Economic Prosperity under Varieties of Capitalism

The structural change of 12 developed states over the years 1973-2008 was analysed with a focus on the manufacturing sector. Key indicators were sectoral parameters (output, employment, productivity), exports (export rate, trade balance) and inequality indicators (GINI index, S90/S10 ratio). By comparative analysis, three state clusters were identified. Their paths of development were put in relation with the politico-economic regimes of the analysed states as described by models of capitalism. It was found that the varieties of capitalism (VoC) approach by Hall and Soskice (2001a) provides a sound explanatory basis for macro-economic developments triggered by the manufacturing sector: Manufacturing requires incremental innovation, a path that is paved by coordinated market economies (CME). Countries of that group: Austria, Finland, Germany, Sweden, also (to a lesser extent) Belgium and the Netherlands. Due to their institutional structures, liberal market economies (LME) aim at disruptive innovation and put less effort into incremental innovation as required to achieve a high manufacturing productivity. Countries of that group: UK, USA. This notwithstanding, the explanatory power of the VoC dichotomy is incomprehensive since a sample of CMEs (France, Italy, Japan, Spain) were found to be less successful in reaching a cutting-edge manufacturing productivity. For this deviating group, drawing from the model of Schmidt (2003), the strong role of the state in their national economies was identified as the decisive factor for their deviance. State economic guidance and interference kept the respective economies from living up to their full potential in manufacturing and thus hampered economic success. Models involving other factors (e.g. geography, welfare system) had less explanatory power for the identified socio-economic results.

Keywords: Structural Change, Manufacturing, Productivity, Varieties Of Capitalism, Comparative Capitalism, Deindustrialization

Introduction

Comparative Capitalism is a stream of economic theory that strives at distinguishing certain types of capitalism by their determinants of economic development and, in more recent publications, also in their relation to social inequality (Nölke, 2010). In this study covering the years 1973-2008, the structural change of 12 developed states with special regard to the manufacturing sector is contrasted with varieties of capitalism. Patterns of socio-economic development are identified and put in relation with various models of Comparative Capitalism, starting from the Varieties of Capitalism (VoC) approach.

Literature Review

The theories of Comparative Capitalism are based on the assumption of path-dependent developments triggered by cultural and historical preconditions. In this study, their explanatory applicability on sectoral change with a focus on the development of the manufacturing sector is explored. Accordingly, this literature review involves the following topics:
The role of manufacturing in national economies,
the course of industrialisation and internationalisation,
comparative analysis of capitalism.

The Role of Manufacturing in National Economies

In this section, the sectoral variety of manufacturing technologies will be presented, followed by a delineation of the role of manufacturing in the process of structural change of a national economy.

Manufacturing Sub-Sectors and Technical

The manufacturing sector is no completely homogeneous entity, but involves production processes of very different kinds and technological levels. To make these levels accountable, economists have come up with sectoral classifications. The one utilised in this article (European Commission, 2014) is given in Table 1. The ISIC 4 sectors shaded grey are accounted as high-tech sectors.

The manufacturing sector is part of the ISIC 4 International Standard Classification of all economic activities (United Nations, 2008). The following sections are listed:

- Primary Sector (Agriculture):
  A Agriculture, forestry and fishing

- Secondary Sector (Industry):
  B Mining and quarrying
  C Manufacturing
  D Electricity, gas, steam and air conditioning supply
  E Water supply; sewerage, waste management and remediation activities
  F Construction

- Tertiary Sector (Services):
  G-U Private and public services
Table 1. ISIC 4 codes including technology assessment

<table>
<thead>
<tr>
<th>ISIC 4</th>
<th>Classification</th>
<th>Technical level *</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Manufacture of food products</td>
<td>low</td>
</tr>
<tr>
<td>11</td>
<td>Manufacture of beverages</td>
<td>low</td>
</tr>
<tr>
<td>12</td>
<td>Manufacture of tobacco products</td>
<td>low</td>
</tr>
<tr>
<td>13</td>
<td>Manufacture of textiles</td>
<td>low</td>
</tr>
<tr>
<td>14</td>
<td>Manufacture of wearing apparel</td>
<td>low</td>
</tr>
<tr>
<td>15</td>
<td>Manufacture of leather and related products</td>
<td>low</td>
</tr>
<tr>
<td>16</td>
<td>Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials</td>
<td>low</td>
</tr>
<tr>
<td>17</td>
<td>Manufacture of paper and paper products</td>
<td>low</td>
</tr>
<tr>
<td>18</td>
<td>Printing and reproduction of recorded media</td>
<td>low</td>
</tr>
<tr>
<td>19</td>
<td>Manufacture of coke and refined petroleum products</td>
<td>medium low</td>
</tr>
<tr>
<td>20</td>
<td>Manufacture of chemicals and chemical products</td>
<td>medium high</td>
</tr>
<tr>
<td>21</td>
<td>Manufacture of basic pharmaceutical products and pharmaceutical preparations</td>
<td>high</td>
</tr>
<tr>
<td>22</td>
<td>Manufacture of rubber and plastic products</td>
<td>medium low</td>
</tr>
<tr>
<td>23</td>
<td>Manufacture of other non-metallic mineral products</td>
<td>medium low</td>
</tr>
<tr>
<td>24</td>
<td>Manufacture of basic metals</td>
<td>medium low</td>
</tr>
<tr>
<td>25</td>
<td>Manufacture of fabricated metal products, except machinery and equipment</td>
<td>medium low</td>
</tr>
<tr>
<td>26</td>
<td>Manufacture of computer, electronic and optical products</td>
<td>high</td>
</tr>
<tr>
<td>27</td>
<td>Manufacture of electrical equipment</td>
<td>medium high</td>
</tr>
<tr>
<td>28</td>
<td>Manufacture of machinery and equipment n.e.c.</td>
<td>medium high</td>
</tr>
<tr>
<td>29</td>
<td>Manufacture of motor vehicles, trailers and semi-trailers</td>
<td>medium high</td>
</tr>
<tr>
<td>30</td>
<td>Manufacture of other transport equipment</td>
<td>medium high</td>
</tr>
<tr>
<td>31</td>
<td>Manufacture of furniture</td>
<td>low</td>
</tr>
<tr>
<td>32</td>
<td>Other manufacturing</td>
<td>low</td>
</tr>
<tr>
<td>33</td>
<td>Repair and installation of machinery and equipment</td>
<td>medium low</td>
</tr>
</tbody>
</table>


The Role of Manufacturing in a National Economy

The three-sector hypothesis, introduced by Fisher (1935) and Clark (1940) and taken further by Fourastié (1949), is a politico-economic theory describing the sectoral structural change of a national economy (Klodt, 2014c). On a low level of development, the primary sector (agriculture) dominates, later the secondary sector (industrial production) and, as the final achievement, the tertiary sector (services) (Klodt, 2014b).

On a low income level, the demand for goods is focused on the coverage of basic needs and thus relatively inelastic. With rising income, the elasticity of demand rises. Thus, industrial goods and – in the course of development – services become more and more favoured. Moreover, technical progress leads to different patterns of growth per sector. In the secondary sector (capital-intensive production), the labour content becomes reduced by automation, so
deindustrialization as a relative decline in sectoral employment results. Possibilities for productivity rises in the tertiary sector were considered as limited by the authors of the middle 20th century (Klodt, 2014b).

While the outlined pattern of structural change has been demonstrated in general by empirical studies (Pohl, 1970), the presumption of a general backlog in productivity of the tertiary sector did not prove to be appropriate. It was based on the notion of services as typically being consumer-oriented. In recent decades, modern information and communication technologies (ICT services) have played an important and still growing role in enterprise-oriented services and have improved the productivity of many other fields of service (Klodt, 2014a). Therefore, the dominant factor for the advancement of services can be seen in a shift of demand (Klodt, 2014b).

The socio-economic debate on de-industrialization focussed on manufacturing as the core industrial sector (Kollmeyer, 2009). Central to economic thought on manufacturing was the idea that “there is something special about manufacturing” (Kitson & Michie, 2014, p. 322). Among the first authors that argued in that direction were Young (1928), Lewis (1954) and Kaldor (1966). The British economist Nicholas Kaldor (1908-1986) was of major influence not only in scientific debate, but as a policy advisor for the British Labour government since 1964 (Dasgupta & Singh, 2006). He estimated the productivity growth of manufacturing higher than that of both other sectors because of its exclusive potential of economies of scale (Kitson & Michie, 2014) and thus assumed manufacturing to be the central cause of GDP growth, its ‘engine of growth’ (Thirlwall, 1983, p. 345).

