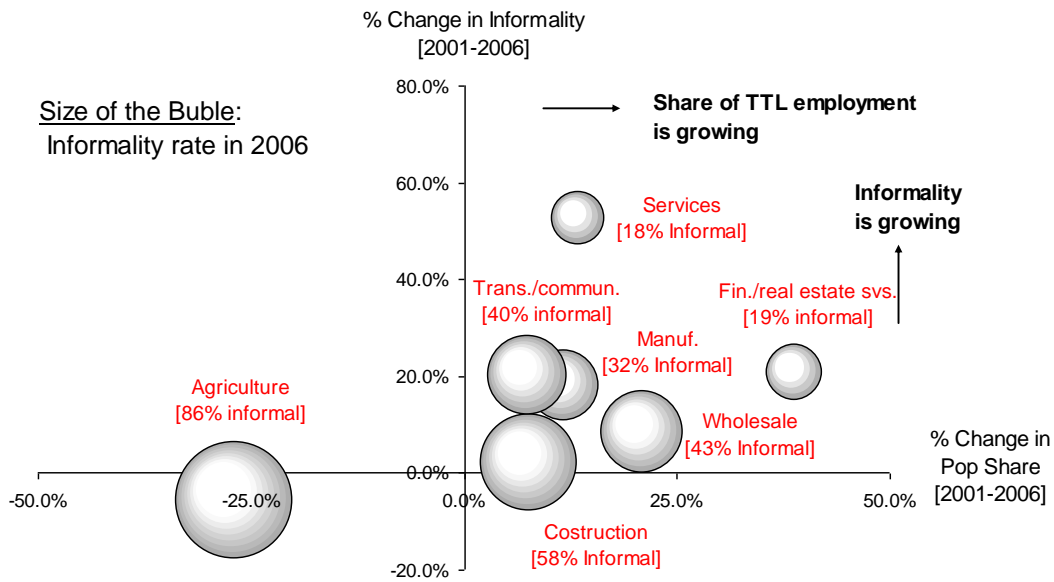
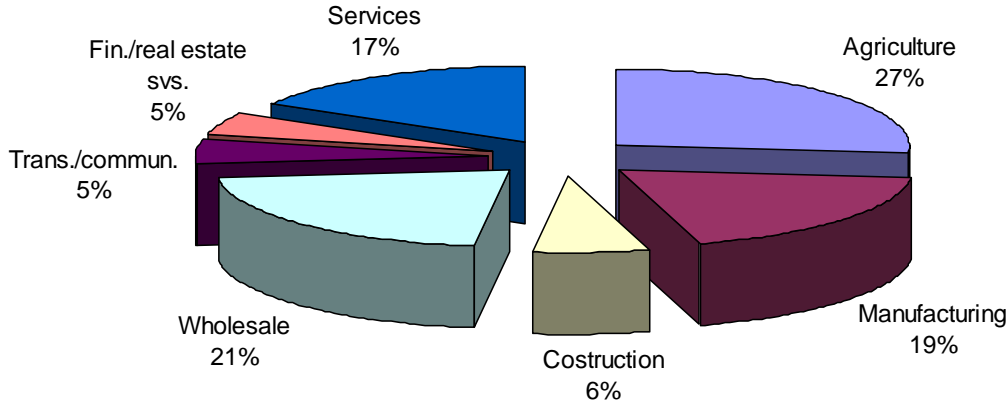


Source: World Bank using 2001-2006 LFS data.



**Figure 11 Dynamics of Informality and Employment by Employment Sector in Turkey [2001 – 2006]**

**Share of Employment by Industry in Turkey, 2006**



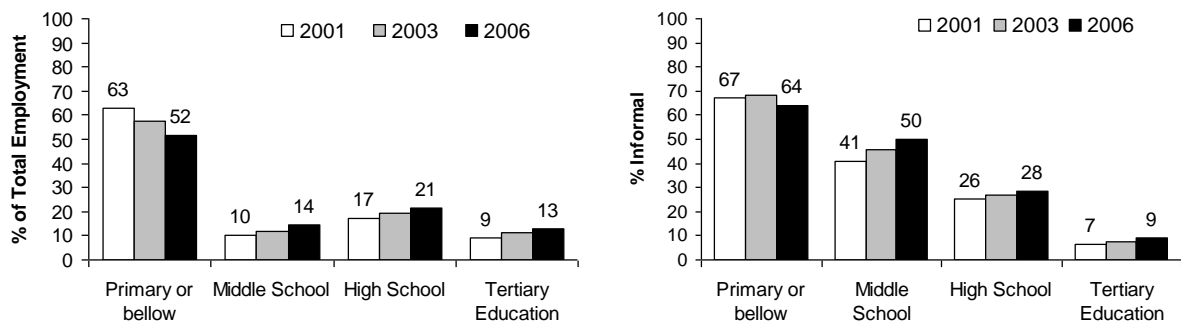
Source: World Bank using 2001-2006 LFS data. *Bubble graph:* The X Axis illustrates the percentage change in employment composition; the Y Axis, the percentage change in informality rates. The size of the Bubble illustrated the informality rate in 2006

**Education Level**

1.29 Improvements in informality mainly benefited unskilled labor, which still accounts for the majority of the employed population. The left panel of Figure 12 indicates the composition of employment in Turkey by educational attainment. Not surprisingly, informality rates are higher among individuals with lower education attainment and decrease as workers become more educated. Estimates for 2006 indicate that the majority of all individuals employed in Turkey (52 percent) have attained at most primary education. However, since Turkey is becoming a more educated country, the

share of overall employment with at most primary education decreased from 63 percent in 2001 to 52 percent in 2006. This coincided with an increase in the share of overall employment that attained secondary and tertiary education. Informality decreased among individuals with at most primary education, going from 67 percent in 2001 to 64 percent in 2007. This group (largely defined as unskilled workers) was the only group that benefited from improvements in informality during the period of study. This is consistent with the fact that informality only decreased in agriculture and in rural areas where the population is generally less educated than average. On the contrary, informality among semi-skilled workers (those who have attained middle and high school) increased during the period of study as well as informality among high-skilled workers (those who have attained tertiary education).

**Figure 12 Informality Rates and Employment Composition by Education in Turkey [2001 – 2006]**



Source: World Bank using 2001-2006 LFS data.

### Profession

1.30 The increase in informality trend among high-skilled workers can be better understood when broken down by profession. As described in Table 3, informality rates among officials, clerks, technicians, and professionals increased significantly between 2001 and 2006. All of these groups also experienced growth in their share of the total population. Within professions associated with lower skills (such as elementary occupations and operators) informality also increased but to a lesser extent. The only occupation that displayed a decrease in informality was agriculture/fishery workers, which confirms what other data demonstrated above.

**Table 3 Dynamics of Informality and Employment by Profession in Turkey [2001 – 2006]**

	2001		2006		% Change in Composition	% Change in Inf. Rates
	Pop. Share	% Informal	Pop. Share	% Informal		
Officials/managers	8.2	15.9	9.1	26.9	11.0	69.2
Professionals	5.9	5.1	6.7	6.6	13.6	29.4
Technicians	5.1	11.8	6.1	15.9	19.6	34.7
Clerks	4.6	9.8	6.1	15.8	32.6	61.2
Service workers/salesmen	9.2	43.1	11.6	45.1	26.1	4.6
Agriculture/fishery worker	34.3	91.5	21.5	85.8	-37.3	-6.2
Craft and trade worker	15.8	41.6	14.6	47.3	-7.6	13.7
Operators	8.2	29.1	10.7	32.2	30.5	10.7

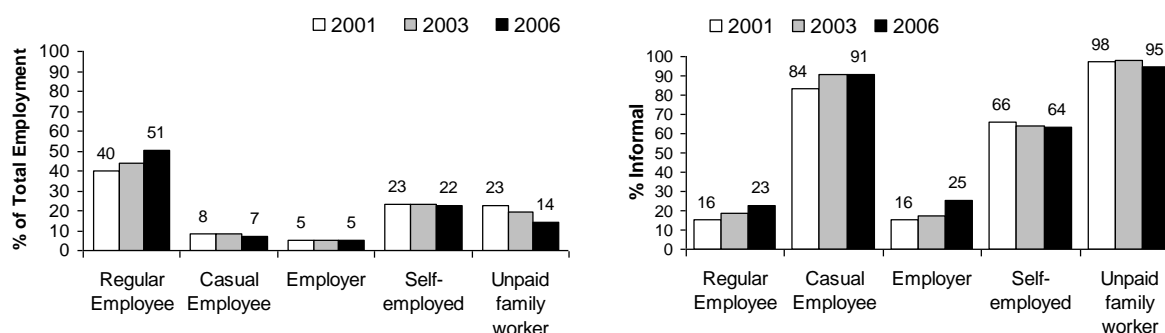
Elementary occupations	8.7	54.1	13.7	63.5	57.5	17.4
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Source: World Bank using 2001-2006 LFS data.

### Employment Status

1.31 Furthermore, improvements in informality have been associated with a decrease in unpaid work and a decrease in informality rates among self-employed individuals. As illustrated in Figure 13, there has been a rapid increase in the share of regular wage employment to total employment between 2001 and 2006 (from 40 to 51 percent) that has occurred hand-in-hand with a decrease in the share of unpaid employment to total employment (from 23 to 14 percent in the same time period). This behavior in the employment composition was likely a very important factor contributing to the decrease in informality between year 2001 and 2006, mainly because regular employment displays much lower informality rates than unpaid employment (Figure 13). However, informality rates among regular workers actually increased from 16 percent in 2001 to 23 percent in 2006. Informality rates also increased among employers and casual workers, and only decreased among the self-employed and the unpaid family worker.

**Figure 13 Informality Rates and Employment Composition by Employment Status in Turkey [2001 – 2006]**

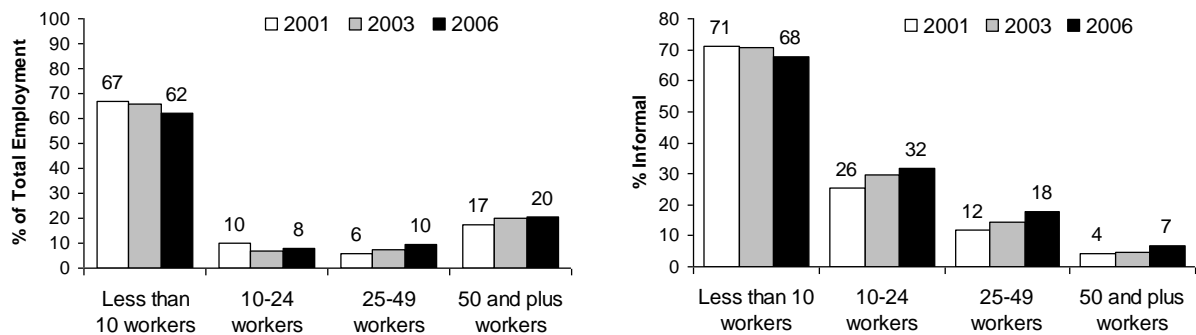


Source: World Bank using 2001-2006 LFS data.

### Firm Size

1.32 Only small-size firms displayed improvements in informality rates during the period of study. Most individuals in Turkey (6 out of every 10) work in firms with less than 10 employees. Individuals working in these micro-firms display the highest informality rates (of roughly 70 percent). However, the share of small firms in Turkey has been decreasing since 2001, a trend that likely contributed to the decrease in overall informality in the country. However, the share of informality among workers of medium and large firms actually increased and only small firms displayed a mild improvement in informality rates (Figure 14).

**Figure 14 Informality Rates and Employment Composition by Firm Size in Turkey [2001 – 2006]**



Source: World Bank using 2001-2006 LFS data.

