Journal of Economic Behavior & Organization 137 (2017) 90–104

Contents lists available at ScienceDirect

Journal of Economic Behavior & Organization

journal homepage: www.elsevier.com/locate/jebo

Union bargaining power, subcontracting and innovation[☆]

Hamid Beladi[a,*], Arijit Mukherjee[b,c,d,e]

[a] *University of Texas at San Antonio, USA*
[b] *Nottingham University Business School, UK*
[c] *CESifo, Germany*
[d] *INFER, Germany*
[e] *GRU, City University of Hong Kong, Hong Kong*

ARTICLE INFO

Article history:
Received 26 May 2016
Received in revised form 14 February 2017
Accepted 17 February 2017
Available online 21 February 2017

JEL classification:
D42
J51
L12
O31

Keywords:
Consumer surplus
Innovation
Union
Subcontracting

ABSTRACT

We show that if a firm can subcontract production to an informal sector, an increase in union power may either increase or decrease innovation. An increase in union power makes the firm worse off irrespective of its effect on innovation. However, in contrast to the usual belief, an increase in union power may increase consumer surplus and decrease union utility by affecting innovation, thus suggesting that a union may not want to be too powerful. An increase in union power may create an ambiguous effect on social welfare. Our analysis provides new insights to the relation between union power and innovation.

1. Introduction

The book by Freeman and Medoff (1984) on the impacts of labour unions generated a significant amount of interest to examine the effects of unions on innovation. Looking at the US firms, Connolly et al. (1986), Hirsch and Link (1987), Acs and Audretsch (1987, 1988), and Audretsch and Graf von der Schulenburg (1990) show that there is a negative influence of unions on innovation. Hirsch (1992) shows that most US studies find a negative relation between union power and innovation. Using COMPUSTAT data, Bronas and Deere (1993) show that there is a significant negative relation between firm-specific unionisation rate and innovation. Using mainly aggregative industry level data, Ulph and Ulph (1989) find a negative relation for the high-tech industries in England, while Addison and Wagner (1994) find a positive but insignificant relation. Menezes-Filho and Van Reenen (2003) show strong negative effects of unions on innovation in North America, while that is generally not the case in the UK. Using the industry-level data from Germany, Schnabel and Wagner (1994) show that there is no statistically significant negative influence of unions on innovation. Addison et al. (2001) also use data from Germany

☆ We thank an anonymous referee and an Associate Editor of this journal, and Thomas Gresik for helpful comments and suggestions. We also thank Li Hao for comments on an earlier version. The usual disclaimer applies.
* Corresponding author at: Department of Economics, College of Business, University of Texas at San Antonio, San Antonio, TX 78249, USA.
E-mail address: hamid.beladi@utsa.edu (H. Beladi).

http://dx.doi.org/10.1016/j.jebo.2017.02.013

and show that works councils are associated with higher wages but no reduction in innovation. There are other studies showing no significant effects of unions on innovation (Schnabel and Wagner, 1992, focusing on manufacturing industries in West Germany, Machin and Wadhwani, 1991; Menezes-Filho et al., 1998, focusing on the UK firms and Betcherman, 1991, considering Canadian data).

The theoretical analysis by Grout (1984) shows that an increase in union power creates a negative impact on innovation due to the 'hold-up' problem. However, Ulph and Ulph (1989, 1994, 1998) show that whether the hold-up problem remains in an oligopoly with strategic R&D competition may depend on the type of bargaining. If there is ex-post (short-term) bargaining, which does not involve R&D investment, an increase in union power reduces the R&D investment if the bargaining is over wages only, i.e., if there is a right-to-manage model of firm-union bargaining.[1] However, if bargaining occurs on wages and employment, i.e., if there is an efficient bargaining, an increase in union power increases the R&D investment if the unions are weak and they are relatively risk averse. If there is ex-ante (long-term) bargaining, where bargaining occurs on R&D investment, wage and employment, an increase in union power increases (decreases) the R&D investment if a successful innovation increases (decreases) employment.[2]

While the extant theoretical literature provides important insights into the relation between union power and innovation, the result that an increase in union power always reduces innovation under ex-post right-to-manage firm-union bargaining cannot explain the empirically observed ambiguous effects of union power on innovation. By considering only in-house production by the firm, this literature ignores subcontracting or outsourcing of production, which is an important empirical regularity in today's world.[3] We show in this paper that the possibility of both in-house production and subcontracting can explain the ambiguous effects of union power on innovation under ex-post right-to-manage firm-union bargaining.