In this context, Kitson and Michie (2014) alluded that in many states the manufacturing sector has closely been linked with other economic sectors, not only services, but namely higher education and the public sector. The authors state that by active industrial policies, governments like those of Germany, Japanese and the USA “have been picking winners […] whilst hiding behind the convenient veil of the free market” (p. 325). Hence, they are referring to the institutional underpinning of the manufacturing sector.

As Singh (1977) noted, the manufacturing sector is of crucial influence on the external balance of a country. He followed that idea three decades later when noticing that UK manufacturing accounted for less than 20 % of the GDP, but still for 60 % of its foreign trade (Dasgupta & Singh, 2006). Kitson and Michie (2014) underlined this by stating that from the early 1980s, the UK for the first time since the industrial revolution had a negative balance on manufactures. They blamed ill-led capital flows, e.g. into a too big financial sector, for the weak manufacturing sector in the UK and the subsequent economic distortions as the trade deficit and regional imbalances.

To wind up the discussion on whether there is something special about manufacturing, the following can be stated (Przywara 2017):

- Economic welfare may also be achieved by competitive advantages in other sectors (e.g. KIBS, oil and gas production).
Any sectoral weakness needs to be compensated by imports. Sectoral specialisation may be the source of wealth (e.g. oil and gas exports) but often weakens other sectors (e.g. manufacturing) by drawing away investments (so-called ‘Dutch disease’).

Both as an exporter (e.g. of oil and gas) and as an importer (e.g. in manufacturing), the unbalanced economy is put at an extra risk of being very susceptible to blackmail from their respective customers or suppliers. Close international cooperation is the only way to limit these risks.

The Course of Industrialisation and Internationalisation

Before turning to internationalisation, the historical industrial development of early modern states is introduced. The contributions of France, Great Britain, the United States and Germany are highlighted with an eye on their cultural and institutional background.

Industrialisation

Despite of the fact that in the 18th century, France was the by far leading nation in academic research and teaching of natural sciences (especially physics), the first country to industrialize was Great Britain (from 1801: United Kingdom). This can chiefly be attributed to the fact that industrial progress at that time was rather driven by craftsmanship and private entrepreneurship (Great Britain) than by scientists and state initiative (France).

France – cradle of academic teaching of technology

In France, the mercantilists under Colbert had removed century-old traditions of the guilds, the institutions that had hindered technical developments by fiercely defending their artisan traditions. But as successful as in removing old development hurdles, the French were in putting up new ones by their system of state protectionism. Moreover, their intolerance towards religious minorities such as Huguenots, Protestants and Calvinists turned out to be of negative influence for the persecutors. Members of these religious orientations did not preferably seek gratifications for good conduct in afterlife, but considered the accumulation of wealth as the highest authentication for a life agreeable to God. Their ambition and mind-set was of major influence on the industrial development of the states that received them openly, namely England, the Netherlands, Prussia and the USA (Nedoluha, 1961).

At a time when in Great Britain free entrepreneurship blossomed, the French elite stubbornly stuck to their traditional ideas on state and economy until the ancien régime was swept away by the revolution of 1789. In its course and the subsequent Napoleonic era, France completely lost the big technological advance that it had built up and maintained for a good century (Buxbaum, 1921). Yet, its scientific and technical traditions, symbolized by
institutions like the Académie française, were taken further. The first academic technical schools, the École des Ponts et Chaussées (founded 1747) and notably the École polytechnique (founded 1794), served as role models for academic teaching of science and technology (Spur, 1991). The idea of the technical university, drawing from Galileo’s notion that “the book of nature is written in the language of mathematics” (Machamer, 2014), was especially picked up by the German countries. Though it took a while to lift off, it finally helped Germany to overcome its underdevelopment and industrial backwardness and leapfrog competition (Przywara, 2006).

Great Britain – motherland of industry driven by entrepreneurship

Great Britain was very different to France. Blessed with available natural resources (coal, wood, water), capital from colonial endeavours and inventive genius not hampered by tradition, it was the first country to industrialize. By improvements in agriculture like new ploughing techniques, Great Britain’s primary sector was able to feed a rising number of people. In the enclosure movement, the available agricultural land had been re-shaped and concentrated in the hands of a few land-owners, mainly the local gentry, at the expense of the local commons (Fairlie, 2009; Hardin, 1968). The movement had three major effects:

- The land was more intensively cultivated.
- The disenfranchised commons had to make a living elsewhere, so enough people were ready to work in factories.
- The landlords became more and more business-minded and ready to invest, which later helped develop industrial structures (Niedhart, 1995).

British inventors had improved the production process of garment, especially by removing the long-known bottleneck caused by the spinning process. Thereby, the industrial production of textiles was finally ready to beat the price of precedent proto-industrial structures involving home-based artisan steps of manufacture (Mommertz, 1987).

The key material for the industrial age was steel. In the late 18th century, British inventors had gained the ability to generate forgeable steel in large amounts utilizing available black coal instead of rather scarce wood in the production process. Thus, Great Britain became free from the necessity to import large amounts of steel from Sweden (Niedhart, 1995).

Yet, another obstacle had to be overcome to start into the industrial age. Until the very late 18th century, parts made of steel could only be shaped on a manual basis. Without available machinery, no production of standardized parts could be realized. It required a combination of technical genius and palmary mechanical skills to overcome these obstacles and build the first machine tools on the basis of craftsmanship before machines could be used to make machines. Henry Maudsley (1771-1831) was the man who made the first industrial lathe in 1797. With his machine, steel elements like screws and nuts
could be cut at constant dimensions for the first time. Once this Gordian knot was cut, within a few years all other machine tools known today (e.g. machine for milling, drilling, grinding and slotting) were invented and built, facilitating mass production on the basis of precise and interchangeable parts (Przywara, 2006).

Already the very early industrial development of Great Britain was driven by entrepreneurship and individual technical genius. It could blossom because, unlike in contemporary European countries like France and Germany, creativity was not hampered by narrow traditions of guilds and crafts or state regulations. Throughout the 18th and the first half of the 19th century, technical progress was mainly achieved by trial-and-error procedures executed by persons often outside the subject area. They found the most suitable natural and economic conditions in Great Britain. On this basis, and despite of not being the leading nation in natural and engineering sciences which clearly was France, Great Britain became the motherland of the industrial revolution (Przywara, 2006).

Despite of available machinery, firms in Great Britain did not change existing production processes requiring manual skills, e.g. for rifle production. New ways of production were chiefly used for new products in heavy industries (Spur, 1991), especially utilising the steam engine. Its grade of efficiency could be largely increased by precision manufacture, and so it became widespread in different heavy industry applications like the railway and the ship-building sector (Mommertz, 1987).

**United States of America – home of modern production systems**

Utilizing machine tools in mass production was realized for the first time in a country free from the traditions, skills and limitations of craftsmanship. The young USA suffered from British sanctions on the export of goods and the emigration of highly-skilled people, so new ways of production had to be developed that would replace manual skills by machinery and organization. Production of rifles was the first sector where an interplay of high demand and ingenuity led to interchangeability in the second decade of the 19th century. The ‘American system of manufacturing’, characterized by division of labour and use of machinery, was then successfully transferred to the manufacture of more and more consumer goods. American producers benefitted from the fact that they could utilize milling processes as their key steps of production due to the relatively soft American iron, whereas in Britain, milling tools did not withstand the more adverse local material properties (Przywara, 2006).

**Germany – role model for catch-up modernization**

In the late 19th century, innovations at the forefront of technical advance were no longer achieved on a mere trial-and-error basis, but required scientific underpinning. E.g. producing gears required a precise mathematical understanding of cycloids and a deep knowledge of grinding technologies for
machining hardened surfaces. These skills were also necessary for the manufacture of rolling contact bearings, an invention crucial for the production of bicycles and later motor vehicles. Combining science and technology was the key competence of technical universities which became the more useful the more sophisticated technologies were implemented.