### *Determinants of informality in Turkey*

1.33 Following the earlier discussion on different definitions and estimates of the size of informality in Turkey, this section will explore the potential determinants of informality in the country. The two perspectives on informality introduced earlier in this chapter, exclusion and exit, help us to conceptualize what the key drivers of informality may be. The exclusion perspective suggests that firms are forced into informality by factors outside of their control, such as burdensome levels of taxation and regulations. These factors can be characterized as “institutional” constraints to formality. On the other hand, some workers and firms, upon making some implicit or explicit assessment of the benefits and costs of formality, may choose to opt out of the formal sector. As emphasized by Loayza (2007), these more deliberate decisions may in turn be affected by “the structural characteristics of underdevelopment” in a particular country, such as educational achievement levels, production structure and demographic trends. These structural determinants of informality are also highlighted in the Turkish government’s analysis of determinants of informality in Turkey<sup>14</sup>. The report emphasizes the effect that factors such as the structure of the economy (size of the agricultural and services sector) and demographic trends such as high population growth and migration to urban areas has on informality trends in Turkey.

1.34 We begin this section with a broad description of some of the main features of the regulatory environment in Turkey. We then turn to a model that takes into account both institutional and structural factors as possible determinants of informality. This approach, based on Loayza (2009), uses aggregate indicators and it is applied in this chapter to assess broad determinants of informality in Turkey. We reinforce this analysis of the determinants of informality with firm level evidence drawn from Enterprise Survey results for Turkey. Finally, we discuss the evidence coming from labor force surveys. Together these analyses should help create a better understanding of what is driving informality in Turkey.

### *The regulatory environment in Turkey*

<sup>14</sup> 2008-2010 Action Plan of Strategy for Fight against the Informal Economy, mimeo.

1.35 Many aspects of the regulatory environment of a country can influence the decision of firms to stay in the informal sector or to adopt informal practices.<sup>15</sup> In what follows, we concentrate in 3 aspects that are deemed more relevant for a discussion of informality in Turkey: the tax system, labor regulation and costs of registry and permits.

Taxes

1.36 The complexity of the tax system and the level of the tax burden are among the aspects of the regulatory environment most associated with informal behavior. The causality often goes both ways: high tax burden leads to increased tax evasion that ends up shrinking the tax base and leading to higher nominal rates. Many developing countries find themselves in this type of a “bad equilibrium” outcome.

1.37 There is no shortage of complaints in the Turkish private sector related to taxes. The 2007 ICA for Turkey identifies high taxation rates as the main cause of informality, leading to losses in productivity, and employment. When asked as part of the Enterprise Survey what competitive advantages informal firms have over formal ones, the top two answers from firms were that “they do not pay VAT” and “they do not pay corporate tax and other taxes.” Results from a qualitative survey conducted for this study in 2008 among 50 firms found that most respondents believed tax rates to be too high. Small firms are especially critical of the rates, and believe they share an unfair burden of taxes, with many admitting they do not pay them in full.<sup>16</sup>

1.38 Survey results confirm the finding that tax rates are perceived as high, and suggest that decreases in rates could lead to better compliance. A survey with 1,000 firms conducted for this study asked specific questions on the predicted influence of a reduction in corporate or income taxes and value added taxes by half on government’s tax revenues. The majority of the respondents stated that a reduction of both corporate or income taxes and value added taxes in the sector would increase government’s revenues (72.8%, 70.8% respectively). However, when asked to characterize how widespread common practices of tax evasion are in their sector, the responses suggest that tax evasion is not widespread (see table 4 below). Respondents used a scale from one to ten to evaluate the extent of the given practice (1 = not widespread at all, 10 = very widespread). Out of eleven practices of tax evasion, the most widespread practice was declaring taxes lower than the actual level (mean= 4.56), followed by buying (mean= 3.62) and selling (mean= 3.57) goods and services without receipt, and writing receipts that are lower than the actual value (mean= 3.51).

**Table 4 Firms’ Perceptions on Practices about taxes**

How widespread are_.....	N	Minimum	Maximum	Mean	Std. Deviation
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<sup>15</sup> The World Bank’s Investment Climate Assessment (ICA) and the Doing Business data, among others, provide insights into what administrative processes are likely to push firms towards informality.

<sup>16</sup> One small entrepreneur, a glassware shop owner, stated “Who is paying the taxes? No one can give away half of their income for taxes and survive!”

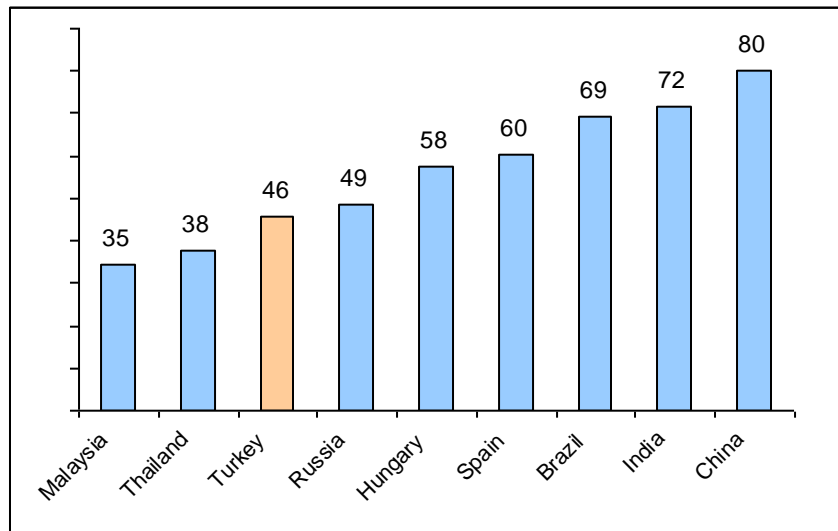
Declaring taxes lower	1030	1	10	4.56	3.073
Using fake invoice	1025	1	10	2.73	2.445
Buying goods and services without receipts	1033	1	10	3.62	2.872
Selling goods and services without receipts	1033	1	10	3.57	2.885
Writing receipts lower than the actual value	1031	1	10	3.51	2.819
Using unregistered electricity-water	1031	1	10	2.27	2.175
Imports with receipts lower than the actual value	976	1	10	2.48	2.307
Imports without receipts	971	1	10	2.26	2.152
Exports without receipts	967	1	10	2.26	2.152
Export with receipts higher than the actual value and claiming VAT returns	963	1	10	2.58	2.439
Exports with double receipts	908	1	10	2.19	2.147
Valid N (listwise)	898				

1.39 Despite this widespread concern, tax rates in Turkey are not particularly high, especially when one compares Turkey's tax rates with other European countries. Payroll taxes are indeed high in Turkey (Davutyan 2007), but overall taxation stands at levels that are comparable to comparator countries. According to the 2009 Doing Business results, Turkey's total tax rate of 45.5 percent of profits is lower than most comparator countries.<sup>17</sup> In 2005, this rate stood at 53 percent. This assessment is corroborated by other sources: the overall tax burden in Turkey as measured by the IMF is also not particularly high compared with Turkey's competitors. This suggests that the problem may lie more on the complexity of the tax system, with many loopholes and exemptions still in place that favor evasion (see the paper on tax policy and administration for a more complete discussion about the tax system in Turkey).

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<sup>17</sup> Total tax rate includes all taxes and mandatory contributions a firm must make, accounting for deductions and exemptions for a typical firm.

**Figure 15 Total Tax Rate (% of Profit)**

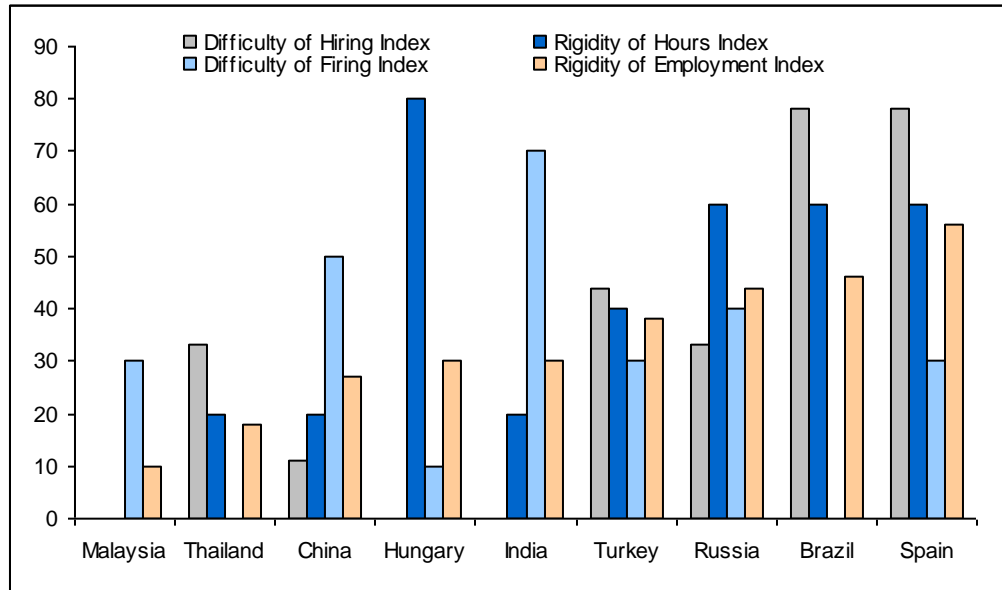


Source: Doing Business 2009

### Labor Regulation

1.40 Overly rigid or costly labor regulations also discourage firms from fully complying with rules. As stated in an earlier section, firms frequently underreport their workforce to avoid taxation and regulations. In the 2007 ICA for Turkey, firms reported that “not obeying work and labor legislations and social security regulations” was a top reason that informal firms have a competitive advantage over formal ones. The Doing Business indicators in Figure 16 Employing Workers compare Turkey’s labor regulations to that of comparator countries. The higher the number of the indices, the stricter the rules are. For example, a high difficulty of hiring index means that contract conditions are inflexible and minimum wage requirements are high. The rigidity of employment index takes an average of the other three indices and shows that Turkey’s employment rules are slightly more rigid than the average of its comparator countries.

**Figure 16 Employing Workers**



Source: Doing Business 2009

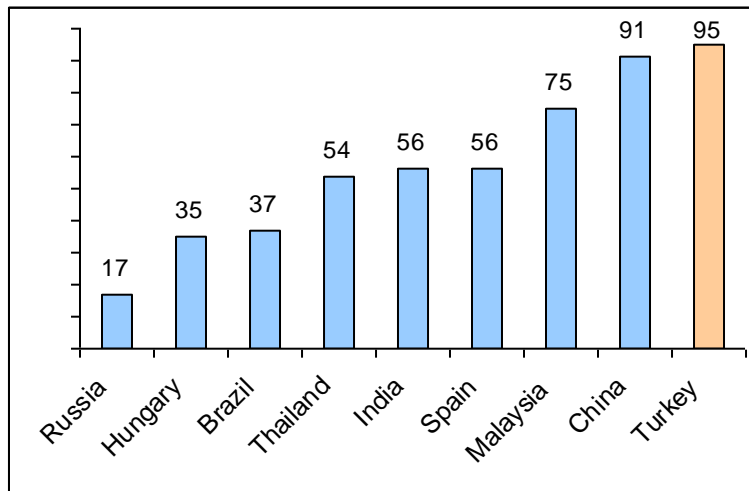
1.41 The ICA confirms that Turkey’s employment protection legislation is restrictive, particularly in regards to severance payments and prevention of flexible contracting. Severance payments in Turkey are especially high as can be seen in Figure 17 Firing Costs (in weeks of wages): they are higher than all of the comparator countries<sup>18</sup>. Many enterprises also find the costs of registering employees with insurance or social security prohibitive. In the qualitative survey, only half of the sample - 25 firms - said they were able to provide insurance for all of their employees. Three firms did not register any workers while the rest of the firms registered a portion. Workers frequently only have the choice of working without insurance or not working at all; this is particularly true for less-skilled workers. Most employers do not fully insure their workers because they claim they cannot afford to.<sup>19</sup>

<sup>18</sup> Firing costs are not included in the Difficulty of Firing Index presented in Figure 16.

<sup>19</sup> As one entrepreneur puts it, “Under these circumstances and considering the tax levels, do you think it is possible to pay [the social security contribution]? Because of these, everyone evades as far as they can.”