It is often found that firms in the South Asian and Latin American countries undertake formal in-house production and subcontract to the informal sector (WTO-ILO, 2009; Ulyssea, 2010). As per Agenor (1996), 60–70% of the total manufacturing employment in the developing world is in the informal sector. Evidence on informal production can also be found in Schneider and Enste (2000), Guha-Khasnobis and Kanbur (2006) and Mehrotra and Biggeri (2007), to name a few.

For example, a significant amount of subcontracting to the informal sector by the formal sector producers occurs in India. As per Sahu (2010) and Kotwal et al. (2011), subcontracting activities increased significantly in India after the economic reforms in 1999. Mukim (2011) mentions that informal sector in India produces intermediate goods and processed exports and import substitutes for the formal sector producers. Ramaswamy (1999) analyses subcontracting intensity of Indian manufacturing enterprises between 1970 and early 1990s. Moreno-Monroy et al. (2014) do a more recent study on subcontracting by Indian manufacturing enterprises over 1995–2006. They mention that ". . . formal enterprises wishing to reduce labor costs subcontract activities to informal enterprises. By their superior status in terms of size and capital, formal enterprises are able to impose stringent conditions on informal enterprises regarding prices, thus extracting most of the value added. . . . formal enterprises can benefit from the 'race-to-the-bottom' in terms of labor costs in the informal sector, as it directly translates into higher profitability from subcontracting.. . . Formal enterprises pursue [. . .] minimizing costs so that the price of the subcontracted activity is as low as possible." Using formal sector data from the Annual Survey of Industries (ASI), covering all registered Indian manufacturing establishments for the years 1994–1995, 2000–2001 and 2005–2006, and the National Sample Survey (NSS) for the informal sector, covering all unregistered manufacturing establishments including home-based enterprises with owner as the only worker, they show the link between formal sector subcontracting and informal sector employment. Basole et al. (2014) also consider subcontracting in Indian manufacturing sector and find that "The fact that relatively less endowed firms are more likely to enter into subcontracting relations implies that the subcontracting relation might be characterized by asymmetric bargaining firm between the parent and the subcontracted firm." Maiti and Marjit (2009) estimate the relation between formal wage, informal wage, and formal productivity in Indian industry.

Cohen and Young (2006) provide evidence on in-house production and outsourcing to the global economy. As mentioned in Beladi and Mukherjee (2012), "DuPont blends its own internal resources with services from more than ten service providers. GMS, a global manufacturing and service firm, has moved from centralized and internal to globally decentralized with internal and external resources. Nokia purchases a large proportion of key electronic components such as semiconductors and microprocessors from a global network of suppliers, and at the same time it produces these components in its own manufacturing plants (Nokia Annual Report, 2003). Freescale Semiconductor Inc., NXP Semiconductors and Analog Device Inc. behave as Integrated Device Manufacturers and are also customers of Taiwan Semiconductor Manufacturing Company Ltd, which is a semiconductor dedicated foundry."

Given the widespread evidence of subcontracting or outsourcing of production, we provide a new perspective to the literature on union power and innovation by considering subcontracting as a production strategy of the firm. In a model with a monopolist producer, thus ignoring the effects shown by Ulph and Ulph (1989, 1994, 1998) in oligopolistic markets,

[1] In a right-to-manage model, firms and unions bargain over wages and the firms hire workers as per their need. On the other hand, in an efficient bargaining model, firms and unions bargain over wages and employment.

[2] See, Menezes-Filho and Van Reenen (2003) for an excellent survey of this literature.

[3] As per the recent estimate provided jointly by ILO and WTO (WTO-ILO, 2009), the informality increases from 50.1% in early 1990s to 52.8% in late 1990s and then changes to 52.2% in early 2000s in Latin American economies. In Africa, this increases initially from 60.9% in early 1990s to 63.6% in late 1990s and then reduces to 55.7% in early 2000s. On the other hand, Asia accounts for higher informality and it was 78.3% in early 1990s and drops to 68.5% in late 1990s in Asia. After that, it increases to 78.2% and goes to the level that was in the early 1990s. Evidences on in-house production and outsourcing to the global economy can be found in Cohen and Young (2006).