



Determinants of wage stickiness in a developing economy[☆]



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ARTICLE INFO

Article history:

Accepted 17 January 2014

Available online xxx

JEL classification:

E5

F4

O1

Keywords:

Survey of employers

Wage rigidity

Labor market institutions

Monetary policy

ABSTRACT

We explore wage flexibility in a developing country and compare our results to what has been found in similar studies using European data. In particular, we conduct a survey of 1189 firms in Pakistan to analyze the determinants of wage rigidity. We find that the existence of competitive wages and an interaction with the informal economy are statistically significant determinants of wage stickiness. While the role of competitive wages is similar to what has been found in studies of European firms, the latter find a much larger role for turnover, collective bargaining and employment protection. In contrast, in Pakistan we find that firms hiring from the informal sector are significantly more flexible in changing their wages. This suggests that the informal sector adds to the wage flexibility of the formal sector.

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1. Introduction

The objective of this paper is to study wage rigidity in Pakistan. Pakistan differs from the more developed countries where similar studies have been performed in that the system of unemployment benefits is absent, labor unions are very weak, a modern welfare state is non-existent, there is a large underground economy and poverty is widespread. It shares with many European countries the existence of significant firing costs, in particular in the public sector.

We report the results of 1189 face-to-face structured interviews carried out in 2009 to 2011 with managers in formal firms in the

manufacturing and service sectors of Pakistan.¹ Only *regular* employees are included making our results comparable to similar research done in the developed countries. We start by reviewing the literature and then turn to describing our survey before describing our results on wage setting, the frequency of wage adjustments, wage setting rules and the determinants of wage flexibility.

2. Literature

Our structured interviews enable us to study reasons for downward wage rigidity in Pakistan (as Bewley (1999), Blinder and Choi (1990), Agell and Lundborg (1995), Campbell and Kamlani (1997) and Zoega and Karlsson (2006)) but we also focus on the frequency of wage changes rather than just the reasons why firms do not cut wages in recessions. We harmonize our questions with the European Central Bank survey enabling us to make direct comparisons. The ECB conducted a survey of 17000 firms in 17 countries, which was performed in 2007–2008.² The results are described in Druant et al. (2012), Galuscak et al.

[☆] We thank John Leahy, Chris Woodruff, Shamshad Akhtar, Salim Raza, Shahid Kardar, Yaseen Anwar, Riaz Riazuddin, Mushtaq Khan, Shahzad Ahmed, FPCCI and the Chambers of Commerce of Karachi and Lahore for their support, and participants at Private Enterprise Development in Low-Income Countries (PEDL) 2012 CEPR/DFID workshop in London. We also acknowledge the fieldwork at the statistical Bureau of Sindh and Punjab with special appreciation for Shamim Rafique and Sajid Rasool from Punjab and Manzoor Ahmed Memon and Qazi Masood from the Sindh Bureau of Statistics. The project was undertaken by a large team of researchers at the State Bank of Pakistan consisting of Hassan Abbas, Amjad Ali, Shahid Hussain Javaid and Amna Saeed, and a team of translators Mansoor Ahmed, Shujat Ali, Suhail Anjum, Alia Atta Karim and Zeeshan Suleiman. Finally, we appreciate the help of Carl Campbell who provided the questionnaire of the U.S. survey and Zeenat Hisam for providing information on minimum-wage laws in Pakistan.

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¹ By formal it is meant that our firms are officially registered, tax liable and also report data to employment agencies. Therefore, these firms necessarily are a part of the official GDP and employment statistics.

² The countries included are Austria, Belgium, Czech Republic, Estonia, France, Greece, Hungary, Italy, Ireland, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Slovakia and Spain. The German survey was not fully harmonized with the others. In 2009 similar surveys were also conducted for Slovakia, Cyprus, Bulgaria and Malta.

(2010), Babecky et al. (2009, 2012), and Bertola et al. (2012). Of particular interest to us is the presence of nominal wage rigidity.³

Druant et al. (2012) describe the nature and sources of nominal rigidities in Europe. They focus on the frequency of price and wage changes; the prevailing mechanism of adjustment, in particular its timing and the degree of synchronization; and the cross-sectional variability of rigidity measures with respect to firm-specific characteristics, product–market features and labor market institutions. When it comes to wage setting, these authors find evidence of time-dependent rules with more than half documenting that wage changes are concentrated in a particular month. They also find significant variability in wage setting across firms and sectors. Wages turn out to be more flexible when bargaining is decentralized, when the coverage of collective bargaining and the stringency of employment-protection legislation is low and where the share of high-skilled and white-collar workers is smaller.

In this paper we are interested in exploring the frequency of wage changes and the determinants of wage flexibility in a developing country that differs in fundamental ways from the European economies. To facilitate a comparison we will structure our questions based on Druant et al. (2012). The wage setting environment in Pakistan differs from what we find in the European countries mainly in that labor unions in Pakistan are weak, a modern welfare state is non-existent and there is a large informal or underground economy.

3. The survey

The survey was conducted in the provinces of Punjab and Sindh between December 2009–March 2010 and June 2010–October 2011 respectively. For security reasons, smaller provinces were excluded. The survey was carried out in collaboration with the statistical agencies of Pakistan, which also conducted a pilot study before launching the formal interviews.⁴ The questions were directed at regular employees defined as workers on formal contracts, registered with social-security or the *Employment and Old Age Benefit Institute* (EOBI), and recorded in firms' official documentation.

