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Disentangling patterns of economic, technological and innovative specialization of Western economies: An assessment of the Varieties-of-Capitalism theory on comparative institutional advantages

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ABSTRACT

It is one of the central arguments of the Varieties-of-Capitalism (VoC) literature that national institutions determine comparative advantage. While Liberal Market Economies (LMEs) are said to offer comparative institutional advantages to firms that specialize in high-tech sectors based on radical innovation, Coordinated Market Economies (CMEs) offer advantages to firms specializing in medium-high-tech sectors characterized by incremental innovation. Several studies have tested these claims and arrived at contradictory results about specialization in line with institutional advantages. We argue that undifferentiated conceptualizations of the notion of specialization contribute to these inconclusive results. Based on the insights of the innovation literature on comparative advantage, we therefore disentangle the concepts of 1) economic specialization, 2) technological specialization, and 3) innovative specialization. Our analyses of panel data on exports and patents show that the VoC theory is rather weak in explaining patterns of economic specialization but can account for technological specialization. Furthermore, the VoC literature can hardly explain patterns of innovative specialization.

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1. Introduction

Ever since the work of Ricardo (1821), the determinants of national comparative advantages have been subject of social science debate. Gradually, economic explanations of comparative advantage based on the production factors labour and capital (Heckscher, 1919; Ohlin, 1933; Vanek, 1968) have given way to accounts of institutions as determinants of comparative advantage (Freeman and Perez, 1988; Porter, 1990; Lundvall, 1992; Hall and Soskice, 2001). From a strategic management perspective, Porter (1990) showed how national institutions, such as a country's education and financial system, can support firms in performing competitive strategies of low-cost or high-quality production. A few years later, the literature on National Innovation Systems (NIS) proposed arguments about the links between national (scientific) institutions and their comparative advantages offered to firms in sectors of diverse innovation intensity (Dalum, 1992; Faber and Hesén, 2004; Herrmann and Peine, 2011). Over the past two decades, the Varieties of Capitalism literature has devel-

oped the most comprehensive framework on how labour- and financial-market institutions, as well as institutions channeling inter-organizational collaboration, offer comparative advantages to firms, which lead the latter to specialize in line with the facilitated product, technology, or innovation strategies (Hall and Soskice, 2001; Hancké et al., 2007; Hall and Gingerich, 2009).

The Varieties of Capitalism (VoC) theory concentrates on the Western world and distinguishes two types of countries with different institutional structures: Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs). In LMEs, economic activities are structured by market-based institutions, whereas coordinating institutions channel the interactions of economic actors in CMEs. Due to these institutional foundations, so the further argument of the VoC scholars, firms in LMEs have a comparative advantage in high-tech production based on radical innovation and, consequently, in so-called high-tech sectors like biotechnology and IT. Firms in CMEs, on the other hand, have an advantage in high-quality production based on incremental innovation and, thus, in medium-high-tech sectors such as automotive and machinery.

Various empirical studies have tested the claims of the VoC literature on corporate specialization in line with institutional advantages, but the results obtained are often contradictory. While

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some studies find, at least partial, empirical support for the specialization theory (Allen et al., 2006; Akkermans et al., 2009; Schneider and Paunescu, 2012), others reject it (Taylor, 2004; Herrmann, 2008a). This is problematic because the VoC arguments on the comparative advantage of nations have become a highly influential explanation for the types of industries that prosper in some rather than in other countries. Furthermore, the VoC arguments are also widely used in policy-making, for example in the strategy document aiming at strengthening the single European market (Monti 2010; Trouille, 2011). At the same time, the persistent academic debate about the empirical validity of this argument casts doubt on the generalizability of the VoC theory.

We argue that these contradicting outcomes largely result from the undifferentiated conceptualizations of comparative advantage and, thus, specialization patterns (Hall and Soskice, 2001; Akkermans et al., 2009; Schneider and Paunescu, 2012). From the innovation literature on comparative advantage, we know that specialization patterns can be conceptualized as *economic* specialization in specific export sectors, as *technological* specialization in distinct industries, or as *innovative* specialization, that is as specialization in a specific type of innovation (Laurson, 2000; Leiponen and Drejer, 2007). If a country excels in a particular sector technologically, it does not necessarily show a high economic specialization in that sector – and vice versa (Laurson, 2000; Schmoch et al., 2003). Similarly, the innovation literature on comparative advantage teaches us that firms in each sector develop both radical and incremental innovations (Mangematin et al., 2003; Leiponen and Drejer, 2007; Kirner et al., 2009).