As outlined above, the German countries had picked up the French tradition of academic teaching of technology. In the long run, the early investments of Prussia and other German states paid off. After the German Empire was founded in 1871, Germany’s industry gained technological leadership in several fields (e.g. power engineering, chemistry) and before World War I turned the British consumer warning “Made in Germany” into a seal of quality (Przywara, 2006).

*The chronology of technical evolution in a nutshell*

The technical developments of the long 19th century, i.e. the time span from the French Revolution until the beginning of World War I, are exposed in Figure 1.

**Figure 1. Chronology of industrial development**

[Diagram showing chronological development of industries]

*Source:* Own compilation.

The developments are characterized by three phases:

1. Until around the middle of the 19th century, the United Kingdom was the undisputed ‘workshop of the world’ which presented itself proudly at the
first world exposition in London in 1851. It had established the elementary
technologies for industrial production (steelmaking and machine tools).

(2) Within a few years, the situation changed completely. At the world
exposition in Philadelphia in 1876, the USA had taken the technological lead
especially in machine tools. For its fast-growing domestic market, fostered by
excellent natural (coasts and rivers) and man-made (channels, railways)
logistical connections, mass goods were produced on the basis of the
'American system of manufacturing'.

(3) By the end of the century, the German empire had caught up and taken
the lead in some of the most demanding technological fields of that era (Spur,
1991). Unlike its Anglo-Saxon competitors, it could draw from excellent
technical education rendered by technical universities and vocational schools
founded after the French role model. Far-sighted investments of German
states, especially the Prussian ministry of culture, eventually paid off
(Przywara, 2006).

The course of historical industrial development followed a certain course:

- First, a raw material basis was assured (steel, mining).
- The textile industry was the vanguard sector.
- To establish mass production, high technical, organisational and
capital demands (machine tools, mechanical engineering, division of
labour) needed to be fulfilled.
- Scientific skills rendered by higher education were required to
establish the most advanced technologies (chemicals, pharmaceuticals,
power engineering, motor vehicles, electronics).

The Course of Internationalisation

Globalization can be considered as the ultimate stage of
internationalization. Its phenomena such as international trade, licensing and
direct investment and the reasons behind them can be analysed at different
aggregate levels: macro-economic, micro-economic, institutional, personal.
While macro-economic approaches can explain trade, they have little or
nothing to say concerning foreign direct investments, since these are carried
out at firm level on the basis of management decisions (Dülfer & Jöstingmeier,
2008). (This holds at least as long as these enterprises are free from major state
influence.)

According to Abele, Kluge and Näher (2006), three phases of globalization
can be distinguished (Figure 3):
Starting at around 1850, first enterprises started to expand internationally. E.g. Siemens, founded in 1847, started building up the Russian telegraph network in 1853 and started a British sales office in 1858.

(2) 1930-1980: Largely independent production in foreign countries
Brand names like Coca-Cola and Mercedes gained international awareness and reputation. Local markets were captured on the basis of local production. As a very early example, GM built up a production in Argentina in 1925 and acquired the German Adam Opel AG in 1929.

(3) From 1980: Global production networks and cross-functional cooperation

Driven by improved frame conditions such as reduced hindrances for trade and foreign direct investment (FDI), improved information and communication technologies (ICTs) and constantly falling transport costs per unit, companies can split their value chains globally. Vendor and supplier networks are controlled by worldwide supply chain management.

After World War II, national economies were rather confined entities with export rates lower than before World War I. The USA was by far the most powerful and wealthy economy. Over the years, the frame conditions for business changed. By the GATT/WTO rounds and voluntary cooperation like the European Union, markets became more permeable and interconnected (Meier & Roehr, 2004). The new market conditions helped to raise the welfare of high-income countries to about the American level (Vernon, 1979).

Figure 2. Three phases of globalization

Source: Own graph, after Abele, Kluge, & Näher (2006, p. 4), drawing from McKinsey/PTW data
From the opening of the East, these developments have been taken further. In the globalized economy, most markets are open and connected and more and more less-developed countries have become economically involved, taking part in the international division of labour (Abele, Kluge, & Näher, 2006). Multi-national companies (MNCs) whose economic rationale is not the benefit of any national economy, but their own (transnational) profit, keep pushing on. The economic power of the strongest MNCs is in the order of magnitude of national states, and so is their aspired political influence. Over the years, more and more MNCs have evolved. In 2012, there were already more than 82,000 transnational groups with 890,000 affiliates in total (UNCTAD, 2013).

In 2011, 43 out of the 100 biggest economic units of the world were companies and not states (White, 2012). Almost half of the almost 1.4 trillion dollars of foreign investments was controlled by the 100 largest MNCs. The whole international trading amounted to approx. 21 trillion dollars (UNCTAD, 2013). A good quarter of the international market volume is intra-firm trade between units of international companies (and not influencing the international markets) (Lanz & Miroudot, 2011).

Due to high capital demands for internationalization, companies had to learn to focus on core competencies and to outsource parts of their value chains, even some of those they considered as vital before including major shares of R&D (Prahalad & Hamel, 1990). They departed from many of their easy-to-handle but inefficient in-house units. By outsourcing, the benefits of specialization (more customers and know-how, higher efficiency) dominated. While some big players dominate specific industrial markets, the machine building sector is a rag rug of niche markets where small or medium-sized firms, often family-owned, act as ‘hidden champions’ (Abele, Kluge, & Näher, 2006).

In today’s globalized economic environment, industry in high-cost countries is facing competition of low-cost countries in more and more fields (Figure 3). High-cost countries compete on the basis of ever-improved productivity and good education of their workforce. But some low-cost competitors have learnt the lesson from Germany that put emphasis on its education sector during its catch-up modernization in the 19th century.

Low-tech manufacturing sectors in high-cost countries have got more and more under pressure, and even medium-high or high-tech sectors become part of the battle zone (Figure 3). If manufacture is to be kept in high-cost countries, there has to be some competitive advantage in terms of unique technology and/or superior productivity and logistics.
Figure 3. Competitive situation of industries in the global environment


Comparative Analysis of Capitalism

According to a well-established definition by Edgar Schein, organizational culture consists of “the basic assumptions and beliefs that are shared by members of an organisation, that operate unconsciously and define in a basic taken-for-granted fashion an organisation’s view of itself and its environment” (Schein, 2004, p. 6). The behaviour of members of an organization is influenced by partly overlapping specific cultures, constituting cultural frames of reference of the following spheres (Johnson et al., 2014):

- national/regional,
- organisational field,
- organisation,
- functional/divisional.

Attitudes to work, authority, equality and other important factors for the development of firms and their functions and divisions, economic sectors and national economies may vary largely at all these aggregate levels of an economy. Yet, national/regional cultural differences have an impact on all organisations of the respective national/regional economy. Such differences have been shaped by factors like geography, religion, politics and socio-economic history over many centuries (Johnson et al., 2014), so they are
deeply rooted in the cultural memory of the people of the respective country or region. The related taken-for-granted assumptions and behaviours pervade the actions of political and economic decision-makers and co-workers at all hierarchical stages, so national culture may exert large influence on the course of socio-economic development of a country.

The Role of the State in Economic Debate

In the course of industrialization, more than one nation took the leading role. The developments were influenced by specific national traditions involving different institutions, e.g. in the education sector. In parallel to economic development, the modern welfare state emerged. From its early beginnings, e.g. in Germany from the late 19th century, it was conceived as a stronghold against the labour movement (Ajazz, 2010). Today, all developed states are if not welfare states, but (to a sometimes very different extent) social states.

The expected role of the state within the economy is seen differently from nation to nation. As the notion of the ‘land of the free’ reveals, most US citizens have not been in favour of a strong state, while the opposite may be the case in countries minted by social-democrat or even socialist traditions. This notwithstanding, Roosevelt’s ‘New Deal’ helped overcome the US Great Depression around 1930. The emerging stronger role of the state was only pushed back by the neo-liberal movement around 1980 as an answer to economic stagnation in England and the USA (Temin, 1989).