The manufacturing sample is drawn from data registers for census of manufacturing industries (CMI). Economic activity codes from 15 to 36 (excluding 30 since this sector – ioffice equipment and computers – does not have any private firm) are covered in the *Pakistan-Standard-Industrial-Classification* (PSIC) system.^{5,6} Similarly, firm size in the manufacturing industry was defined on the basis of employment; firms in the manufacturing sector were split into three employment brackets: 10–50, 51–250 and more than 250 employees defined as small, medium and large firms respectively. Based on these criteria, a random sample of

1200 manufacturing firms was drawn from 63 mutually exclusive strata, along with a 50% extra replacement sample.⁷

Pakistan has no formal database for the service sector. To overcome this issue, we used the database of the *Securities and Exchange Commission of Pakistan* (SECP) which maintains a list of all firms registered with them. Yet, the SECP register has its own limitation; it lacks information on firm size and whether firms are dormant or non-dormant. Before utilizing the SECP database we applied filters to circumvent this limitation.⁸ Our final service sector sample of 270 firms includes firms from transport and telecommunication, hotels and restaurants and education and health care services, while construction, real state, financial services, wholesale and trade sectors were dropped due to the problem of defining their main service.⁹ This is because for services like financial services, construction, retail and trade the type of service may change with every transaction.

To draw valid inferences from the population, we perform post stratification to control for closure, non-responses and possible economic activity shifts. We have also dropped observations when firms were pure exporters since we are only interested in firms that operate in the domestic markets. Furthermore, large firms suffered from a low response rate but their decisions are likely to be more important. As a result, the observations required adjustment for firm size as well. These adjustments were done differently for the manufacturing and service sector because the data came from separate sources.¹⁰

With population frame, economic activity and firm size serving as pivots, we draw a stratified-random sample for each sector. We summarize the sample in Table 1 below where the first two lines describe the size of the manufacturing and the service sectors, lines 3 and 4 show how large the sample is in terms of aggregate output and employment in Pakistan and the remaining lines show the composition of the sample based on the location and size of firms and the type of workers.

The estimates for the aggregate economy are presented as weighted averages based on the sectoral contribution of manufacturing and service sectors to GDP. Generally, the manufacturing and service sectors combined accounted for 71.4% of GDP in 2009, while taking only into consideration the sub-sectors covered in our interviews. Our sample is a good representation of decision-makers that produce 25.2–27% of GDP and that of formal sector wage-earners in our chosen sectors. Specifically, out of 1189 respondents, the sample of 1025 in the manufacturing sector turns out to be 9% of the overall target population, but the sample from the service sector is smaller and based on a derived population. We use final post-stratification to reduce sectoral bias as per their contribution towards GDP. Interestingly, the employment shares of these two economic sectors are consistent with their GDP shares, hence all the estimates reported can be interpreted as both weighted by respective shares in GDP and/or employment.

The selection rests upon per strata shares to population. However, sample size was deliberately increased for the smaller strata to raise the power of the statistical inference. We asked CEOs to break down their labor force into three socio-occupational categories: (i) white collar, (ii) skilled blue collar and (iii) unskilled blue collar. Regular employees accounted for 66% of all workers in firms in our sample, implying that our results reflect the wage-setting pattern for the representative group of workers we visited. In particular, skilled blue collar employees account for the main occupational group in the

³ While there are few studies explaining the frequency of wage changes there is a much larger number of papers that focus on the frequency of price changes. To name a few of those, Rotemberg (1982) and Carlton (1986) studied price stickiness in the U.S., Cecchetti (1986) the frequency of changes of newspaper prices in the U.S., Blinder et al. (1998) presented the results of a survey of American firms, Asplund et al. (2000) studied gasoline prices, Hall et al. (2000) used survey data in the UK, Bils and Klenow (2004) study the frequency of price change of 350 categories of goods and services in the U.S., Amirault et al. (2005) studied price stickiness in Canada and more recently Fabiani et al. (2007) and Álvarez et al. (2006) report the results of a study of pricing decisions in the euro area.

⁴ For a further quality check, economists from the Central Bank randomly audited 10% of live interviews.

⁵ The activities are: 15–(food products & beverages), 16–(tobacco products), 17–(manufacture of textiles), 18–(wearing apparel), 19–(leather products), 20–(wood & wood products), 21–(paper & paper products), 22–(publishing, printing & reproduction), 23–(petroleum), 24–(chemicals & chemical products), 25–(rubber & plastics products), 26–(other non-metallic mineral products), 27–(basic metals), 28–(fabricated metal products), 29–(machinery & equipment N.E.C.), 31–(electrical machinery & apparatus N.E.C.), 32–(radio, TV & communication equipment), 33–(medical & optical instruments), 34–(motor vehicles & trailers), 35–(other transport equipment), 36–(furniture).

⁶ These economic activities are in line with the *International Standard Industrial Classification* (ISIC).

⁷ In case of non-response, a firm from a particular stratum was randomly replaced by another firm from the same stratum to maintain an unchanged sectoral representation.

⁸ For example, to minimize the chance of selecting dormant firms from a very large database, we only selected firms that had been registered within the last ten years and if registered before that time period have reported to the SECP at least once in the last ten years. Also to avoid too many small firms, firms with paid-up capital of more than RS. 2,000,000 (USD 23500) were selected.

⁹ This is because we used the same sample for a separate price-setting survey where it was necessary to include firms involved in economic activities that could not be clearly identified in term of product/service.

¹⁰ An appendix presents the post-stratification schemes.

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