



The own-wage elasticity of labor demand: A meta-regression analysis



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ARTICLE INFO

Article history:

Received 12 January 2015

Accepted 14 August 2015

Available online 6 September 2015

JEL classification:

J23

C10

C83

Keywords:

Labor demand

Wage elasticity

Meta-analysis

ABSTRACT

The own-wage elasticity of labor demand is a key parameter in empirical research and policy analysis. However, despite extensive research, estimates of labor demand elasticities are subject to considerable heterogeneity. In this paper, we explore various dimensions of this heterogeneity by means of a comprehensive meta-regression analysis, building on information from 151 different studies containing 1334 estimates in total. Our results show that heterogeneity in the estimates of the elasticity is natural to a considerable extent: the magnitude of the elasticity depends on the theoretical model applied and features of the workforce. Moreover, we find that labor demand has become more elastic over time, and is particularly elastic in countries with low levels of employment protection legislation. Furthermore, we find heterogeneity due to the empirical specification of the labor demand model, characteristics of the dataset and publication bias.

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1. Introduction

The own-wage elasticity of labor demand is a key parameter of interest in labor economics crucially influencing the effectiveness of many labor market policies (Hamermesh, 1993) and pointing to structural changes in production due to skill-biased technological or organizational change. It also plays a key role in many other fields besides labor economics. Firms' labor demand responses to wage rate changes have gained increasing attention in public finance, with own-wage elasticities of labor demand serving as an important input in optimal tax models of individuals and firms (Jacquet et al., 2012; Riedel, 2011) as well as determining the deadweight loss due to taxation. In international economics, the wage elasticity of labor demand serves as an important parameter in theoretical models of international trade (Rauch and Trindade, 2003) as well as when assessing the effects of globalization on the volatility of employment and wages (Rodrik, 1997). Moreover, estimates of wage elasticities of labor demand are used to calibrate macro and computable general equilibrium (CGE) models in various fields, typically using "guestimated" elasticities (Boeters et al., 2013).

The importance of this parameter is reflected by the enormous number of studies devoted to the estimation of firms' labor demand responses to wage changes. Despite extensive research, heterogeneity in the estimates of the own-wage elasticity of labor demand is apparent, with most estimates ranging between zero and minus one. Correspondingly, Fuchs

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et al. (1998) show that beliefs about the size of the own-wage elasticity are widely dispersed among economists. In this paper, we explore different sources of heterogeneity in the estimates by conducting a comprehensive meta-regression analysis of the relevant literature. Using information from a total of 151 micro-level studies and 1334 elasticity estimates, we account for sources of heterogeneity due to the type of elasticity being estimated and the empirical specification being used.

Specifically, we test whether empirical findings back up theory: given different theoretical concepts of the labor demand elasticity, we expect some heterogeneity in the estimates. We investigate how much of this heterogeneity can be explained by the empirical specification of the labor demand model or by characteristics of the dataset. Moreover, we analyze whether the elasticity of labor demand differs for various types of workers, industries or countries and whether the elasticity has increased over time (for example, due to technological change or increasing globalization). In addition, we explicitly test for publication selection (or reporting) bias, given that journals' preference to publish statistically significant results (DeLong and Lang, 1992) and economists' strong beliefs in particular economic relationships might prompt researchers to report, and journals to publish, expected empirical results only (Card and Krueger, 1995; Franco et al., 2014). With respect to the own-wage elasticity of labor demand, there is unanimous belief in a negative relationship between real wages and labor demand, and thus, a negative own-wage elasticity. With his seminal contribution, Hamermesh (1993) has further shaped this belief by providing an interval, ranging from -0.15 to -0.75 , of likely values for the constant-output elasticity of labor demand. In our study, we therefore explicitly test whether there is evidence of publication bias in this strand of the literature.

Our meta-regression analysis offers six key results. First, a considerable share of the variation in the estimates can be explained by the different concepts of elasticities applied: according to labor demand theory, we find that the elasticity of labor demand is smaller in the short than the intermediate and long run and that the total elasticity of demand – obtained from a structural model – exceeds the constant-output elasticity. Second, firms' responses to wage changes are dependent on worker characteristics, with the elasticity of labor demand being higher for low-skilled and atypical workers compared to the average worker. Third, we find sizeable differences in elasticity estimates across industries and countries, with labor demand being particularly elastic in countries with low levels of employment protection legislation. Fourth, labor demand has become more elastic over time, possibly due to technical progress and increased globalization. Thus, variation in the estimates of the labor demand elasticity is natural to a considerable extent. There is no central elasticity of labor demand; rather, researchers need to carefully assess which type of elasticity to estimate in a given context or adapt when calibrating a model.

However, differences in the estimates are (fifth) also due to differences regarding the empirical specification of the labor demand model and the type of data used: structural-form models better correspond to theory, while estimates based on industry-level data understate firms' labor demand responses to changes in the wage rate. Sixth, the results of our analysis also point to substantial upward publication (or reporting) bias, especially in reduced-form models.

The remainder of this paper is structured as follows. In Section 2, we explore various dimensions of heterogeneity in the estimates of the elasticity (Section 2.1) and provide descriptive statistics for our meta data (Section 2.2). In Section 3.1, we introduce our meta-regression model and the underlying estimation strategy. We present and discuss our results in Section 3.2, while investigating the presence of publication (or reporting) bias in Section 3.3. Section 4 concludes.

2. The meta sample and sources of heterogeneity

The data for our meta-analysis are collected by thoroughly examining the literature on labor demand and related topics.¹ Overall, we identify 151 studies that provide micro-level estimates of the own-wage elasticity of labor demand. As most studies supply more than one elasticity estimate, the sample comprises those estimates that differ in an important source of heterogeneity only. Thus, we include all estimates from a particular study in case where they are derived from different specifications of the theoretical and empirical model, estimation procedures applied, or when they are worker-, industry-, time-, or country-specific. In contrast, if estimates only differ due to minor variations in the specification,² the authors' preferred estimate is used. If there is no preferred estimate, we rely on the most comprehensive specification. Overall, this leaves us with 1334 estimates of the own-wage elasticity. Tables S1 and S2 in the Online Appendix list the dimensions of heterogeneity and the particular source, i.e., the corresponding table or passage, for each estimate included in our meta-regression analysis.

Fig. 1 shows the distribution of labor demand elasticities in our data.³ The mean (median) own-wage elasticity is -0.551 (-0.420), the standard deviation is 0.747 and the vast majority of estimates (83%) lies within the interval of minus one and zero.

¹ In detail, all studies included in our data are either listed in google scholar or given in the reference list of previously identified papers. In addition, we rely on the excellent survey of earlier empirical labor demand studies by Hamermesh (1993) to identify relevant studies published prior to 1993.

² For example, due to the inclusion or exclusion of a specific control variable.

³ For the sake of clarity, this graph does not include estimates of the own-wage elasticity of labor demand that exceed the value of two in absolute terms ($N=55$).

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