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More labour market flexibility for more innovation? Evidence from employer–employee linked micro data

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ABSTRACT

This paper examines labour market flexibility in various definitions and its impact on innovation. The results demonstrate that the relationship strongly depends on the type of innovation as well as the predominant innovation regime in which a company operates. Thereby, labour market flexibility does not influence innovation in an entrepreneurial innovation regime characterised by high competition, low market entry barriers and generally available knowledge. That might explain why the Silicon Valley has been successful despite of having a labour market with a strong strong hire and fire mentality. In contrast, labour market flexibility significantly reduces the likelihood of innovation in a routinised innovation regime with leading innovators and high entry barriers similar to the US automobile industry and steel districts that did not succeed. These findings emphasise that the currently discussed structural labour market reforms might hamper innovation as technological change still requires a level of security and stability.

1. Introduction

Labour market flexibility continues to be a highly debated topic, be it in economics, politics, or in general society. Especially after the sharp rise in unemployment in Europe in the 1970s and 1980s many labour market economists call for increasing labour market flexibility in order to improve the adaptability and mobility of businesses and employees (Brodsky, 1994; OECD, 1994; Siebert, 1997). Accordingly, the potential impact of labour market flexibility on employment, growth, profits, or productivity has been discussed for a long time.[1]

At the same time, the need for more employment security, especially since the recent financial crisis, continues to grow. This trade-off between flexibility and security is reflected in the concept of "flexicurity" proposed by the Prime Minister Rasmussen of Denmark in the 1990s and further discussed by Wilthagen and Tros (2004) and Heyes (2013). This trade-off also significantly affects innovation projects. Following Acharya et al. (2010), labour security encourages employees to engage in more radical and risky innovations activities, in particular, cost intensive projects associated with high risks.

Thus, the relationship between labour market flexibility and innovation activities has gained more and more attention in recent years.[2] However, existing studies only focus on the impact of numerical and functional aspects of labour market flexibility such as part-time work or flexible working contracts. Wage flexibility, in contrast, has hardly been explored in previous studies, mainly due to the lack of data (Zhou et al., 2011, p. 3).[3] In addition, the majority of previous studies do not provide a sufficient analysis on company level (Freeman, 2005; Zhou et al., 2011).[4]

By joining three datasets from the Netherlands with information on employer as well as employee level, we obtain several measures of wage flexibility. Combined with data on external numerical

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[1] A review of labour market flexibility, its definitions, and implications can be found in e.g. Beatson (1995), Salvanes (1997), or Solow (1998). A survey of theoretical approaches is given in Towers (1992) or Solow (1998).

[2] A survey of previous studies can be found in Storey (2001).

[3] Previous studies only analyse the impacts of flexible work on wage levels. See Kleinknecht et al. (2006), McGinnity et al. (2004) or Sànchez and Toharia (2000).

[4] Studies with data on company level include Arvanitis (2005), Kleinknecht et al. (2006), Michie and Sheehan (2003), or Zhou et al. (2011).

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and functional flexibility, we are able to characterise labour market flexibility much more comprehensively.

The rest of the paper is structured as follows. At first, we give a definition of labour market flexibility followed by a theoretical discussion of possible effects on innovation including a short review of existing studies. A description of the available dataset as well as the empirical model used in the analysis can be found in Sections 4 and 5. The results are discussed in Section 6 and section 7 concludes.

2. Definition of labour market flexibility

Labour market flexibility represents the capacity of the labour market to adapt quickly to changes in the economy or society. The most commonly used definition is given by Atkinson (1984).[5] He defines labour market flexibility as a function of corporate strategy and divides it into three different dimensions: numerical, functional and financial or wage flexibility. Thereby, external and internal aspects of flexibility can be distinguished.

External numerical flexibility refers to the mobility of employees between different companies, illustrating the extent to which the number of employees can be quickly adapted to economic requirements. Examples of external numerical flexibility are flexible employment contracts such as temporary employment that facilitate a fast change of the number of employees. Internal numerical flexibility refers to the ability of a company to adjust the working hours of its employees and might affect daily, weekly or annual working time as well as seasonal arrangements or short-time work.

Functional flexibility describes how a company can use its employees for different tasks. External solutions are possible through outsourcing or temporary employment, while internal functional flexibility refers to continued training that allows multi-skilled employees to fulfil a variety of tasks.

Wage flexibility as the third dimension of labour market flexibility can be defined as the flexibility of wages. A high wage flexibility is associated with a decentralised wage-setting where the wage level represents the equilibrium of supply and demand on the labour market.