**Figure 17 Firing Costs (in weeks of wages)**



Source: Doing Business 2009

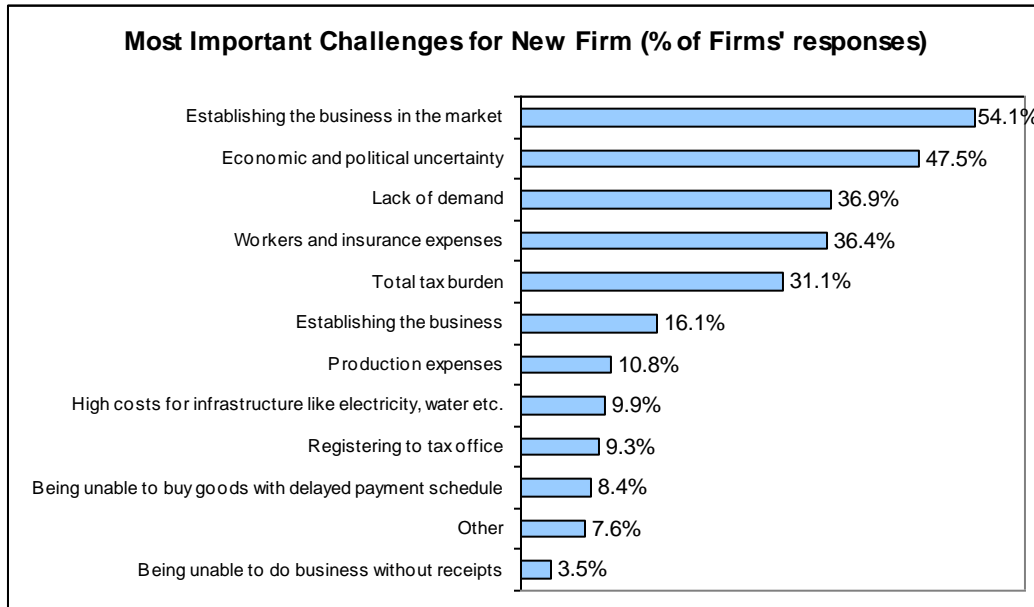
### Registration

1.42 Contrary to what is found in many developing countries, business registration does not seem to be an obstacle to formality. Only a small fraction of firms sampled by the different surveys was not registered at the time of sampling or was not registered when they began operating. The informality Firm Survey results show that only 5% of sampled firms did not register before they began operations. The BEEPS 2008 results show that 94% of firms were formally registered when they started their operations. Finally, only 3 out of 50 firms interviewed for the qualitative survey were not formally registered. Moreover, most firms do not perceive registration as a major challenge for a newly established business. It ranks low in a list of challenges that firms face: only 9.3% thought of it as a major challenge, well below other issues such as being able to establish the business in the market (54% of responses), political and economic uncertainty (47%), and wages and tax burden (36% and 31% respectively). As a consequence, rates of entry and exit for firms in Turkey are robust, when compared to other emerging economies<sup>20</sup>.

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<sup>20</sup> Source: ICA Turkey 2007

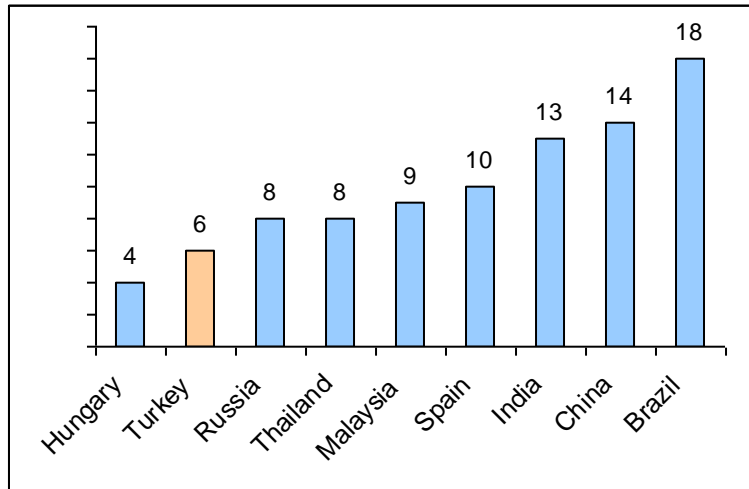
Figure 18



Source: Firm Informality Survey (2008)

1.43 This is corroborated by data from the Doing Business and ICA reports indicating that the burdens of starting a business are not particularly high. Recent reform efforts during this decade have significantly streamlined and facilitated the registration procedure, decreasing both the time and number of steps required to register a business. A typical company in Istanbul nowadays will need 6 days and 6 steps in order to register their business. The number of procedures is much lower than most of its comparator countries (see Figure 19). On the other hand, while the costs to register a business have dropped considerably from 28 percent in 2005 to 15 percent in 2008, they remain high in comparison to other countries. This fact is again corroborated by the qualitative survey results: while most firms are registered, many complain about the high costs of doing so. Moreover although registration of a business in Turkey may be relatively efficient, if costly, the licensing regime may benefit from reforms. According to the ICA 1007, firms in Turkey see licensing as overly burdensome. In 2005, a typical firm would need approximately 66 days and US \$319 to obtain the necessary licenses to operate. Registration fees are also high and not transparent. Among the various fees paid to notaries, the Chambers, and the municipalities, it is unclear what guidelines determine the fees and what the fees are financing.

**Figure 19 Number of Procedures Required to Start a Business**



Source: Doing Business 2009

1.44 Classifying firms as formal or informal based on registration status therefore may not be very useful in the Turkish context. Most firms are registered, and consider registration, while “an expensive gate-keeping activity”, necessary to “enter and sustain the economic activity”.<sup>21</sup> Since registration does not seem to be a significant barrier, concerns over the exclusion from government services and benefits that registration may entail (such as training programs for SMEs, financing and legal recourse) should not feature prominently in the analysis. Instead, informality in Turkey seems to manifest itself more strongly in the underreporting of sales, in the underreporting of both number of employees and wages. Informality is to be found in the interactions of economic actors: firms interacting with employees and firms interacting with clients and suppliers. What are the potential consequences of the informal nature of these relationships? Why are these relationships so informal in Turkey? These are questions that we attempt to address in the next sections.

#### *Assessing the impacts of regulation, governance and structural factors*

1.45 From a general description of the regulatory environment in Turkey we now turn to the relation between features of this environment and informality. There is considerable evidence linking the incidence of informality with the institutional characteristics associated with the regulatory environment, the prevalence of the rule of law and the quality of government in general. In an attempt to include both the exclusion and exit perspectives of informality mentioned earlier in this chapter, Loayza (2009) develops a model that takes into account both institutional and structural factors as possible determinants of informality. Loayza’s model is used to estimate how institutional and structural factors contribute to explaining differences in informality levels between countries. We do such an exercise for Turkey, and we compare it to

<sup>21</sup> In the Turkish context, opening up a firm, instead of operating a business personally, allows for significant layers of *legal insularity*. If bad checks are written, for instance, the firm, not the individual, is black-listed. In addition, the penalties are considerably lower for firms in comparison to the penalties given to the individual bad checks.

informality levels in two comparator countries: the United States, representing a highly developed and industrialized OECD country, and Chile, a fast-growing developing economy where levels of informality are relatively low.

1.46 The main features of the model are reproduced in Table 5 where the four proposed determinants of informality (explanatory variables) representing institutional and structural factors are presented. These variables are: i) an index on the prevalence of law and order – obtained from The International Country Risk Guide – to proxy for the quality of governance and institutions; (ii) an index of business regulatory freedom – taken from the Fraser Foundation’s Economic Freedom of the World Report – to proxy for the quantity of regulations imposed on businesses; (iii) the average years of secondary schooling of the adult population – taken from Barro and Lee (2001) – to control for the human capital of the labor force; and (iv) an index of socio-demographic factors – constructed from the World Bank’s World Development Indicators, as well as ILO and UN data– which includes the share of agriculture in GDP, the share of youth in the population and the share of rural population.<sup>22</sup> Three different measures of informality are regressed against these explanatory variables. It is important to highlight the statistical and economic significance of the four coefficients for each explanatory variable, their expected signs, as well as the large share of cross-country informality variation that is explained by the model. Informality decreases when law and order, business regulatory freedom, or schooling achievement rise, as well as when the share of agriculture and the demographic pressures from youth and rural populations decline.

**Table 5 Cross-Country Determinants of Informality**

	Informality measures		
	Schneider Shadow Economy Index (% of GDP) [1]	Heritage Foundation Informal Market Index (1-5: higher, more) [2]	Non-contributor to Pension Scheme (% of labor force) [3]
Law and order (index from ICRG, range 0-6: higher, better; country average)	-3.2360** -2.57	-0.0969* -1.76	-2.9764* -1.67
Business Regulatory Freedom (index from Economic Freedom of the World by The Fraser Institute, range 0-10: higher, less regulated; country average)	-2.0074* -1.80	-0.5333*** -9.95	-5.8675** -2.28
Average Years of Secondary Schooling (from Barro and Lee (2001); country average)	-1.9684* -1.70	-0.1152** -2.00	-5.8114*** -3.27
Sociodemographic Factors (simple average of share of youth (aged	3.8438** 2.00	0.5027*** 4.99	21.6130*** 7.31

<sup>22</sup> This index captures the production structure and demographic composition of a country, and is expected to be positively related to informality for the following reasons. A production structure where agriculture is the prevalent economic activity may induce informality by making legal protection and formal contract enforcement less relevant and valuable for a larger sector of the economy. Second, larger shares of youth or rural populations are likely to make government monitoring and service provision more difficult and expensive.

10-24) population, share of rural population, and share of agriculture in GDP; country average)

Constant	60.3429***	6.6326***	113.3110***
	10.48	31.72	11.40
No. of observations	84	86	70
R-squared	0.57	0.89	0.88

Notes: (1) t-statistics are presented below the corresponding coefficients. (4) \*, \*\* and \*\*\* denote significance at the 10 percent, 5 percent and 1 percent levels, respectively. See Loayza (2009) for further information on countries included in each regression, definitions and sources of variables used to compute country averages of informality measures. Source: Loayza (2009).

**Table 6 Measures of Informality: Actual<sup>23</sup> and Model Prediction**

	<i>Schneider Shadow Economy Index (% of GDP)</i>	<i>Heritage Foundation Informal Market Index</i>	<i>Non-contributor to Pension Scheme (% of labor force)</i>
<b>Turkey</b>			
Actual	33.75	3.4	59
Predicted	33.20259	3.223659	59.29002
Predicted / Actual	98%	95%	100%
<b>USA</b>			
Actual	8.549999	1.4	7.5
Predicted	14.98393	1.229352	4.476724
Predicted / Actual	175%	88%	60%
<b>Chile</b>			
Actual	20.6	1.6	39.06667
Predicted	23.88025	1.865118	31.02799
Predicted / Actual	116%	117%	79%

Source: Authors' own calculations, based on Loayza (2009).

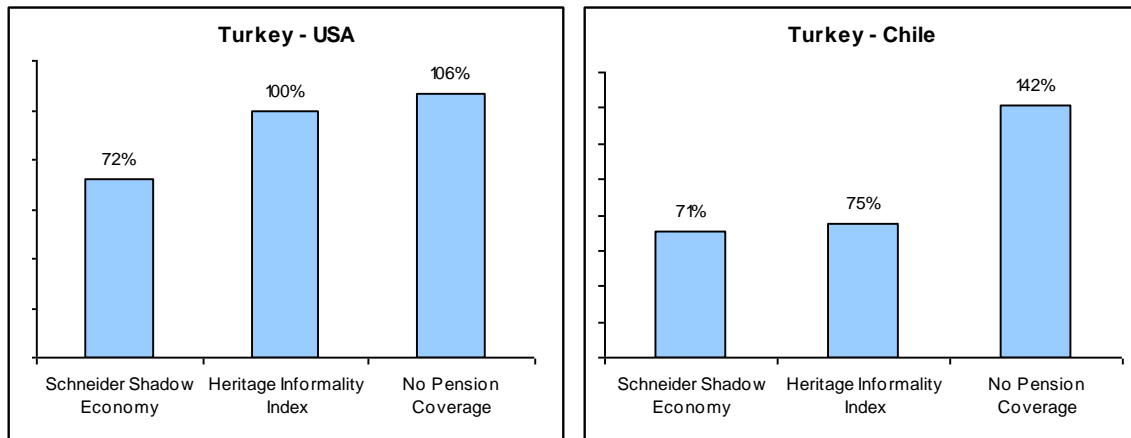
1.47 The coefficients for each explanatory variable derived from the cross country regressions can be used to estimate the level of informality in Turkey. Comparing these predictions with the actual values of informality for Turkey, Table 6 above shows that the model predicts the various measures of informality quite well, explaining between 95% and 100% of the actual indicators.<sup>24</sup>

<sup>23</sup> Actual numbers of informality refer to average numbers. Therefore Schneider's Shadow Economy Index is an average for 2001-2002, the Heritage Foundation Informal Market index is based on 2000-2005 averages, the self-employment figures are averages for 1999-2006 ILO data, and the Non-contributor to a Pension Scheme figure is an average of 1993-2005 using World Development Indicators. See Loayza (2009) Appendix 2 for further information.