The economic mainstream was very much influenced by at a time actual Anglo-Saxon policies. From the 1950s, massive state interventions were advocated, i.e. for import substitutions by (heavy) manufacturing. By the 1990s, economic mainstream thinking had undergone a complete paradigm change. Leading economists (not only the neo-liberalist extremists) and institutions like the IMF and the World Bank propagated the ‘Washington Consensus’, a bundle of measures, recommended deregulation and international competition, even almost complete state withdrawal. In its course, the 2005 World Development Report did not even mention industrial policies anymore (Lin, 2012).

The globalization period was marked by the ideas of free trade, deregulation and international competition. Supra-national organizations like the WTO, the EU and NAFTA created the institutional framework that bolstered the thrive and prosper of the world economy, more and more driven by FDIs of the leading MNCs. The neo-liberal form of a national economy seemed to be superior to any other form of government. Many researchers believed that sooner or later, all economies would converge into that model. Due to the Great Recession 2008/9, this belief was substantially shaken. Meanwhile, the pendulum of economic mainstream thinking has swung back to a certain extent, with economists advising a stronger role of the state and a wider range of economic orientation (Lin, 2012).
While the economic policies of national states were influenced by the actual mainstream, driven by the economic and political power of the USA, this happened only to a certain extent. Nations still followed their own often very different approaches towards economic development. Based on different national cultural backgrounds, different concepts of the state and its institutions evolved, thereby creating specific comparative advantages of their economies.

Varieties of Capitalism

Comparative Capitalism is a stream of economic theory that strives at distinguishing certain types of capitalism by their determinants of economic development and, in more recent publications, also in their relation to social inequality (Nölke, 2010). Starting with the seminal work by Shonfield (1965), a number of typologies of national models of capitalism were developed by writers of different theoretical background, i.e. French regulation school (Amable, 2003), Neo-Marxism (Coates, 2000) and New Institutionalism (Hall & Soskice, 2001a). Like the work of their popular predecessor Albert (1991) who coined the term ‘Rhine capitalism’ in contrary to the ‘Anglo-Saxon’ form, the work of Hall and Soskice is based on a juxtaposition of two types of economies (LME vs. CME). Probably due to this parsimonious approach in combination with a sound framework of institutional analysis (Hoffmann, 2003), their ‘Varieties of Capitalism’ version has gained much acceptance and led to many empirical studies (Nölke, 2010). Even for writers in a Neo-Marxist perspective it offered a starting point of analysis since it predicted path dependency rather than superiority of a single economic model (Bieling, 2011).

Crouch (2005) detected several pitfalls resulting from a mere dichotomy of types, even when limiting the analysis to the around 25 fully developed countries. When either stressing or shrouding certain specific features of the economic reality, Mediterranean countries are either squeezed into the binary model, or a third group is constituted, e.g. by Schmidt (2003). Basing on the seminal paper of Esping-Andersen on forms of Welfare Capitalism (Esping-Andersen, 1990), Schröder (2013), by integrating VoC and welfare state research, arrived at a unified typology of three forms of capitalism.

Whitley (1999) found national economies too different for any form of typification and instead offered a sophisticated multivariate set of parameters for classification. Although such a multivariate analysis is at the bottom of any kind of typology, not presenting any further kind of grouping has not become widely accepted.

While the VoC approach was originally aimed at mature countries, in recent years more and more research was carried out on emerging economies. Mostly, these investigations focused on regions, i.e. Latin America (e.g. Schneider, 2013), East Europe & CIS (e.g. Nölke & Vliegenthart, 2009), Asia (e.g. Andriesse, 2010), but also comparative studies on the biggest emerging economies (BRIC or BICS states) have been conducted (Nölke, 2010).
In the following, the original VoC approach will be introduced in some detail. Outlining its shortfalls, possible amendments for mature countries will be introduced.

The Varieties of Capitalism (VoC) dichotomy

The central actor in the model of Hall and Soskice (2001a) is the firm. It is in relation with other actors, namely its own employees (internal) and a range of external actors that include supply chain partners, stakeholders, trade unions, business associations and governments. Hall and Soskice (2001b) distinguish a fundamental difference in five spheres (institutions) of liberal market economies (LMEs), e.g. the USA, and coordinated market economies (CMEs), e.g. Germany. The five interdependent spheres of institutions are (Nölke, 2010):

1. corporate finance,
2. corporate governance,
3. industrial relations,
4. education/training,
5. transfer of innovation within the economy.

In all these spheres, coordination needs to be achieved for successful outcomes, i.e. minimized transaction costs and avoidance of problems form principal-agent relationships, i.e. moral hazard, adverse selection, hold-up and shirking. The fundamental difference between LMEs and CMEs lies in the prevalent form of coordination. LME firms coordinate their activities by market relations in a context of competition and formal contracting, while CME firms rather depend on non-market relationships, i.e. incomplete contracting, exchange of private information inside networks, a generally more collaborative approach. The involved institutions include strong employer associations, trade unions, networks of cross-shareholding, legal systems that allow information sharing and collaboration (Hall & Soskice, 2001b).

From their analysis, Hall and Soskice contend that a particular institutional environment renders specific conditions of development and eventual competitive advantage to a firm. The authors name that concept “comparative institutional advantage” (Hall & Soskice, 2001b, p. 37). It shows in the prevalent mode of product innovation. While radical innovation is necessary in fast-moving technology sectors like biotechnology, semiconductors, software development, telecommunications, incremental innovation is essential for keeping competitive advantage in the production of capital goods from the machine building sector, e.g. machine tools, factory equipment, consumer durables, transport equipment. From their analysis, Hall and Soskice deduce that LMEs are better suited for bringing about radical innovation while inhibiting incremental innovation. In CMEs, it is exactly the opposite:
In CMEs, the (vocational) training systems provide firms with skilled labour at all levels of the firm, required for incremental progress. Cooperation of firms along the value chain is supported by business associations and appropriate contract laws. Moreover, trade unions aim at labour protection and long-term employment. All this is highly indicative for incremental innovation, while radical innovation is hampered by lacking risk capital and labour mobility.

In LMEs, short-term employment and high market pressure in combination with unilateral control at the firm top prevents the development of a labour force with skills and determination towards incremental innovation. Hire-and-fire policies just do not meet these requirements. On the other hand, available venture capital allows to finance new and risky endeavours with good prospects, drawing from an adaptable and available workforce ready to acquire new skills when paid accordingly. Thus, a good basis for radical innovation is laid.

In most sectors of an LME, production relies on low-cost standardized production driven by employees of low qualification and a correspondingly low wage level. This is in sharp contrast to the few high-technology markets, resulting in high wage differentials, indicated by a high GINI index and low levels of social security. The opposite is the case with CMEs.

<table>
<thead>
<tr>
<th>Type of capitalism</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal market economy (LME)</td>
<td>UK, USA, Ireland, Canada, New Zealand, Australia</td>
</tr>
<tr>
<td>Coordinated market economy (CME)</td>
<td>Germany, Austria, Switzerland, Belgium, France, Netherlands, Italy, Sweden, Denmark, Finland, Norway, Iceland, Japan</td>
</tr>
</tbody>
</table>

Source: Hall & Soskice (2001b, p. 20), amended

Central to the VoC theory is the path dependency of both capitalisms. There is no single optimum policy, no convergence towards one system (presumably LME), but two very different approaches leading to very different results on the basis of specific comparative advantages (Hall, 2005). Path dependency of economies is based on institutional complementarities, i.e. “institutions within a successful economy are mutually reinforcing, balanced, and complementing” (Nölke & Vliegenthart, 2009, p. 672). National institutional arrangements tend to push firms towards certain corporate strategies especially in terms of innovation.

Further to that, paths cannot easily be changed or altered, since firms develop long-term strategies complementary to the institutions in place (Whitley, 2003). They adapt to their environment, creating certain sensitive equilibria. Thus, policy-making can neither simply replace one system by another nor put elements of systems together on a voluntary basis, but has to acknowledge the inherited culturally grounded ‘rule of the game’ within each type. If changes are intended aiming at improved coordination of institutions,
delicate trust-based equilibria need to be respected. These exist especially in CMEs. In the case of LMEs, such trust and respective institutions are difficult to build up, e.g. vocational training fostering the necessary workforce for technology-based small and medium-sized firms, since firms are afraid of possible agency effects and of poaching (Hoffmann, 2003).