Flexible labour such as temporary employment contracts are often labelled as atypical work. In selected sectors and especially for certain groups of employees, for example low-skilled employees or women, atypical work is now common practice (De Grip et al., 1997; O'Reilly and Fagan, 2002). Thereby, the share of temporary employment increased significantly from 1994 to 2010 across all OECD countries (OECD, 2010). However, the results vary greatly depending on the considered country. In most countries, the share of temporary employment contracts is significantly higher, or even twice as high for women and especially for young people aged between 15 and 24 (OECD, 2010, p. 288). The same applies to part-time contracts. In most countries, more than 70 percent of all part-time positions are filled by women because they frequently use part-time contracts when re-entering the labour market after childbirth (OECD, 2010, p. 286) and because of a lack of affordable childcare (Ingold and Etherington, 2013).

3. Labour market flexibility and innovation

Below, we discuss the relationship between innovation and the different aspects of labour market flexibility, external numerical and functional as well as wage flexibility.

According to the resource-based view, a company creates a competitive advantage by utilising its own internal resources and capabilities. Thereby, a sustained competitive advantage can be achieved by having resources that cannot be easily imitated or substituted (Barney, 1991). Based on this theoretical approach, the relationship between external numerical and functional flexibility and innovation is not unambiguous. Researchers such as Grant (1991) argue that the capabilities of an organisation cannot be completely utilised using short-term, temporary or part-time employment contracts. This results in a negative relationship between flexible work and innovation as empirically shown by e.g. Michie and Sheehan (2003). In addition, the development of innovation is path dependent and therefore influenced by earlier investments as well as accumulated previous knowledge (Pavitt, 1991). Temporary employment contracts might therefore undermine training investments of a company resulting in a loss of competitive advantage (Zhou et al., 2011). Additionally, the likelihood of successful innovation depends on the commitment of a company's employees. As shown by Acharya et al. (2010), employees have an additional incentive to engage in risky innovation projects if their employment status provides them with security and stability. Following Lorenz (1999), employment contracts that provide high employment security will increase the incentive of the employees to share their knowledge about labour saving innovations with their company.

However, the relationship between external labour market flexibility and innovation is not necessarily negative.[6] Following Kodama (1995) or Matusik and Hill (1998), not only internal resources are used for innovation. Instead, innovation depends much more on the effective utilisation of technology and knowledge, even beyond internal capacities. According to Teece (1986, pp. 288–289), the use of external capacities can be seen as additional innovation input factors, especially in the case of open source projects. As Bassanini and Ernst (2002) or Scarpetta and Tressel (2004) emphasise, severe restrictions on terminations of labour contracts may limit the incentive to implement labour-saving process innovations. Following Adams and Brock (2004), flexible employment also allows a larger labour turnover which introduces new knowledge and fresh ideas into a company and additionally allows an easier replacement of inefficient workers (Zhou et al., 2011, p. 4). Finally, Ichniowski and Shaw (1995) think that permanent employees may be disinclined to change in the form of innovation due to habit or so called lock-in effects. In this respect, flexible working arrangements such as outsourcing, temporary, or fixed-term contracts can fit exactly right with the innovation process.

In the end, the question which effect predominates also depends on the sector and its innovation regime. The negative impact of external numerical and functional labour market flexibility particularly applies to sectors where companies depend on their historically accumulated knowledge. These sectors are dominated by a so-called routinised innovation regime characterised by leading innovators and high entry barriers (Kleinknecht et al., 2014). Sectors with a high competition, low market entry barriers and generally available knowledge, in contrast, tend to have an entrepreneurial innovation regime. Those sectors might much more benefit from flexible labour contracts.[7]

Hypothesis I. The impact of external numerical and functional flexibility on innovation depends on the innovation regime. It is negative in a routinised innovation regime, while for sectors that

[5] Further classifications of labour market flexibility can be found in Beatson (1995), Blyton (1992), or Klau and Mittelstädt (1986).

[6] A more detailed survey is given by Pieroni and Pompei (2008, pp. 326–329), Storey et al. (2002, pp. 3–4), or Zhou et al. (2011, pp. 3–6).

[7] These two innovation regimes are also referred to as Schumpeter mark I and Schumpeter mark II innovation models. More information describing the different innovation regimes based on Schumpeter can be found in Breschi et al. (2000), Kleinknecht et al. (2006) and Kleinknecht et al. (2014).