<sup>24</sup> Actually, the model predicts quite well the levels of informality in most countries; there is only a minority of countries for which the residual is relatively large and significantly different from zero. This seems to suggest that there is low variance in the coefficients across countries.

1.48 We next explore the relative importance of each one of the independent variables in explaining the differences in predicted informality between Turkey and the United States and between Turkey and Chile. We first calculate the predicted and actual differences between two countries for each one of the informality measures. Figure 20 shows that for the Turkey-United States comparison, the model gives fairly accurate predictions for the differences in informality levels using both the Heritage Foundation Index and the indicator of the percentage of labor force without pension coverage. When informality is measured by Schneider’s Shadow Economy Index, the model considerably under predicts the level of informality. For the Turkey-Chile comparison, the model gives more accurate predictions for the differences in informality levels using the Heritage Foundation Index and Schneider’s Shadow Economy Index than it does for informality as measured by percentage of labor force without pension coverage, where the model over predicts the actual difference. With these under and over predictions in mind, this model can then be used to assess the relative importance of each one of the independent variables in explaining the differences in predicted informality between Turkey and the United States and Turkey and Chile. By multiplying the estimated coefficients by the differences across countries in the averages of the corresponding variables, it is possible to decompose cross-country informality differences in fractions attributable to selected business environment factors.

**Figure 20 Percentage of actual differences in informality levels predicted by model**

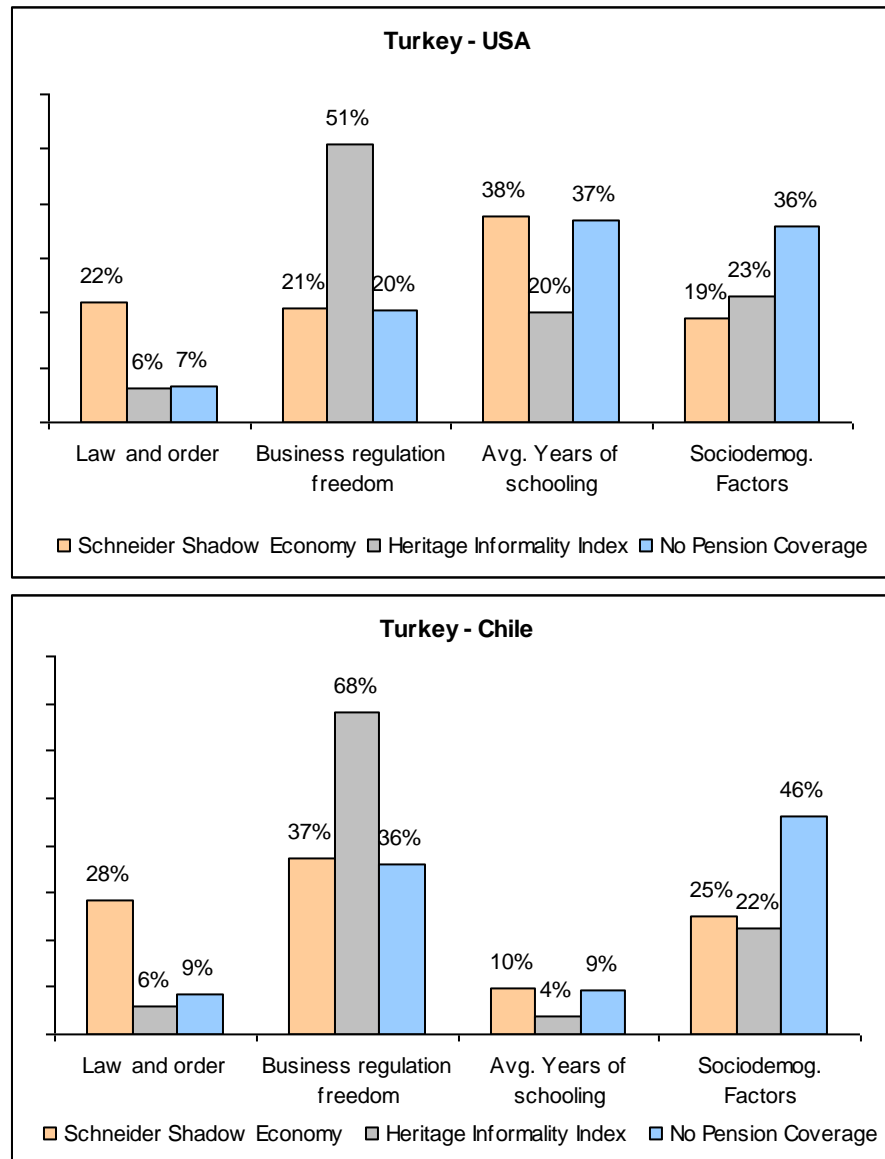


Source: Authors’ own calculations, based on Loayza (2009).

1.49 Figure 21 show that both structural factors, especially educational attainment, and institutional factors, particularly the regulatory burden indicator, do play a significant role in explaining the differences in informality levels between Turkey and the United States. Education explains between 20 and 38% of the differences in informality between Turkey and the U.S, while the proxy for law and order explain much less, between 6 and 22%, depending on the index of informality used. The regulatory framework shows more variance according to the different indexes, explaining as much as 51% of the differences when the Heritage Informality Index is used. The comparison with Chile shows that the regulatory burden indicator accounts for the majority of the difference seen in predicted values of informality between the two countries. Given the relatively more similar education attainment levels in the two countries, it is not surprising to see that education does not explain much of the difference in informality between Turkey and Chile. On the

other hand, socio-demographic factors are important in explaining part of that difference, particularly when informality is measured by the percentage of the workforce without pension coverage. These results hint at the fact that reevaluating the country's regulatory framework and how it affects businesses operations will help to combat informality in Turkey, but that policies addressing more structural factors, like overall levels of education among its workforce, may also be required.<sup>25</sup>

**Figure 21 Contribution to Differences in Predicted Informality**



Source: Authors' own calculations, based on Loayza (2009).

### *Firm's Perception on Informality and the Business Environment*

<sup>25</sup> In similar exercises prepared for Latin American countries such as Colombia and Peru, the institutional variables explain more than half of the differences regardless of the indicator used.

1.50 The Enterprise Survey (2005) conducted by the World Bank in Turkey provides another source of information about drivers of informality in Turkey. We use firm's perceptions on the degree of tax evasion and employment underreporting as our measures of informality<sup>26</sup>. We attempt to correlate these variables to a number of business environment indicators, controlling for a variety of firm level characteristics. Table 7 presents the main results for the simple OLS regression run to compute correlations between the variables of interest<sup>27</sup>. Not surprisingly, firms that indicate tax rates as either a major or a very severe obstacle to business are also more likely to perceive greater tax evasion in their own sectors. On the other hand, firms that generally have a positive impression about the rule of law in Turkey are less likely to perceive pervasive amounts of sales or employment underreporting in their industries. Firms that report that bribes are needed to "get things done" (our indicator of corruption) do perceive greater tax evasion and employment underreporting in their sectors. Finally, Table 7 shows that the perception of employment underreporting is more acute for small firms when compared to medium and large firms. Although no causality can be implied from these correlation exercises, they constitute additional evidence on the relevance of the business environment for explaining levels of firm informality in Turkey.

**Table 7 Perceptions of Tax Evasion, Employment Underreporting and Business Environment Indicators**

	<b>% Unreported Sales</b>	<b>% Unreported Employment</b>
Unfavorable Perception of Corruption	<b>5.516*</b> [3.320]	<b>11.197***</b> [2.857]
Firm Has Positive View on Rule of Law	<b>-6.988**</b> [3.123]	<b>-5.713**</b> [2.606]
Bureaucracy Indicator	0.132 [0.125]	0.156 [0.099]
Tax Rate as Constraint	<b>8.826**</b> [3.688]	4.268 [3.120]
Labor Regulation as Constraint		0.586 [2.734]
Medium	1.159 [3.679]	<b>-6.925**</b> [3.286]
Large	-1.902 [4.323]	<b>-10.964***</b> [3.693]
Observations	508	512

Robust standard errors in brackets

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

<sup>26</sup> Strictly speaking this is not a direct measure of tax evasion (and thus informality), but it is a measure of how pervasive of an issue firms may think this is.

The exact questions that firms are asked to respond to are the following: "Recognizing the difficulties many enterprises face in fully complying with taxes and regulations, what percentage of total sales would you estimate the typical establishment (one just like yours) in your sector reports for tax purposes?" for tax underreporting and "Recognizing the difficulties many enterprises face in fully complying with labor regulations, what do you think is the percentage of total workforce that is reported for purposes of payroll taxes and labor regulation in a typical establishment in your sector?" for employment underreporting.

<sup>27</sup> For complete results see Annex XX.



Sector and regional controls included. Omitted variables: Marmara (region=1), small firms, food and beverages sector

### *Who Competes Against Informal Firms?*

1.51 A final exercise is presented that also uses data from the Enterprise Survey relating firm's own response to whether they compete with informal businesses and some basic firm characteristics. A simple differential probit regression is used to model this relationship and the results are presented in Table 8 below. A basic profile emerges of the kind of firm that is more likely to face informal competition. Foreign ownership, firm size and manufacturing sector all appear to be highly and significantly correlated to likelihood of competing against informal firms. Specifically, foreign ownership decreases the likelihood that a firm will compete with informal businesses by about 25 percentage points. Likewise, firms in the machinery sector tend to be less likely to face competition from informal firms when compared to firms in the food and beverage sectors. A possible explanation for this is that the machinery sector is more capital intensive than the food and beverage sector and thus requires higher levels of investments that are more likely to be available for formal, registered firms. Medium and large firms are also less likely to face informal competition, although the negative relationship for large firms lacks statistical significance.

1.52 To account for structural factors that could also explain an increased likelihood of competing in markets where informality is more prevalent, two variables that attempt to capture the levels of education of the firm's manager and workforce are included. Indeed we find that firms whose manager has at least some level of secondary education are about 9 percentage points less likely to compete with informal firms, when compared to firms with less educated managers. Firms that have higher levels of education among its workforce are also less likely to compete with informal businesses.

1.53 Finally it is important to note that variables that a priori were thought likely to have a negative correlation with informal competition (such as location in a special economic zone, exporter status or supplier to large or foreign clients) do not show a discernible or significant relationship to informal competition.