Path dependency shows in the detail. Market pressure from globalization was thought to weaken the influence of unions in CMEs, but the more the firms became lean and focused on core competencies, the more dependent they became on their skilled workers. The unions as intermediaries in wage negotiations could retain their strong position in CMEs like Germany and Sweden (Hoffmann, 2003).

The dichotomy is not absolutely straightforward, e.g. Crouch (2005) made the remark that its large state-led military sector does not fit into the usual scheme of US capitalism. Although Hall and Soskice (2001b) acknowledged big differences between institutions of states of one type (e.g. Germany’s formation of industry-specific skills in contrast to Japan’s formation of skills required in business groups) and also sectoral institutional differences within states, they considered the similarities in both groups big enough to justify a dichotomous approach.

Other authors found certain institutional differences meaningful enough to come up with a more differentiated grouping. A number of these typologies are introduced in the following.

Models containing additional types of capitalism

Schmidt (2002, 2003) focussed on the role of the state in national institutions. Despite of a tendency towards more liberal markets in the globalization era from the 1990s, she still distinguished three different market models (Table 3), with France as the central actor of the state-led group characterized by high direct influence of the state in terms of economic guidance and interference, e.g. in wage settlements.

Table 3. Typology of capitalism by Schmidt

<table>
<thead>
<tr>
<th>Type of capitalism</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market (MR)</td>
<td>UK, USA, Ireland, Canada, New Zealand, Australia</td>
</tr>
<tr>
<td>Managed (MD)</td>
<td>Germany, Austria, Denmark, Sweden, Netherlands</td>
</tr>
<tr>
<td>State-led (S-L)</td>
<td>France, Italy, Spain, Japan, Taiwan, Korea</td>
</tr>
</tbody>
</table>

Source: own compilation based on Schmidt (2003)

As Crouch (2005) remarked, Hall and Soskice (2001b) also recognized a ‘Mediterranean’ group (France, Italy, Spain, Portugal, Greece and Turkey), seen as “empirically poised somewhere between the LME and the CME model” (Crouch, 2005, p. 445), but without requiring a specific definition and in most of their text treated as standard CMEs.

Schröder (2013) put his emphasis of analysis on the strength of social security systems and made an attempt of integrating varieties of capitalism and
welfare state research. He gave an overview of five typologies consisting of
two to five types of capitalism. By then connecting the VoC approach with
the classical welfare state typology by Esping-Andersen (1990), he arrived at
his own typology of three variations (Table 4).

Table 4. Unified typology of capitalism by Schröder

<table>
<thead>
<tr>
<th>Type of capitalism</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal (LIB)</td>
<td>UK, USA, Ireland, Canada, New Zealand, Australia</td>
</tr>
<tr>
<td>Conservatively coordinated (CC)</td>
<td>Germany, Austria, Switzerland, Belgium, France,</td>
</tr>
<tr>
<td></td>
<td>Netherlands, Italy, Spain, Portugal, Japan</td>
</tr>
<tr>
<td>Social democratically coordinated (SD)</td>
<td>Sweden, Denmark, Finland, Norway</td>
</tr>
</tbody>
</table>

Source: own compilation based on Schröder (2013)

Compared to the VoC dichotomy, the Anglophone group of LMEs
remained unaltered under the caption ‘liberal capitalism’. The group of CMEs
was split up into the more welfare-state oriented Scandinavian group labelled
as ‘social democratically coordinated capitalism’ and the intermediate group
named as ‘conservatively coordinated capitalism’.

Amable (2003), on the basis of a vast range of empirical institutional
data, came up with five geo-cultural clusters of capitalism (Table 5).

Table 5. Geo-cultural patterns of capitalism by Amable

<table>
<thead>
<tr>
<th>Type of capitalism</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market-based (M-B)</td>
<td>Anglophone countries</td>
</tr>
<tr>
<td>Social democratic (S-D)</td>
<td>Nordic</td>
</tr>
<tr>
<td>Asian (AS)</td>
<td>Japan, Korea</td>
</tr>
<tr>
<td>Mediterranean MED</td>
<td>Southern Europe</td>
</tr>
<tr>
<td>Continental European (CE1, CE2)</td>
<td>Continental Western European less Nordic and Mediterranean</td>
</tr>
<tr>
<td>i)</td>
<td>Netherlands, Switzerland</td>
</tr>
<tr>
<td>ii)</td>
<td>Austria, Belgium, France, Germany</td>
</tr>
</tbody>
</table>

Source: Crouch (2005), p. 447

A different basic approach was taken by Baumol, Litan and Schramm
(2012) who focussed their model (Table 6) on firm ownership in relation to
innovations. They claimed that recent successful forms of capitalism are
hybrids of entrepreneurial small and medium-sized enterprises generating
innovation and powerful firms large enough to succeed in global markets and
to constantly acquire innovations from the inventors. Unlike Hall and Soskice
(2001b) who connected radical innovation with LMEs and incremental
innovation with CMEs, they connect radical innovation with entrepreneurial
small and medium-sized enterprises and incremental innovation with the
oligoplastic big firms. Thus, no juxtaposition of German and US capitalism is
resulting, but different accentuations of a similar form of capitalism.
Table 6. Patterns of capitalism by Baumol, Litan and Schramm

<table>
<thead>
<tr>
<th>Type of capitalism</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oligarchic</td>
<td>Latin America, Africa, Middle East, Russia</td>
</tr>
<tr>
<td>State-guided</td>
<td>Korea, China</td>
</tr>
<tr>
<td>Big-firm</td>
<td>Japan</td>
</tr>
<tr>
<td>Entrepreneurial</td>
<td>(small and medium-sized enterprises)</td>
</tr>
<tr>
<td>Mixed entrepreneurial-oligopolistic</td>
<td>USA, Germany</td>
</tr>
</tbody>
</table>

Source: own compilation, based on Baumol, Litan, & Schramm (2012), pp. 119-121

The typology of Baumol, Litan and Schramm (2012) is not limited to fully-developed economies, but encompasses all global economies. Only in the last decade, developing countries have increasingly been included in VoC literature (Andriesse, 2010).

As these examples of groupings have shown, there is no consensus on how much detail is necessary to not be too inaccurate in terms of diversity for the sake of a parsimonious approach (Crouch, 2005). Yet, the institutional grounds of Hall and Soskice’s (Hall & Soskice, 2001a) analysis have become widely accepted in the analyses of the types of capitalism introduced so far. An overview on VoC typologies is given by Table 7. The typology of Baumol, Litan and Schramm (2012) is not specific in terms of the country sample, so it is not included.

Table 7. VoC patterns

<table>
<thead>
<tr>
<th>Typology</th>
<th>AUT</th>
<th>BEL</th>
<th>FIN</th>
<th>FRA</th>
<th>GER</th>
<th>ITA</th>
<th>JPN</th>
<th>NLD</th>
<th>ESP</th>
<th>SWE</th>
<th>UK</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall &amp; Soskice (2001a)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schmidt (2003)</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Schröder (2013)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amable (2003)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own compilation based on Schmidt (2003), Schröder (2013), Crouch (2005), p. 447

Methodology

In the following, the course of analysis and the available data base will be outlined. The analysis is based on the central idea that the role and shape of the manufacturing sector should significantly deviate between different varieties of capitalism. Manufacturing is a typical sector of incremental innovation which requires skilled staff for enhancing productivity. Thus, CMEs with their well-trained workers are expected to be more inclined towards manufacturing than LMEs.
Other factors (extent of welfare state, state influence on the economy, geography, firm size) may play an additional role, but there are no presumptions on the outcome of the analysis.

Course of Analysis

First, a country pattern of structural change of the manufacturing sector and inequality of the investigated national economies shall be identified. It will then serve as a basis for a comparison with VoC patterns of different typologies (Table 8), trying to identify similarities. In the case of eventual correlations, the fit of the inherent logic of the model with the real economic scenarios will be checked. Additionally, the results will be triangulated with the cultural and historical national context outlined in the literature review.