In order to shed light on the VoC debate about corporate specialization patterns in line with comparative institutional advantages, we distinguish between different specialization concepts. Accordingly, we ask the question whether the VoC theory on comparative institutional advantages can explain patterns of economic, technological and innovative specializations in Western economies.

To answer this question, we test the empirical validity of the VoC claims with the help of panel data of exports and patents. In line with previous VoC studies assessing specialization patterns, we measure economic specialization with export data (Allen et al., 2006; Schneider and Paunescu, 2012), technological specialization with data on patent applications (Taylor, 2004), and innovative specialization with patent citation data (Akkermans et al., 2009). Taking the criticism of the CME-LME dichotomy into account (Streeck, 2010; Thelen, 2012), we follow more recent developments of the VoC literature by distinguishing not only between one broad group of CME and LME economies, but differentiate additionally between CME countries with stable institutions and CME countries that have liberalized (at least some of their) key labour- and financial-market institutions over the past decades (Schneider and Paunescu, 2012). Our analyses show that the VoC arguments weakly predict economic specialization, can account for technological specialization, and are hardly reflected in innovative specialization patterns.

To illustrate our argument, the remainder of this paper is organized as follows. In section two, we lay out the VoC reasoning and discuss the various conceptualizations of comparative advantage in the innovation literature. In section three, we describe the data and analytical approaches used. We present the results of our analyses in section four. Section five concludes with a discussion of the implications and limitations of our results, and points to avenues for further research.

2. Theory

The VoC theory on comparative institutional advantages starts with the observation that the institutions structuring economic

relationships within Western political economies differ systematically (Hall and Soskice, 2001). In Liberal Market Economies (LMEs) – including the Anglo-Saxon countries, most prominently, the United States – competitive market-based arrangements constitute the primary mode of economic interaction. Relationships between economic actors are dominated by arm's length interaction based on formal contracting: Labour markets are fluid and allow firms to hire, and fire, employees from one day to the next. As a result, the scientists and workers employed in firms typically have portable rather than firm-specific skills. Since supervisory boards are unknown to firms in LMEs, the top management often has unilateral control over the firm. Firms chiefly rely on equity markets to acquire finance, which is provided based on publicly available information. The case-based common law of LMEs makes firms reluctant to collaborate within the framework of encompassing industry associations as they fear to be found guilty of violating antitrust regulations (Hall and Soskice 2001; Hancké et al., 2007).

In CMEs, by contrast, concerted and collaborative relationships between economic actors are the predominant form of interaction. Powerful unions and work councils combined with restrictive labour-market regulation make it difficult to hire and dismiss employees on short notice. As a consequence, long-term oriented career trajectories within one company motivate scientists and shop-floor workers to gain high and company-specific skills. Supervisory boards including both employee representatives and shareholders grant important control rights to the board members. Therefore, major stakeholders – such as banks, suppliers, employees, or the founding family – also tend to be major shareholders of a company. Finally, the code-based civil law of CMEs gives firms the necessary security that large-scale cooperation within encompassing industry associations will not be considered as violating antitrust legislation (Hall and Soskice, 2001; Hancké et al., 2007).

According to the VoC literature, these institutional constellations offer important comparative advantages to firms in CMEs and LMEs respectively. In LMEs, the institutional setting brings firms to focus on high-tech production based on radical innovation and, consequently, to specialize in so-called high-tech sectors like biotechnology and IT. Thanks to their versatile skills, scientists and shop-floor workers are creative, come up with radically new ideas and are used to cope with the rapidly changing work environments. Since wages are flexible, firms can reward their employees for such outstanding results. Furthermore, shareholders without a voice in a company's supervisory boards chiefly rely on publicly accessible stock market indicators to evaluate corporate performance, because they have only reduced monitoring possibilities to understand how their investments are used. Consequently, firms focus on radically innovative high-tech projects that promise high returns on shareholder value. Since antitrust regulation is suspicious of large-scale firm collaboration, new component standards are developed in small consortia rather than in encompassing industry associations. This helps firms to protect radical innovations from imitation by competitors (Hall and Soskice, 2001, p. 27–33).

The institutional basis in CMEs, on the contrary, brings firms to specialize in high-quality production based on incremental innovation in medium-high-tech sectors such as automotive and machinery. Thanks to their firm-specific skills, employees are less creative, but have the necessary in-depth knowledge to bring the products of 'their' company to perfection. Thanks to the control rights granted to supervisory board members, shareholders have inside information on how their investments are used. In line with their own interests as the company's stakeholders, they thus have a preference for less risky product-improvement strategies even if these promise more limited, but stable, returns on shareholder value. Thanks to the permissive antitrust regulation, suppliers and producers can jointly develop new component standards in encom-

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