**Table 8 Competing Against Informal Businesses**

	Firm Competes Against Informal Businesses	Firm Competes Against Informal Businesses	Firm Competes Against Informal Businesses
	[1]	[2]	[3]
Labor Productivity ( <i>Value added per worker</i> )	<b>-0.000*</b> [0.000]	0 [0.000]	<b>-0.000*</b> [0.000]
Large or Foreign Client Dummy	0.015 [0.048]	0.008 [0.048]	0.015 [0.048]
Direct exporter (10%+)	0.066 [0.049]	0.06 [0.049]	0.063 [0.049]
Foreign owned (10%+)	<b>-0.251*</b> [0.132]	<b>-0.232*</b> [0.140]	-0.229 [0.140]

	Firm Competes Against Informal Businesses	Firm Competes Against Informal Businesses	Firm Competes Against Informal Businesses
Manager has at least some secondary education	<b>-0.088*</b> [0.050]		-0.061 [0.052]
Percentage Workforce with at least high school completed		<b>-0.002**</b> [0.001]	<b>-0.002**</b> [0.001]
Firm Located in Some Type of Industrial Zone	-0.041 [0.045]	-0.045 [0.045]	-0.044 [0.045]
Medium	<b>-0.108*</b> [0.056]	<b>-0.126**</b> [0.055]	<b>-0.111**</b> [0.056]
Large	-0.071 [0.064]	-0.076 [0.063]	-0.056 [0.065]
Ege	0.098 [0.064]	0.094 [0.065]	0.098 [0.065]
Ic Anadolu	-0.028 [0.063]	-0.001 [0.064]	-0.005 [0.064]
Akdeniz	-0.014 [0.065]	0.003 [0.066]	0.001 [0.066]
Karadeniz/Dogu Anadolu	0.05 [0.086]	0.05 [0.086]	0.052 [0.086]
Textiles and wearing apparel	-0.037 [0.073]	-0.039 [0.073]	-0.031 [0.073]
Chemicals and related products	0.027 [0.075]	0.041 [0.076]	0.046 [0.076]
Non-metallic mineral products	0.036 [0.090]	0.016 [0.092]	0.02 [0.092]
Fabricated Metal products	-0.083 [0.074]	-0.066 [0.074]	-0.058 [0.074]
Machinery, except electrical	<b>-0.245***</b> [0.071]	<b>-0.235***</b> [0.072]	<b>-0.230***</b> [0.073]
Electrical machinery	<b>-0.191**</b> [0.089]	-0.149 [0.094]	-0.146 [0.095]
Transport equipment	-0.106 [0.090]	-0.096 [0.091]	-0.1 [0.091]
Observations	600	596	595

Robust standard errors in brackets

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

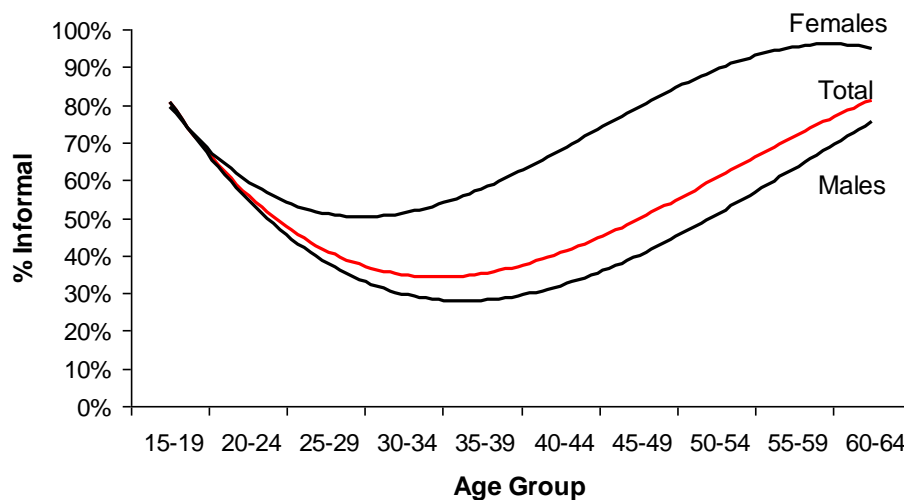
Omitted variables: Marmara, small firms, food and beverages sector

### *Evidence from Households surveys*<sup>28</sup>

<sup>28</sup> This section uses data from the 2006 LFS in order to quantify the micro-determinants of informality in Turkey.

1.54 Age and gender are important determinants for informality. As indicated in Figure 22, there are interesting patterns of informality in Turkey by age and gender. First, informality rates are rather high among young individuals (15 to 19) and decreases rapidly as age increases. Informality reaches its minimum point between ages 25 to 29 for women and 35 to 39 for men, after which it increases until retirement age. This is probably due to the fact that individuals in Turkey choose to retire early. The low age of retirement is caused by the relatively high pension replacement rates. Also, pension benefits are not reduced for workers who retire younger than the official retirement age. Furthermore, retirees do not pay taxes on their pension and are entitled to full health insurance, without having to pay contributions (Leibfritz, 2009). Another interesting feature of Figure 22 is that, for most age groups, informality among female workers is higher than among male workers, especially among adult groups. This is partly due to the fact that women tend to work in agriculture and display lower levels of education than men (Dayioglu, 2009). Nevertheless, controlling for other characteristics (such as age, education, and occupation), male workers are expected to have informality rates that are 10 percent lower than those of their female counterparts.

**Figure 22 Informality Rates by age group and gender [Turkey, 2006]**



Source: World Bank using 2006 LFS data.

1.55 Controlling for other characteristics, education attainment does not seem to play such a higher role in the probability of working in the informal sector as one would expect. Table 9 presents the conditional probability (as estimated by a basic probit regression model) of being employed in the informal sector for individuals between 15 and 64 years of age. As in any probit model, the conditional probability of a given characteristic is evaluated at the mean of the characteristic's distribution and interpreted relative to an omitted variable. Regression estimates indicate that – controlling for other characteristics – higher levels of education attainment are associated with lower levels of informality. However, the magnitude of the effect is rather low. Workers who have attained university and high-school education are associated with only an 11 to 13 percent lower probability to hold an informal employment as compared to an otherwise similar worker who attained at most primary education. The positive (but weak)

association between higher education attainment and lower informality is even less important among male workers and among workers in the agriculture sector.

1.56 Workers employed in large firms have a 35 to 40 percent lower probability to work informally that otherwise similar workers employed in small firms. Estimates in Table 9 indicate that a negative (and rather large) association between firm size and the likelihood of holding an informal job. In particular, estimates indicate that workers in middle-size (those between 10 and 50 employees) and large-size firms (those with more than 50 employees) are associated with 20 to 40 percent lower likelihood to hold and informal job than otherwise similar workers employed in small-size firms (those with less than 10 individuals). This result holds for men and women as well for firms in the agriculture and non-agriculture sector. This is a quite important finding given than the majority of all workers in Turkey (6 out of every 10) work in small-size firms. Thus, reducing the constraints small firms face to enter the formal sector (such as complicated registration procedures, high tax rates, and high social security contributions) is likely to have an important and favorable impact in worker's informality.

1.57 Regular employees and firm owners are associated with a lower probability of holding an informal job as compared to casual employees, self-employed, and unpaid family members. Estimates in Table 9 indicate that casual and unpaid employees are 20 to 40 percent more likely to hold informal jobs as compared to otherwise similar workers who are employed as regular employees. This result holds for male and female workers as well as for workers employed in agricultural and non-agricultural activities. Self-employed individuals display an 8 percent higher likelihood to hold informal job vs. similar workers employed as regular employees. The aforementioned effect is higher among self-employed women, who display an 18 percent higher probability to be informal than women who are regular employees. On the contrary, employers are generally associated with a 6 to 10 percent lower probability of being informal as compared to regular employees.

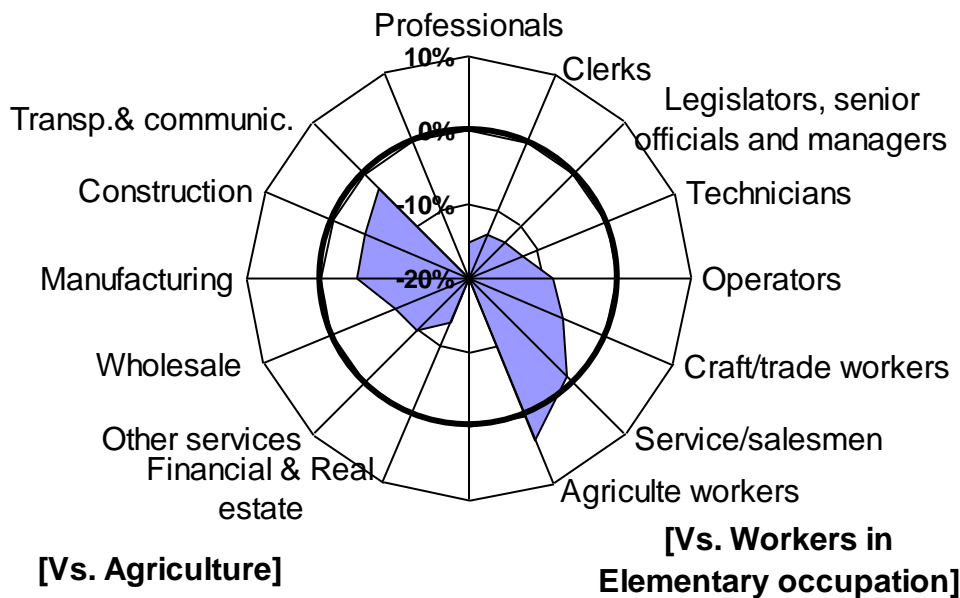
**Table 9 Marginal Change in the Probability of Working in the Informal Sector.**

<i>Dependent Variable: Employed in the informal sector.</i>	<i>All</i>	<i>Male</i>	<i>Female</i>	<i>Agriculture</i>	<i>Non agriculture</i>
Male	-9.4%			-13.4%	-8.1%
Are you literate?	-8.4%	-16.5%	-2.1%	-5.7%	-18.0%
<b>Education</b>					
Middle school	-4.1%	-4.0%	-4.8%	-2.6%	-4.1%
High School	-11.2%	-10.4%	-14.3%	-3.1%	-12.0%
Tertiary	-12.3%	-9.9%	-17.8%	N.S.	-13.3%
<b>Firm Size</b>					
10-24 workers	-19.1%	-18.5%	-18.0%	-8.8%	-19.9%
25-49 workers	-27.4%	-26.3%	-27.7%	-19.4%	-27.4%
50 or more workers	-36.5%	-34.9%	-38.7%	-41.0%	-35.9%
<b>Employment Status</b>					
Casual Employee	37.8%	39.2%	29.4%	33.0%	38.1%
Employer	-9.4%	-10.0%	-6.4%	5.9%	-12.0%
Self-employed	8.4%	5.9%	18.2%	12.0%	6.0%
Unpaid family worker	22.8%	23.9%	21.3%	21.8%	26.9%

Source: World Bank using 2006 LFS data. N.S: Not Significant. Underlined coefficients are significant at a 10 percent confidence level. All other coefficients are significant at a 5 percent confidence level. Omitted categories: Age group (15 to 24); Education (primary or bellow); Firm size (less than 10 workers); Employment Status (regular employee).

1.58 Occupation is an important determinant of informality. Figure 23 illustrates the conditional probability of holding an informal job according to the worker’s sector of employment and occupation. The bold circle represents the “zero” effect line. Characteristics associated with a higher (lower) probability of working in the informal sector are plotted above (below) the “zero” effect line. Estimates indicate that workers in agriculture and in elementary occupations (i.e. blue collar) display a higher probability of working informally as compared to workers in other industries and professions. In relation to occupation, estimates indicate that professionals, technicians, and clerks are 12 to 15 percent less likely to work informally than otherwise similar workers in elementary occupations. Operators, salesmen, and craft workers are 2 to 9 percent less likely to work informally as compared to workers in elementary occupations. In relation to employment sector, estimates indicate that workers in the retail and service sectors display a 9 to 13 percent lower probability of working informally than workers in the agriculture sector. Finally, estimates indicate that workers in the construction, manufacturing and transport sectors are 2 to 5 percent less likely to work informally than workers in the agriculture sector.

**Figure 23 Marginal effect in the probability of working in the informal sector according to sector and occupation**



Source: World Bank using 2006 LFS data.

### *Consequences of firm informality*

1.59 From a theoretical point of view, there are several potential mechanisms through which informality can have negative effects on firm productivity, curtailing the prospects of economic growth. Many potential costs have been put forward in the literature both

from the economic efficiency and from the public choice point of view. For instance, Loayza (1996, 2007) and the United Kingdom National Audit Office (2008), among others, argue that through tax evasion informal firms pose a “free rider” problem because they congest public goods that are provided for by tax contributions from formal firms and workers without contributing to the resources necessary to maintain and expand provision of these public goods.

1.60 Another important potential cost often cited in the literature emphasizes efficiency considerations. If the large majority of informal firms stay very small, it is possible that they never reach an efficient scale of production (De Soto 1969, Mckinsey 2006). Informality is associated with the presence of very small firms with limited access to medium- and long-term finance or to the rapidly expanding global market, and who therefore cannot achieve their full potential in terms of productivity or competitiveness.