Indicators for characteristic paths of industrial development are:

- Absolute and relative size of the manufacturing sector
  The role of manufacturing within a national economy is determined by the manufacturing share of input (employees) and output (GDP).
- Productivity (manufacturing productivity)
  Productivity is the key indicator for scenarios of (de-)industrialization (Przywara, 2017).
- Exports (export rate, trade balance, merchandise trade balance between developed countries)
  In many cases, exports are largely determined by manufactured goods. Exports are often largely driven by manufacturing products sold on the basis of technical superiority. Thus, the export rate is a meaningful indicator for the competitiveness of the manufacturing sector (Przywara, 2016). Trade of merchandise between developed states is a meaningful indicator for the state of development of the manufacturing industry of a country (Przywara, 2016).
- Income distribution (Gini index, ratio between top and lowest 10% of income)

Since LMEs promote simple production on the bottom end and highly innovative technology on the top end, the income difference should be much higher than in CMEs with their well-trained workers in sectors of incremental innovation, e.g. machine building. Therefore, a country’s income distribution should be emblematic for the whole economy.

By putting country clusters identified by an economic analysis in relation with those of the models of capitalism, the explanatory power of various models of varieties of capitalism will be tested.
Data Base

Major results of the underlying study (citation removed for blind review purposes) on sectoral change, namely de-industrialization, were published in recent papers (citation removed for blind review purposes). Here, some already published results will be newly contextualized and complemented by additional data. The analysis was carried out with regard to long-term developments in the mature states listed in Table 8. All monetary values were transferred into 2010 US dollars on the basis of exchange rates as utilized by the World Bank (2014) to assure international comparability over time.

Table 8. Analysed mature economies (2010)

<table>
<thead>
<tr>
<th>Country</th>
<th>Indicator Code</th>
<th>Population (million)</th>
<th>Population density (per km²)</th>
<th>GDP (bn USD)</th>
<th>GDP p/c (k USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>AUT</td>
<td>8.4</td>
<td>101.8</td>
<td>377.7</td>
<td>45.0</td>
</tr>
<tr>
<td>Belgium</td>
<td>BEL</td>
<td>10.9</td>
<td>360.6</td>
<td>471.1</td>
<td>43.2</td>
</tr>
<tr>
<td>Finland</td>
<td>FIN</td>
<td>5.4</td>
<td>17.6</td>
<td>236.7</td>
<td>44.1</td>
</tr>
<tr>
<td>France</td>
<td>FRA</td>
<td>65.0</td>
<td>118.7</td>
<td>2,565.0</td>
<td>39.4</td>
</tr>
<tr>
<td>Germany</td>
<td>DEU (GER)</td>
<td>81.8</td>
<td>234.6</td>
<td>3,304.4</td>
<td>40.4</td>
</tr>
<tr>
<td>Italy</td>
<td>ITA</td>
<td>60.5</td>
<td>201.5</td>
<td>2,055.4</td>
<td>34.7</td>
</tr>
<tr>
<td>Japan</td>
<td>JPN</td>
<td>127.5</td>
<td>349.7</td>
<td>5,495.4</td>
<td>43.1</td>
</tr>
<tr>
<td>Netherlands</td>
<td>NLD</td>
<td>16.6</td>
<td>492.6</td>
<td>777.2</td>
<td>46.8</td>
</tr>
<tr>
<td>Spain</td>
<td>ESP</td>
<td>46.6</td>
<td>93.4</td>
<td>1,384.8</td>
<td>29.7</td>
</tr>
<tr>
<td>Sweden</td>
<td>SWE</td>
<td>9.4</td>
<td>22.9</td>
<td>462.9</td>
<td>49.4</td>
</tr>
<tr>
<td>UK</td>
<td>GBR (UK)</td>
<td>62.7</td>
<td>259.4</td>
<td>2,285.5</td>
<td>36.6</td>
</tr>
<tr>
<td>USA</td>
<td>USA</td>
<td>309.3</td>
<td>33.8</td>
<td>14,958.3</td>
<td>48.4</td>
</tr>
</tbody>
</table>

Source: World Bank (2014) data and codes (in brackets: codes utilized in this article), in constant 2010 USD

The timeframe for the underlying analysis (citation removed for blind review purposes) was the period from 1970 until 2010. This period exactly meets the frame of a statistical database resulting from an EU research project, the EU KLEMS database (Groningen Growth and Development Centre, 2012). It aims at providing a statistical base for questions related to growth and productivity, following the ISIC 4 classification (cf. Table 1). In addition, World Bank (2014) data and some data from national statistical bureaus and publications was used.

In order to leave out distortions by the first oil crisis and the Great Recession, the period form 1973-2008 was chosen as the standard representation. The analysed period is divided by a historical caesura, the fall of the Iron Curtain in 1989/90. By opening the Eastern markets, it brought about the era of globalisation. Accordingly, in the underlying study (citation removed for blind review purposes), the period from 1973 to 2008 was
Results

Following the outlined methodology, the development of the manufacturing sector, exports and income distribution will be evaluated in order to identify patterns to be compared with those of varieties of capitalism.

Development of the Manufacturing Sector

In Figure 9, the key indicators of the manufacturing sectors of the investigated country sample are listed for 1973, 1993 and 2008, allowing a view on the investigated full 35-year period and the 15 years of full globalization.

Manufacturing Employment and Output

All countries deindustrialized in a sociological sense (i.e. by relative employment) in the long run. In declining order, the UK, the USA, Belgium, the Netherlands and France have heralded this structural change. Germany, Spain and Sweden are in the midfield, while Italy, Japan, Finland and Austria have retained the highest percentage of workers in the manufacturing sector. The United Kingdom even had to record reductions of the manufacturing output.
The phase of intense globalization (1993-2008) due to open Eastern markets brought about new frame conditions for the rich Western economies. Competition from low-cost countries evolved especially in markets with low or medium levels of technology. In half of the countries (Belgium, France, Netherlands, Spain, the United Kingdom, USA), relative employment decreased massively. Still, all countries except of France and the UK managed to increase their output.

A grouping was made, differentiating between countries of a relatively high (> 15 %), medium and low share (< 10 %) of employees in manufacturing.

- Austria, Finland, Germany, Sweden were the four countries most dedicated to manufacturing. They were also achieving the highest manufacturing output growth rates.
- Belgium and the Netherlands manoeuvred in the midfield.
- While it boomed in the 1970s and 1980s, in the 1990s Japan’s industry was more and more facing low-cost competition in its Asian neighbourhood. In the fully globalized period, it could barely keep its output.
- Italy (like Spain) traditionally pursued cautious strategies of limited productivity rises (see below), aiming at little job losses.
- Spain fared comparatively well, given its limited industrial capabilities. Its absolute number of employees even rose because of the rising number of women participating in the Spanish labour market.
- France did not really meet the competition but rather aimed at avoiding job losses by significantly reducing workload (reduction to 35

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Table 9. Overview on manufacturing indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>AUT</th>
<th>BEL</th>
<th>FIN</th>
<th>FRA</th>
<th>GER</th>
<th>ITA</th>
<th>JPN *</th>
<th>NLD</th>
<th>ESP</th>
<th>SWE</th>
<th>UK</th>
<th>USA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empl. (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>25.</td>
<td>31.</td>
<td>24.</td>
<td>32.</td>
<td>27.</td>
<td>25.</td>
<td>21.</td>
<td>22.</td>
<td>26.</td>
<td>24.</td>
<td>20.5</td>
<td>20.5</td>
</tr>
<tr>
<td>2008</td>
<td>15.</td>
<td>13.</td>
<td>16.</td>
<td>18.</td>
<td>19.</td>
<td>16.</td>
<td>10.</td>
<td>12.</td>
<td>15.</td>
<td>7.9</td>
<td>9.5</td>
<td></td>
</tr>
<tr>
<td>CAGR (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empl. (rel.)</td>
<td>-1.4</td>
<td>-2.4</td>
<td>-1.1</td>
<td>-2.0</td>
<td>-1.7</td>
<td>-1.0</td>
<td>-1.2</td>
<td>-2.1</td>
<td>-1.7</td>
<td>-1.6</td>
<td>-3.2</td>
<td>-2.5</td>
</tr>
<tr>
<td>1973-2008</td>
<td>1.6</td>
<td>0.2</td>
<td>2.1</td>
<td>0.2</td>
<td>0.9</td>
<td>0.7</td>
<td>1.1</td>
<td>0.8</td>
<td>0.3</td>
<td>1.6</td>
<td>-0.7</td>
<td>1.0</td>
</tr>
<tr>
<td>CAGR (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empl. (rel.)</td>
<td>1.3</td>
<td>-2.2</td>
<td>-0.5</td>
<td>-2.1</td>
<td>-1.5</td>
<td>-1.0</td>
<td>-1.7</td>
<td>-2.3</td>
<td>-2.3</td>
<td>-1.0</td>
<td>-3.0</td>
<td>-2.8</td>
</tr>
<tr>
<td>1993-2008</td>
<td>2.6</td>
<td>0.6</td>
<td>3.6</td>
<td>-0.4</td>
<td>1.4</td>
<td>0.3</td>
<td>0.0</td>
<td>0.9</td>
<td>1.2</td>
<td>2.7</td>
<td>-0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Source: Calculations based on World Bank (2014) and Groningen Growth and Development Centre (2012) data (in 2010 USD); *Japan: 1975; **USA: 1977
weekly working hours). This resulted in limited productivity gains and a loss of its market position.

