The Impact of Regulation on Innovation

Regulatory framework conditions have been identified as important factors influencing the innovation activities of companies, industries and whole economies. However, in the growing body of empirical based literature, the impacts of regulation have been assessed as rather ambivalent for innovation in general, often depending on the different types of innovation. Different types of regulations generate various impacts on innovation, and even a single specific regulation can influence innovation in various ways differentiating between innovation input, i.e. research and development, and output, e.g. incremental or radical innovations, often depending on how it is implemented. The endogenous growth approach developed by Carlin and Soskice (2006), which determines endogenously the rate of technological progress and therefore innovation, allows a conceptual analysis of the influence of different types of regulation on innovation. In general, the negative effect of compliance costs, which are most relevant in the short run, is compared with the more dynamic effect of regulations generating additional incentives for innovative activities. Based on this approach, we analyse the impacts of different specific regulations on innovation assuming that all types of regulation promote the diffusion of innovation in general. We differentiate between economic, social and institutional regulations following the OECD taxonomy of regulations. Existing empirical analyses are surveyed, which are characterised by rather heterogeneous methodological approaches, data bases and results. If we examine the implications on the direction of innovation activities, economic regulations try to keep a high level of competitive pressure, which forces companies both to realise process innovations in order to succeed in price competition and to successfully introduce new products and services into the market in order to escape from fierce competitive pressure. These general impacts can be observed in most of the existing studies, although the immediate specific impacts that foster innovation are difficult to identify. Besides the general studies, the overview of sector-specific studies on the impact of regulation on innovations complements the picture by confirming that the impacts are both sector specific and also company and innovation type specific. Social regulations mainly addressing negative external effects have strong impacts on the direction of innovation activities towards the protection of the environment, the health and safety of citizens in general, but more specifically of consumers and workers. The majority of the studies examined focus on the innovation impacts of environmental regulations. Despite some early ambivalent results, most recent studies reveal mainly positive impacts. This is also due to the fact that environmental policies and the responsible regulatory bodies use regulation explicitly as one policy instrument to foster innovation in contrast to most other policies and regulating institutions. Very few studies on selected institutional regulations provide evidence of stronger incentives for innovation activities, such as product liability towards safer innovative products and services. In addition, employment protection legislations may have in general a positive impact depending on the type of innovation, whereas immigration laws do not show any influence yet1. More restrictive bankruptcy laws are negative for innovation, because they divert activities and investments away from risky towards less innovative engagements. Finally, only the innovation impacts of intellectual property rights (IPRs) regimes as a very generic form of regulation have been investigated in several studies, which confirm the expected and intended general positive impacts. However, some recent studies raise doubts about the innovation incentivising impacts of IPRs, which are increasingly used for the achievement of companies' strategic objectives rather than having innovation as a top priority. In summary, the numerous empirical studies on the impact of different types of regulation on innovation present a rather heterogeneous picture both regarding the type of regulation, the sectors, the companies and the time horizon of the impacts. The studies also show differences between short and long term impacts. The short term impacts of regulations are often negative for innovation in contrast to the long term implications by forcing or encouraging their adoption; and accelerating the uptake of innovations and their spillover benefits. Interestingly, it should be noted that the impacts are not time invariant, i.e. earlier studies find slightly more negative impacts, whereas more recent investigations tend to reveal more positive implications especially in relation to environmental regulations. Furthermore, it has to be noted that most quantitative studies about the impact of regulations are not able to distinguish between the influence of changes in the legislation (on innovation activities) and of their enforcement and the related compliance of companies. Finally, the development of an "innovation culture" within regulatory bodies certainly promotes the positive innovation impact of regulations. However, this aspect has not been analysed yet. Research gaps still exist in the development of appropriate

indicators of the regulatory framework. Furthermore, the processes within companies to react to regulations deserve more attention to understand the rather heterogeneous impacts on innovations. Finally, regulations are per se not only exogenous to companies, but often there is close interaction between regulators and the regulated companies, which should further explain some of the existing ambivalence. Based on the general insights from the conceptual approach, the empirical analyses, but also the gaps identified, the following proposals for more innovation-friendly and innovation targeting regulatory policies can be derived: Strengthen the focus on innovation in regulatory policy. Increase the quality of the regulatory framework regarding innovation. Improve the implementation of regulations to foster innovation. Include innovation in ex ante and ex post regulatory impact assessments. Optimise the frequency and timing of reviewing existing regulations. Coordinate the policies of all relevant regulatory bodies to foster innovation. Move innovation into the centre of public policies in general and in the set of objectives and the general culture of regulatory bodies in particular. Integrate regulation in the research on innovation systems. [1] More details on labour regulations can be found in the NESTA Compendium report by Barbra Jones (2012): Innovation and Human Resources: Migration Policies and Employment Protection Policies; London/Manchester.
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