1.61 As noted in Perry et al. (2007) there is one important caveat to consider, namely that the size restriction may be less important in the services sector, where there may be less room for exploiting economies of scale (Lewis 2004) and where there is a massive participation of informal labor. As a result of their small scale, informal firms are also less motivated to use technological innovation, one of the key drivers of productivity. Low levels of innovation and technology absorption may also emerge as consequence of the absence of focus on longer term relationship with stakeholders that characterize the informal sector. In the absence of formal labor contracts, for instance, informal firms usually maintain frail relations with their employees, restraining mutual incentives to increase human capital and hence productivity.

1.62 Unfair competition is another mechanism through which informality can affect growth, preventing a more efficient resource allocation. Perry et al. (2007) point out that firms that are insufficiently competitive and in other circumstances would be forced to withdraw from the market can remain active in the informal sector. This outcome slows down the flow of human and capital resources to more dynamic and productive sectors, triggering a low productivity trap. As noted in Oviedo (2008), though, arguments based on the premise that informal firms “unfairly” take market share from law-abiding formal firms turn out to be theoretically ambiguous and little empirical evidence exists to determine their economic importance.

1.63 In this section we explore recent firm surveys carried out in Turkey in order to assess some of the costs or consequences of informality. For a more complete evaluation of the impact of informality on productivity, see Taymaz (2009). We begin, however, with a brief summary of how firms view informality and its impact on firm performance.

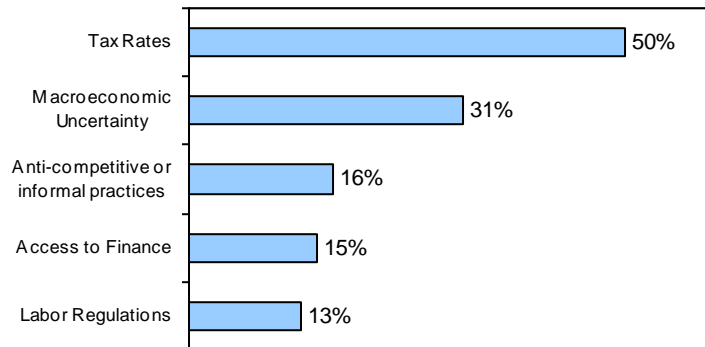
#### *Informality and firm’s perception of its impact on performance*

1.64 Most firms do not view informality as the most significant constraint to their businesses. Results from the different surveys may at first give an impression that informality is a major issue for firms in Turkey. However, careful analysis of the data shows that while many firms seem to be in direct competition with informal businesses (about 45% in ES 2005 and 52% of service firms in BEEPS 2008), this competition only

seems to impede a smaller fraction of firms. Thus out of the 55% of firms in the ES 2005 that identified competition from informal firms as a major or very severe obstacle to their businesses, only 27 % of them actually listed informality as the top or second most important obstacle when asked to prioritize among constraints. And among the full sample, while informality was the third most often cited obstacle, in terms of number of firms sampled, only 16% of them actually identified informality as the first or second most important constraint to their business operation.

**Figure 24**

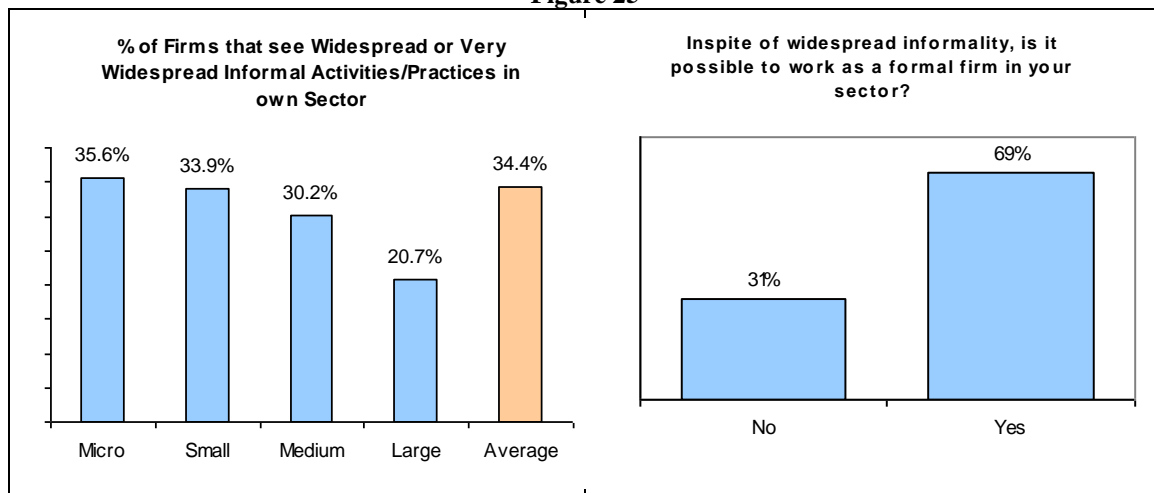
**Top 2 Obstacles for Business (% of respondents)**



Source: Enterprise Survey (2005)

1.65 Data from the Firm Informality Survey seems to confirm this conclusion. When asked if informal practices such as tax evasion, uninsured employment and operating without receipts were widespread, only 34% responded affirmatively. More interestingly is the fact that even for this group of firms that do perceive widespread informal activities, 69% of them responded that it was still possible to work as a formal firm.

**Figure 25**

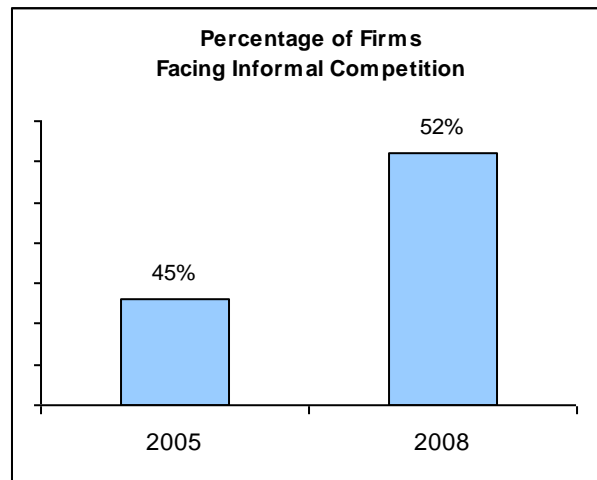


Source: Firm Informality Survey (2008)

1.66 The point being made here is not that informal practices are not common in Turkey. Some level of informal activity takes place in the opinion of a large share of the firms interviewed in all surveys: 77% of firms in the Enterprise Survey of 2005 declared that a typical firm in their sector declares less than 100% of their sales for tax purposes; a majority of the firms interviewed for the qualitative survey said “that doing business without receipts or less-valued receipts is quite frequent in their business sector.” What is being emphasized is: i) the difficulty in measuring the impact that informal practices may have on firm’s performance, and ii) that informality may not be the biggest constraint to a firm’s operation.

1.67 As a caveat, it should be noted that firms’ perceptions about informality have been rising in Turkey in recent years. In the Enterprise Survey of 2005, 51 percent of interviewed firms perceived an increase in the level of informal competition. In contrast, 21 percent saw a decrease and 28 percent said levels of informal competition remained the same. After 2005, firms’ perceptions also seem to indicate that they faced an increase in the level of competition from informal firms. Figure 9 shows there was an increase of 7 percentage points between 2008 and 2005 in the numbers of firms identifying themselves in direct competition with informal or unregistered firms.<sup>29</sup>

Figure 26



Source: Business Environment and Enterprise Performance Survey, Panel Data 2008

#### *Consequences of Informality on Firm Performance:*

1.68 In order to attempt to explore the possible consequences that informality in Turkey may have on firm performance, we use data from a survey that sampled 1,036 firms. We begin by applying a typology of informality to the sampled firms, in an attempt to differentiate their behaviors and practices. The next part of this section characterizes the behavior of these different groups in relation to perceptions about informality, business to business interactions and other variables of interest. The last part

<sup>29</sup> As these are entrepreneur’s perceptions, involving subjectivity and some degree of comparison with other constraints faced by firms, this result should be interpreted with care and should not be taken as an indication of increase in absolute levels of informality in Turkey in this period.



of this section attempts to isolate the relationship between degree of formality and firm performance, controlling for other specific firm characteristics that may also affect performance.

1.69 While it is understood and emphasized throughout this report that informality in Turkey, as in many other countries, is a matter of degree and type of practices, nonetheless we attempt to separate firms into three categories for the purpose of discerning potential impacts on firm performance. This difficult task is made trickier given the practical impossibility of asking firms if and by how much they evade government taxes or regulations. To construct the different groups of firms (informal, semi-formal, and formal), we use the questions from the survey that most directly ask firms about practices that may be considered informal. The first group of questions concerns uninsured and under-insured workers, and the survey asks the firms directly if and how many workers they have, among their total workforce, that the firm could not insure or that the firm could only insure by declaring lower wages than the actual ones. We classify firms as informal if they have at least one employee that is either uninsured or under-insured (lower wages declared). We then look at the other end of the spectrum and try to characterize what would be the behavior of an entirely formal firm. We thus classify firms as formal if they registered their businesses before starting operations and if they have no uninsured, under-insured or non-paid worker among their workforce. The firms that fall in between these two groups, that is, firms that while not having any uninsured or under-insured workers, may or may not have registered before starting operations and may or may not have non-paid workers among their staff, are classified as semi-formal.

1.70 The typology employed yields 124 firms that are informal, 358 firms that are semi-formal, and 545 that are completely formal. We observe few informal firms among the sample: only 12% of them, as compared to 53% that classify as formal and 34% as semi-formal. The classification is further broken down by firm size and sector in Table 10 and Table 11. Not surprisingly, a higher percentage of micro and small firms are classified as informal firms, when compared to medium and large firms. On the other hand, it is surprising to see that only 9.5% of firms in the construction sector were classified as informal (a number lower than in the industry sector, 12%). This result is not a function of firm size, since most construction firms sampled are either micro or small firms. Given the criteria used for classifying firms as informal (uninsured or under-insured workers), it would be expected that more firms in the construction sector would fall under that category. This fact points to an issue that cuts across sectors: the total number of uninsured and underinsured workers, as a percentage of total workers reported across sectors, is particularly low in this survey, ~1.9% in both cases. These figures do not match with the numbers presented earlier in this chapter that are drawn from the labor force surveys conducted in Turkey, which point to a figure of 18%, on average, for uninsured workers in the non-agricultural sectors. This leads us to think that some underreporting may have happened for this survey.

**Table 10 Degree of Formality by Firm Size**

Micro	Small	Medium	Large	Total
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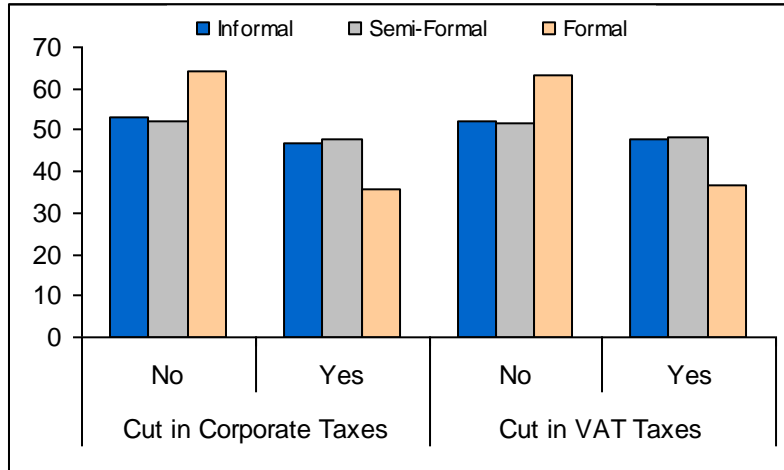
Informal	84	37	3	0	124
Row %	67.74	29.84	2.42	0	100
Column %	12.71	12.63	5.66	0	12.07
Semi-Formal	259	86	11	2	358
Row %	72.35	24.02	3.07	0.56	100
Column %	39.18	29.35	20.75	10	34.86
Formal	318	170	39	18	545
Row %	58.35	31.19	7.16	3.3	100
Column %	48.11	58.02	73.58	90	53.07
Total	661	293	53	20	1,027

**Table 11 Degree of Formality by Sector**

	Industry	Construct	Trade/Retail	Transport
Informal	53	8	48	15
Row %	42.74	6.45	38.71	12.1
Column %	12.3	9.52	14.77	8.02
Semi-Formal	165	40	118	35
Row %	46.09	11.17	32.96	9.78
Column %	38.28	47.62	36.31	18.72
Formal	213	36	159	137
Row %	39.08	6.61	29.17	25.14
Column %	49.42	42.86	48.92	73.26
Total	431	84	325	187

1.71 The survey does attempt to ask, indirectly, the delicate question of whether a firm is underreporting their taxes. The actual question presented to the firms is: “In case the taxes your firm is assigned (corporate or income taxes) would be reduced by half, do you think, the total taxes you pay to the state would increase or would they decrease?” The same question was asked with regards to value added taxes (VAT). Overall responses were very similar to both questions: about 42% of firms responded that the total taxes they pay would increase, while about 58% of firms thought that total taxes would no change much or would decrease. The logic behind the argument connecting these results to underreporting of profits and sales, and thus informal practices, is that firms that say that they would pay more taxes if the tax rates were reduced are indirectly acknowledging that they underreport their profits and sales numbers given the high levels of corporate and VAT taxes. This argument is backed by the results from the qualitative survey conducted for this report, where many firms declared that they believed that collection of taxes would improve if tax rates were not so high. When the results from the firm survey are broken down by our informality categorization, we do see that indeed formal firms are less likely to be underreporting taxes, as shown in the figure below. The results for informal and semi-formal firms are undistinguishable from one another.