- Although finally being left with a one-digit percentage of employees in manufacturing, from the 1990s the USA followed a pretty determined strategy towards a better competitive position in comparison to previous decades.
- The United Kingdom’s manufacturing industry kept losing out against its competition.

Additional analyses (citation removed for blind review purposes) showed that the manufacturing sector was in most states characterized by a shift to high-tech manufacturing, i.e. higher growth rates of high-tech products than of less advanced production. Such a development did not take place in France and the UK – a clear sign of technological backlog.

Manufacturing Productivity

Here, productivity is generally understood as labour productivity based on the sectoral gross value added, the more accurate value compared to GDP-based calculations (Freeman, 2008). In Figure 4, the development of manufacturing productivity over time is shown. The initial situation of the early 1970s is such that there are two states distinctly in the lead (Netherlands and Spain), nine other form a broad midfield while the United Kingdom is lagging far behind. The band between the most and least productive state amounts to roughly 10 USD/h (2010 prices), i.e. a little less than 40% of the maximum 27 USD/h of the Netherlands.

Until 1989, the year of epic change, the band width between most and least productive states had risen to 24 USD/h – almost 50% of the maximum 51 USD/h. Belgium had replaced Spain in the top two group, even slightly outperforming the Netherlands. Spain, from around the early 1990s, had not pursued a productivity increase path anymore and stagnated (as already 1975-80) or even lost productivity. A midfield of nine other states from France (top) to the USA (bottom) is still identifiable, but the differences between states had become larger. The difference between France and the USA already amounted to a good 9 USD/h. The United Kingdom, despite of remarkable efforts, was still lagging far behind.

At the end of the investigated period, in 2007 (before the 2008/9 crisis), the scenario had changed very much. Finland had become the outperformer, followed by Belgium. After these two, another group of four high-performers can be distinguished: Netherlands, Germany, Austria and Sweden. A group of three medium-well performers followed, consisting of USA, Japan and France. While for the first two, this result was realized by a catch-up process starting around millennium, with France it was just the opposite. France performed well until about 2000 when it started stagnating. (Japan followed in 2005.) At the bottom end of performance, the UK had finally caught up with Spain and
Italy which had turned to a course of stagnation around 1995. The spread between top (Finland) and bottom (UK) had remained in the range close to 50%, but had increased to 34 USD/h in absolute terms.

Figure 4. Manufacturing productivity

Source: Based on Groningen Growth and Development Centre (2012) data

Summarizing the findings, the following developments could be observed:

- A group of six states constantly improved their performance and reached a high level (clearly over 60 USD/h): Austria, Belgium, Finland, Germany, Netherlands, Sweden.
- Three states arrived in a medium-high productivity position (around 55 USD/h), one of which after continuous improvements (USA), one of which after long and continuous improvements but recent stagnation (Japan), one of which after a decade of stagnation (France).
- Three states were in the low league (barely over 40 USD/h): Italy, Spain, and UK, the first two after long stagnation, the latter after a restless catch-up process.
- Four states from a certain point in time drifted into manufacturing productivity stagnation: Spain (from 1990), Italy (from 1995), France
Productivity rises are the normal case, but they do not come by nature.

Exports

Export rates and the trade balance are key indicators for international competitiveness. In this context, high export rates can be caused by three different things or even two or all of them:

1) A country is very focused on manufacturing technology.
2) A country is very much involved in international trade.
3) A country is very involved in international manufacturing value chains.

Sometimes, certain pre-fabricated goods are exported, value is added by processing, then these products are re-imported and finally sold (=exported) as part of a finished product. Thus, their initial value is counted double for the export balance, and imports are also accounted (as long as the count is not limited to added value). When utilizing the trade balance, i.e. exports minus imports, this problem is omitted since the double count of export is compensated by the re-import. Yet, the trade balance does not render sufficient information on the magnitude of industrial production and exports. Both indicators need to be evaluated jointly.

All states have significantly increased their international activities over time, especially after the fall of the Iron Curtain. Their exports are mainly driven by manufacturing, as the key data for 2008 rendered in Table 10 shows. Only British North Sea oil and Belgian trade in diamonds (Salazar & McNutt, 2010) play a further significant role in the industrial sector.

Table 10. Overview on exports (2008)

<table>
<thead>
<tr>
<th>(%)</th>
<th>AUT</th>
<th>BEL</th>
<th>FIN</th>
<th>FRA</th>
<th>GER</th>
<th>ITA</th>
<th>JPN</th>
<th>NLD</th>
<th>ESP</th>
<th>SWE</th>
<th>UK</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>59.3</td>
<td>84.4</td>
<td>46.8</td>
<td>26.9</td>
<td>48.2</td>
<td>28.5</td>
<td>17.7</td>
<td>76.3</td>
<td>26.5</td>
<td>53.5</td>
<td>29.4</td>
<td>12.5</td>
</tr>
<tr>
<td>manufacturing</td>
<td>60.0</td>
<td>63.0</td>
<td>61.4</td>
<td>62.6</td>
<td>68.0</td>
<td>68.8</td>
<td>81.2</td>
<td>53.3</td>
<td>48.8</td>
<td>52.9</td>
<td>41.9</td>
<td>51.7</td>
</tr>
<tr>
<td>manufacturing</td>
<td>60.0</td>
<td>63.0</td>
<td>61.4</td>
<td>62.6</td>
<td>68.0</td>
<td>68.8</td>
<td>81.2</td>
<td>53.3</td>
<td>48.8</td>
<td>52.9</td>
<td>41.9</td>
<td>51.7</td>
</tr>
<tr>
<td>oil and gas</td>
<td>2.5</td>
<td>7.7</td>
<td>5.3</td>
<td>4.1</td>
<td>2.1</td>
<td>3.8</td>
<td>2.2</td>
<td>2.5</td>
<td>4.2</td>
<td>5.1</td>
<td>8.0</td>
<td>4.5</td>
</tr>
<tr>
<td>ore and metals</td>
<td>2.6</td>
<td>10.5</td>
<td>3.3</td>
<td>2.1</td>
<td>2.6</td>
<td>1.6</td>
<td>2.3</td>
<td>2.2</td>
<td>1.8</td>
<td>2.8</td>
<td>2.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>35.5</td>
<td>53.2</td>
<td>28.7</td>
<td>16.9</td>
<td>32.8</td>
<td>19.6</td>
<td>14.4</td>
<td>40.6</td>
<td>12.9</td>
<td>28.3</td>
<td>12.3</td>
<td>6.5</td>
</tr>
<tr>
<td>Merchandise to high-income countries</td>
<td>84.0</td>
<td>88.9</td>
<td>85.3</td>
<td>81.1</td>
<td>83.2</td>
<td>79.2</td>
<td>64.9</td>
<td>90.1</td>
<td>80.5</td>
<td>86.4</td>
<td>83.9</td>
<td>65.3</td>
</tr>
<tr>
<td>Trade balance</td>
<td>5.8</td>
<td>0.9</td>
<td>3.8</td>
<td>-2.1</td>
<td>6.3</td>
<td>-0.8</td>
<td>0.2</td>
<td>8.3</td>
<td>-5.8</td>
<td>6.8</td>
<td>-2.2</td>
<td>-4.8</td>
</tr>
</tbody>
</table>

Source: Based on World Bank (2014) data and own calculations, constant 2010 prices

In Figures 5 and 6, the export volume and trade balances of the countries under investigation are charted for the initial state of this analysis (1973), immediately after the years of transition (1993) and the final state in 2008.