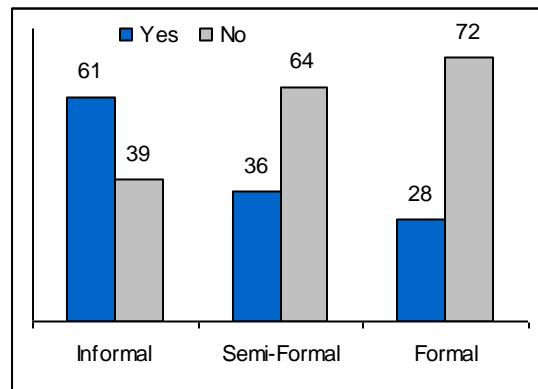
**Figure 27 Would a cut (by half) in your taxes lead to an increase in the total taxes you pay to the state?**



Source: Firm Informality Survey (2008)

1.72 Moving on to perceptions, the results show that overall only 35 % of firms see widespread informal activities/practices in their sectors. When broken down, however, this proportion rises to about 61% among firms classified as informal.

**Figure 28 Are informal activities/practices widespread in your sector? (%)**

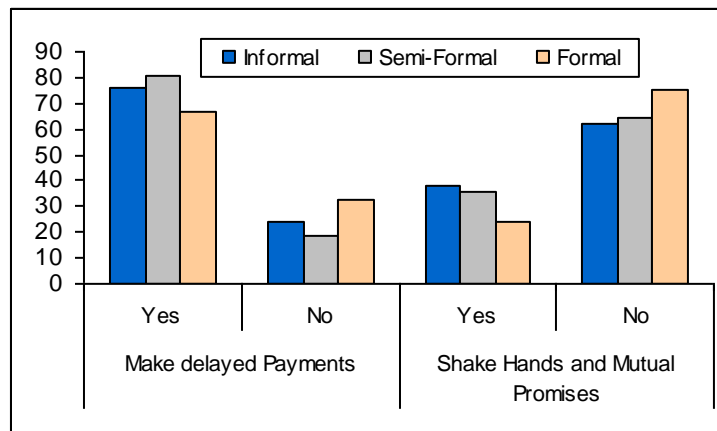


Source: Firm Informality Survey (2008)

1.73 The data collected with the survey also allows for an examination of how firms deal with each other (business to business transactions), and how prevalent certain more informal practices may be. One section of the survey looks into delayed payment arrangements that firms may go into when buying or selling goods or services. According to the data the practice seems to be widespread among the sampled firms. Well over two thirds of all firms engage in this practice; when the data is segregated by firm size, we see that large firms also use this arrangement, albeit less enthusiastically: 58% of firms confirmed that they engage in delayed payments when buying goods or services, and 44% of firms when selling goods or services. Separating firms by their formality status, Figure 29 and Figure 30 show again that while the practice is widely

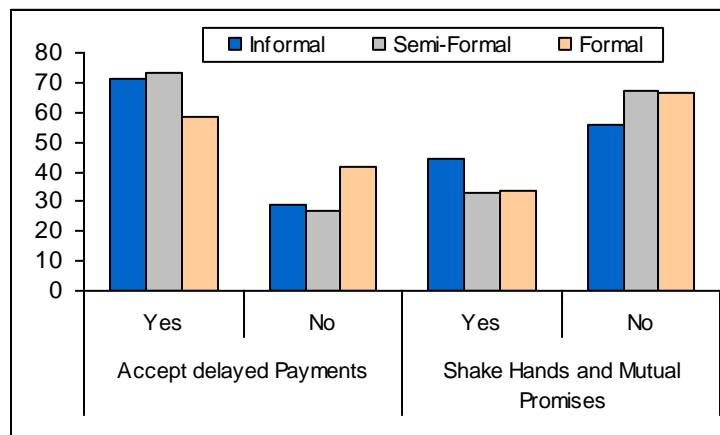
employed across firms, formal firms tend to make less use of it when compared or informal or semi-formal firms. Formal firms that do engage in delayed payment arrangements are also less likely to settle those arrangements using very informal means. Therefore relying only on shaking hands and making mutual promises of payment (instead of signing deposit slips, post dated checks or making written arrangements) when buying goods or services is less common for formal firms, and this difference is statistically significant and meaningful even after controlling for other firm characteristics (see results from regressions later on in this section). When selling goods and services, formal and semi-formal firms have a similar likelihood of relying on a hand shake and mutual promises, and while informal firms seem to be more likely to rely on that arrangement, when other firm characteristics are controlled for, this difference is not statistically significant.

**Figure 29 Delayed Payments and Arrangement for Making Delayed Payment when Buying Goods/Services**



Source: Firm Informality Survey (2008)

**Figure 30 Delayed Payments and Arrangement for Accepting Delayed Payment when Selling Goods/Services**

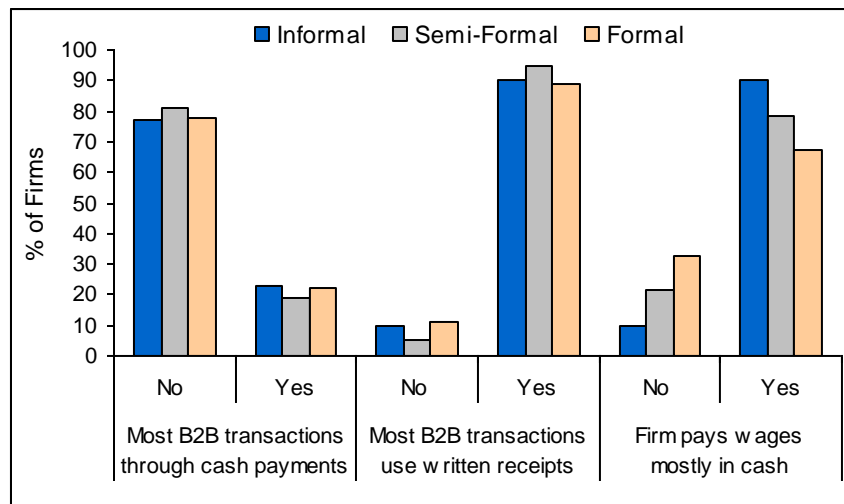


Source: Firm Informality Survey (2008)

1.74 Another section of the survey collects data that allows for further inquiries into the nature of business relations in Turkey. Firms are asked to list their most important

clients and/or suppliers. In addition, they are asked to characterize their business transactions in two dimensions of interest for the purpose of this survey: whether the payments for transactions among them are mostly done in direct cash payment or through bank transfers, check/credit slips or credit cards; and whether these business transactions are registered by means of written receipts. Figure 31 shows that while a majority of firms transacts mostly through other more formal means than direct cash payments, a significant percentage of them (~21%) mostly transact using direct cash payments. An even larger fraction of firms mostly uses written receipts when transacting with their clients or suppliers. It is worth noting that while the majority of business to business transactions are not done through cash payments, a majority of firms mostly pays their worker's wages in cash: 73% for the overall sample. Therefore firms seem to rely on more formal methods of payment when dealing with other firms, and on more informal methods of payment when dealing with their employees.

**Figure 31 Business Transactions with most Important Clients/Suppliers**



Source: Firm Informality Survey (2008)

1.75 Finally, we attempt a more rigorous analysis of the relationship between firm's level of informality, according to the classification created in this section (that mostly emphasizes employment), and some key variables that influence both firm's performance and the nature of the interactions among firms. We explore how informality is associated with the likelihood that a firm will export, apply for and receive credit, engage in more informal interactions with other firms, invest in machinery and equipment and have employees participate in training. In modeling these likelihoods we control for a variety of firm's characteristics in order to minimize omitted variable biases: firm size, age and sector, as well as type of firm (limited company, corporation, individual or collective firm) and education level of the manager<sup>30</sup>. The results from these differential probit regressions are shown in Annex 2

<sup>30</sup> The great majority of the interviewees were either the owner of the firm, the manager or a partner in the firm (~95%).

1.76 We observe that formality seems to be related to an increased likelihood that a firm will export, when compared to semi-formal firms. Other noteworthy results are:

- Formal firms are more likely to apply for and have their credit application approved than semi-formal and informal firms (the difference with the latter one is not statistically significant at the 10% level of confidence);
- Informal and semi-formal firms have an increased likelihood of relying on a “hand shake and mutual promises” when arranging delayed payments to buy goods or services;
- Somewhat surprisingly, firms that have very informal employment relationships with some of their employees are just as likely to have had their workers participate in training programs as firms that have strictly formal employment practices.

1.77 To further explore this last issue, we used a different measure of informality to run the same probit regressions: the percentage of underinsured and noninsured workers over the total number of workers in a firm. Under this specification, results show that it is the depth of informality, more than a simple dichotomy of having under or noninsured employees, that really matters for the likelihood of training employees. And under this specification firms with greater percentages of noninsured or underinsured employees are indeed much less likely to have employees participate in training. Finally in regards to training, a significant correlation emerges between the level of education of the firm’s management and the likelihood of employees participating in training programs (regardless of the specification used for the informality variable).

### ***Conclusions***

1.78 Drawing on different data sources, including surveys carried out for this report, this chapter attempted to provide an overall picture of informality in Turkey, its relative importance, its evolution over recent years, as well as possible causes and consequences. As emphasized earlier in this chapter, given informality’s many facets, we attempted to look at the issue from the side of both firms and workers. The picture that emerges is that informality is still a significant issue in Turkey, in spite of recent decreasing trends seen in the share of informal workers. This observation remains valid even when controlling for levels of income. In fact, informality as proxied by the share of self-employed workers is high for the country’s level of development.

1.79 The decrease in labor informality in Turkey that has taken place in the past few years has been driven mainly by urbanization and the reduction in informality rates in the agricultural sector and in rural areas, where a significant amount of household work has shifted from agriculture to non-agricultural activities. At the same time, these same sociodemographic or structural factors are also responsible for the still significant levels of informality observed in Turkey today. This is evident when informality rates in Turkey are compared to other comparator countries (USA, Chile and a constructed average of selected European countries). However, the analysis presented in this chapter also makes clear that while significant, structural factors are not the only factors behind

Turkey's levels of informality. Institutional factors, such as the regulatory framework, may lie behind the fact that a significant share of this labor is absorbed into the informal economy, instead of the formal one. Actually, the comparison with Chile shows that the regulatory burden indicator accounts for the majority of the difference seen in predicted values of informality between the two countries. Business surveys tend to confirm that tax rates and labor regulation are perceived as some of the most important constraints to formalization.. However, unlike many other emerging economies, informality in Turkey does not seem to be associated with firm registration and it seems to manifest itself more strongly in the interactions of economic actors: firms with employees, clients and suppliers and with government institutions.

1.80 We find that these institutional constraints significantly affect firms' abilities to hire and pay for fully "formal" workers, that is, workers that are fully accounted by and registered with the country's social security institutions. While education levels are important determinants of a worker's likelihood of being formal or not, the main constraint, as evidenced by data presented in this chapter, seems to be the firm's ability (or incentives) to register workers. Thus larger firms, either because they are more visible, have greater concern for reputational issues or are more productive and thus can incur the costs associated with registering workers, are much less likely to employ informal workers.

1.81 The fact that smaller firms may find it harder or just not advantageous to establish more formal relations with their employees may have consequences for their productivity. While we stop short of attempting to measure direct impact of informality on firm productivity, given data limitations, the analysis presented here correlates informality to several important proximate correlates of productivity, such as likelihood to export, access to credit, more formal, and arguably more stable business transactions and arrangements and employee training. We find that firms that have more informal arrangements with their workforce are negatively correlated with all of these variables, thus placing them at a competitive disadvantage and diminishing their possibilities for productivity growth.

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## ANNEX 1

### *Explanation of Selected Regression Variables.*

**Unreported Sales:** The exact question that firms are asked to respond to is the following: “Recognizing the difficulties many enterprises face in fully complying with taxes and regulations, what percentage of total sales would you estimate the typical establishment (one just like yours) in your sector reports for tax purposes? Responses were coded as variable q68a and we used (100-q68a) as the variable for unreported sales.

**Unreported Employment:** The exact question that firms are asked to respond to is the following: “Recognizing the difficulties many enterprises face in fully complying with labor regulations, what do you think is the percentage of total workforce that is reported for purposes of payroll taxes and labor regulation in a typical establishment in your sector? Responses were coded as variable q68b and we used (100-q68b) as the variable for unreported sales.

**Unfavorable Perception of Corruption:** bribe=1 if firm agrees that bribes are needed to get things done.

**Rule of Law Indicator:** “To what extent do you agree with the statement”: “I am confident that the judicial system will enforce my contractual and property rights in business disputes” – Dummy Variable =1 if firm “Tends to agree”, “Agrees in most cases” or “Fully Agrees” with the statement.

**Bureaucracy Indicator:** In a typical week over the last year, what percentage of total senior management’s time was spent in dealing with requirements imposed by government regulations, including dealing with officials, completing forms etc?

**Tax Rate as Constraint:** taxrate=1 if tax rates are a severe or major constraint to business

**Labor Regulation as Constraint:** laboreg=1 if labor regulation is a severe or major constraint to business

**Firm’s age:** in years.

**Labor productivity:** value added per worker.

**Large or Foreign Client Dummy:** Variable to check whether firm sells more than 50 % to foreign or large firms

**Firm Located in Some Type of Industrial Zone:** Dummy variable = 1 if firms is located in either a:

- Small industry district,
- Organized industrial zone,
- Technology development zone,
- Or free trade zone.

**Firm Competes Against Informal Businesses:** Dummy variable =1 for firms that answer Yes

## ANNEX 2

*Probit Regression Results*

	Export	Financing		Business to Business Transactions				Investment	Training
	Firm exports part or all of its production	Firm applied for credit in last 12 months	Firm applied and had credit application approved	Most B2B transactions done through cash payments	Most B2B transactions use written receipts	Delayed payment arrangement:		Firm has invested in machines/equipment in last 12 months	Employees in the firm have participated in training in last 12 months
						firm often/ sometimes uses hand shake/mutual promise when buying goods/services	firm often/ sometimes uses handshake/mutual promise when selling goods/services		
Informal	-0.027 [0.032]	0.065 [0.054]	-0.115 [0.071]	-0.009 [0.042]	<b>0.042**</b> [0.018]	<b>0.105*</b> [0.061]	0.04 [0.062]	0.022 [0.049]	-0.004 [0.049]
Semi-Formal	<b>-0.046**</b> [0.023]	0.055 [0.036]	<b>-0.087**</b> [0.043]	-0.02 [0.029]	<b>0.069***</b> [0.017]	<b>0.101***</b> [0.038]	-0.025 [0.041]	0.013 [0.032]	0.002 [0.032]
Small	<b>0.125***</b> [0.033]	<b>0.156***</b> [0.038]	-0.022 [0.041]	<b>-0.101***</b> [0.028]	-0.007 [0.020]	<b>-0.114***</b> [0.039]	<b>-0.085**</b> [0.043]	<b>0.146***</b> [0.034]	<b>0.094***</b> [0.035]
Medium	<b>0.164**</b> [0.083]	<b>0.170**</b> [0.075]	-0.073 [0.111]	<b>-0.102**</b> [0.049]	<b>0.051*</b> [0.028]	-0.01 [0.083]	-0.137 [0.088]	<b>0.293***</b> [0.078]	<b>0.272***</b> [0.079]
Large	<b>0.193*</b> [0.115]	0.127 [0.122]	-0.018 [0.152]	<b>-0.176***</b> [0.026]		-0.084 [0.112]		0.047 [0.105]	<b>0.475***</b> [0.115]
Construction	<b>-0.073***</b> [0.022]	<b>-0.126**</b> [0.056]	0.052 [0.061]	0.036 [0.060]	<b>0.072***</b> [0.016]	<b>0.119*</b> [0.066]	<b>0.134*</b> [0.074]	<b>-0.162***</b> [0.033]	0.072 [0.059]
Trade	<b>-0.064***</b> [0.021]	0.027 [0.038]	0.01 [0.039]	0.053 [0.034]	-0.015 [0.020]	-0.013 [0.039]	0.059 [0.043]	<b>-0.152***</b> [0.029]	0.057 [0.036]
Transportation & Communication	<b>-0.069***</b> [0.020]	<b>-0.140***</b> [0.042]	0.056 [0.049]	<b>0.372***</b> [0.050]	0.031 [0.020]	-0.028 [0.063]	<b>0.168*</b> [0.086]	<b>-0.066*</b> [0.034]	0.054 [0.043]
Limited Company	<b>0.053**</b> [0.026]	<b>0.090**</b> [0.037]	0.063 [0.043]	<b>-0.118***</b> [0.032]	<b>0.039*</b> [0.021]	<b>-0.114***</b> [0.040]	<b>-0.134***</b> [0.044]	0.041 [0.034]	<b>0.069**</b> [0.034]
Corporation	0.075 [0.056]	0.04 [0.067]	<b>0.148***</b> [0.032]	<b>-0.134***</b> [0.033]	<b>0.054***</b> [0.020]	<b>-0.102*</b> [0.061]	-0.11 [0.068]	<b>0.124*</b> [0.066]	0.109 [0.068]
Collective		0.102 [0.200]		<b>-0.138**</b> [0.066]		<b>-0.183*</b> [0.109]	-0.191 [0.165]	-0.067 [0.172]	-0.146 [0.124]
Secondary or High School	0.019 [0.038]	-0.003 [0.048]	-0.037 [0.054]	-0.023 [0.038]	-0.015 [0.027]	-0.017 [0.049]	-0.024 [0.055]	0.059 [0.045]	<b>0.083*</b> [0.048]
Associate or University Degree	0.053 [0.042]	0.07 [0.051]	0.04 [0.056]	-0.028 [0.041]	-0.008 [0.030]	0.049 [0.053]	-0.008 [0.058]	<b>0.132***</b> [0.049]	<b>0.298***</b> [0.052]
Firm Age	0 [0.001]	<b>-0.003***</b> [0.001]	0.003 [0.002]	<b>0.003**</b> [0.001]	0.001 [0.001]	<b>0.003*</b> [0.002]	0.001 [0.002]	-0.001 [0.001]	0 [0.001]
Observations	689	1000	409	893	871	733	651	986	998

Robust standard errors in brackets

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Omitted categories: Formal, Micro firm, industry, individual firm and primary education or less

	Export	Financing		Business to Business Transactions				Investment	Training
	Firm exports part or all of its production	Firm applied for credit in last 12 months	Firm applied and had credit application approved	Most B2B transactions done through cash payments	Most B2B transactions use written receipts	Delayed payment arrangement:		Firm has invested in machines/equipment in last 12 months	Employees in the firm have participated in training in last 12 months
						firm often/ sometimes uses hand shake/mutual promise when buying goods/services	firm often/ sometimes uses handshake/mutual promise when selling goods/services		
Percentage of Informal Workers ( <i>uninsured and under-insured</i> )	0.031 [0.066]	-0.02 [0.081]	-0.086 [0.091]	0.005 [0.064]	0.012 [0.045]	0.031 [0.085]	-0.002 [0.093]	-0.053 [0.076]	<b>-0.144*</b> [0.081]
Small	<b>0.126***</b> [0.033]	<b>0.154***</b> [0.038]	-0.017 [0.042]	<b>-0.100***</b> [0.028]	-0.009 [0.022]	<b>-0.121***</b> [0.038]	<b>-0.081*</b> [0.043]	<b>0.145***</b> [0.034]	<b>0.093***</b> [0.035]
Medium	<b>0.174**</b> [0.085]	<b>0.163**</b> [0.075]	-0.052 [0.105]	<b>-0.101**</b> [0.050]	0.05 [0.033]	-0.026 [0.080]	-0.137 [0.088]	<b>0.289***</b> [0.078]	<b>0.265***</b> [0.079]
Large	<b>0.217*</b> [0.119]	0.109 [0.123]	-0.004 [0.139]	<b>-0.175***</b> [0.026]		-0.114 [0.102]		0.041 [0.103]	<b>0.468***</b> [0.116]
Construction	<b>-0.077***</b> [0.021]	<b>-0.123**</b> [0.056]	0.051 [0.061]	0.034 [0.060]	<b>0.077***</b> [0.017]	<b>0.125*</b> [0.066]	<b>0.132*</b> [0.074]	<b>-0.161***</b> [0.033]	0.071 [0.058]
Trade	<b>-0.065***</b> [0.021]	0.025 [0.038]	0.009 [0.039]	0.054 [0.034]	-0.02 [0.021]	-0.016 [0.039]	0.061 [0.043]	<b>-0.151***</b> [0.029]	0.057 [0.036]
Transportation & Communication	<b>-0.066***</b> [0.021]	<b>-0.150***</b> [0.042]	0.064 [0.048]	<b>0.377***</b> [0.049]	0.022 [0.023]	-0.047 [0.061]	<b>0.175**</b> [0.086]	<b>-0.069**</b> [0.034]	0.053 [0.043]
Limited Company	<b>0.059**</b> [0.026]	<b>0.082**</b> [0.037]	<b>0.074*</b> [0.044]	<b>-0.116***</b> [0.032]	0.032 [0.021]	<b>-0.118***</b> [0.040]	<b>-0.137***</b> [0.045]	0.036 [0.034]	<b>0.064*</b> [0.034]
Corporation	0.1 [0.062]	0.023 [0.067]	<b>0.152***</b> [0.032]	<b>-0.132***</b> [0.033]	<b>0.048*</b> [0.026]	<b>-0.119**</b> [0.058]	<b>-0.114*</b> [0.068]	<b>0.114*</b> [0.065]	0.101 [0.067]
Collective		0.098 [0.200]		<b>-0.137**</b> [0.067]		-0.184 [0.114]	-0.184 [0.172]	-0.065 [0.173]	-0.138 [0.129]
Secondary or High School	0.025 [0.038]	-0.012 [0.048]	-0.022 [0.053]	-0.02 [0.038]	-0.025 [0.028]	-0.028 [0.049]	-0.024 [0.054]	0.054 [0.045]	<b>0.080*</b> [0.048]
Associate or University Degree	0.062 [0.042]	0.061 [0.051]	0.054 [0.055]	-0.025 [0.041]	-0.017 [0.031]	0.034 [0.053]	-0.008 [0.057]	<b>0.128***</b> [0.049]	<b>0.295***</b> [0.052]
Firm Age	0 [0.001]	<b>-0.004***</b> [0.001]	<b>0.003*</b> [0.002]	<b>0.003**</b> [0.001]	0.001 [0.001]	0.002 [0.001]	0.001 [0.002]	-0.001 [0.001]	0 [0.001]
Observations	689	1000	409	893	871	733	651	986	998

Robust standard errors in brackets

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Omitted categories: Micro firm, industry, individual firm and primary education or less