26
All states have significantly increased their international activities over time, especially after the fall of the Iron Curtain. But there are big differences between countries. A grouping by intervals of 20% of exports leads to the following results:

- Countries of very high export orientation (export rate 60+ %):
  - Belgium
  - Netherlands
Based on their favourable location in the heart of Europe and equipped with high-capacity North Sea ports, their common region has been the traditional centre of European trade. Both have a positive trade balance. While the Dutch balance has been moving into positive, the Belgian has recently almost become neutral.

- Countries of high export orientation (export rate 40-60 %): Austria, Finland, Germany, Sweden
- All these are countries with a high affinity towards technology and of rich engineering traditions. Three countries of this group have managed to change from a negative to a positive balance over time; Sweden has always had one.
- Countries of medium-low export orientation (export rate 20-40 %): France, Italy, Spain, UK
- These are countries with a certain industrial tradition, but no real deep-routed cultural affinity towards technology. All have a negative trade balance.
- Countries of low export orientation (export rate 0-20 %): Japan, USA
- Despite of their sizeable industries, both Japan and the USA are mainly producing for their large domestic markets, the by far largest in the investigated group of developed countries. The USA has turned from a positive to a very negative trade balance over the years, while Japan, starting around neutral, for a long time generated a trade surplus. In recent years, this surplus has almost vanished.

Trade of Merchandise between Developed Countries

The share of merchandise exports from highly-developed to highly-developed countries, the so-called ‘North-North’ trade following Kollmeyer’s (2009) terminology, is supposed to be a meaningful indicator for the technical level of products. Often, only highly-developed countries can utilize and afford to buy very sophisticated technology.

All European countries are on a similar North-North export level with around a good 80 % of total merchandise. The USA and Japan show much lower values of around 65 % (Table 10). The North-North trade balance (Figure 7) renders more differentiated results.
Figure 7. Trade balance of merchandise between developed countries

Apart from the Netherlands and Belgium, there are only four countries left with a positive North-North trade balance: Sweden, Germany, Italy and Finland. All other countries are net importers of merchandise from other high-income countries, with France, the UK and especially Spain in the weakest position. Austria, coming from the last place, has managed to continuously improve its position. Summarizing the findings, the results are as follows.

- The Netherlands are clearly in the lead, so they must have a good technological basis. Nevertheless, a major portion of their excellent figures is to be attributed to favourable logistics and intra-trade of MNEs (see below). The same holds, to a lesser extent, for Belgium which moreover had a worse position in 2008 than in 1993.
- Finland, Germany and Sweden combine a high-tech share in manufacturing of above 3% of the GDP with a positive North-North balance and are thus identified as carriers of superior technology in certain engineering and manufacturing fields.
- Austria, France and Japan are very involved in high-technology manufacturing but do not sell more to high-income economies than they buy from them.
- Italy has a clear surplus in North-North trade, so it might be assumed that it is in possession of superior technology in certain areas. Anyhow,
the Italian exposition to trade flows is limited in general, and so it is in high technology.

- Despite of their impressively high share of high-tech exports which besides some rather narrow technological strength mainly reflects a very limited exposition to trade, the USA is not very persuasive in their technological level. Much more, this holds for Spain which is ranking last in almost all indicators concerning technology.

Generally, success in high-income markets is normally associated with superior technology, leading to innovative products, but also with high productivity based on continuous improvement of processes. Moreover, productivity advantages can partly be realized drawing from economies of scale due to better market integration. The overwhelming success of the Netherlands is most likely not due to its superior technology, but due to its very favourable geographical position and company-friendly taxation that has attracted MNCs to open subsidiaries or even relocate their headquarters (Savelberg, 2013). Trade, especially intra-firm trade, in this respect results from tax avoiding policies which may overlay the findings and distort the results significantly. Since customer markets are not altered concomitantly, exports are resulting. A similar, but weaker development can be assumed for Belgium.

**Income Distribution**

In Table 11, the income distribution of the country sample is displayed by the two variables GINI index and the ratio between highest and lowest 10% shares of total income. Inequality is by far the highest in the USA. The UK are in the upper league of the European mainstream. In this respect, the UK are clearly closer to Europe than to the USA.

<table>
<thead>
<tr>
<th>Table 11. Income inequality (2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GINI index</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>30.4</td>
</tr>
<tr>
<td>highest 10% / lowest 10% income</td>
</tr>
</tbody>
</table>


**Patterns of Economic Development**

In Table 12, the key findings on manufacturing, exports and income inequality are combined in one table. A threefold grouping according to success in the manufacturing sector was made:
Most successful countries, i.e. those below the value in the < column, were left blank.

Midfield countries, i.e. those within the < and > borders, were shaded in light grey.

Most adverse values, i.e. those exceeding the ones in the > column, were shaded in dark grey.

Table 12. Identified patterns (2008)

<table>
<thead>
<tr>
<th>Manufacturing indicators</th>
<th>&lt;</th>
<th>&gt;</th>
<th>AUT</th>
<th>BEL</th>
<th>FIN</th>
<th>FRA</th>
<th>GER</th>
<th>ITA</th>
<th>JPN</th>
<th>NLD</th>
<th>ESP</th>
<th>SWE</th>
<th>UK</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (%)</td>
<td>10,0</td>
<td>15,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output (CAGR, %)</td>
<td>0,0</td>
<td>1,4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity (USD/h) *</td>
<td>48,0</td>
<td>60,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports (%)</td>
<td>20,0</td>
<td>40,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade balance (%)</td>
<td>-3,0</td>
<td>0,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of N-N trade (%)</td>
<td>-3,0</td>
<td>0,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income inequality (GINI index)</td>
<td>32,0</td>
<td>40,0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Harmonized pattern**

In each row, a certain pattern evolves. Not all row patterns match exactly, but a common picture becomes visible. A harmonized pattern can be synthesized as the mean value of all columns. The result includes three country groups:

- Successful in manufacturing, relatively equal:
  Austria, Belgium, Finland, Germany, Netherlands, Sweden
- Less successful in manufacturing, less equal:
  France, Italy, Japan, Spain
- Little inclination towards manufacturing, relatively unequal:
  UK, USA

*Source: own compilation based on World Bank (2014) data

* stagnating countries were generally classified as severe
Discussion

The globalized economy is characterized by international division of labour and worldwide competition in all sectors. Countries with a strong orientation towards manufacturing technology have become more and more export-oriented and dependent. To succeed in such a demanding environment, firms have to constantly improve their technologies, showing in high-technology products and ever-rising productivity. Stagnation means to fall behind the leading nations in manufacturing, i.e. to rely on less innovative products and eventually lower positions in international value chains.

Productivity is the key factor to success in manufacturing, as was already shown in (citation removed for blind review purposes). It has a direct effect on output and export prices, so the productivity pattern also shown in these indicators. Limited efficiency and success in manufacturing may result in unemployment and finally rising societal inequality.

Four states stepped out of the line of constantly rising productivity in the period of globalization: Spain, Italy, France and Japan. The evolving negative pattern is quite consistent through all indicators. All well-meant state measures trying to avoid sectoral job losses – subventions for ailing industry, reduction of weekly working hours in France – made things worse in the long run. Consequently, the group that from a certain point in time was not able to raise its productivity is exactly the group of the state-led variety of capitalism identified by Schmidt (2003). Their state-led approach did not generate the necessary dynamism to meet the high pressure from global competition.

Managed economies stayed on track, based on well-adapted institutions to promote the required continuous incremental change. Also both liberal market economies (UK, USA) continuously increased their productivity.

In terms of sectoral decline by relative employment, the VoC approach predicts that DMEs are less apt for sectors of incremental change (e.g. mechanical and electric engineering) than CMEs, but have competitive advantages in high-technology sectors like KIBS (Hall & Soskice, 2001b). Faster employment shifts from traditional engineering to more radically innovative sectors are expected in the LMEs. Manufacturing is a sector of incremental change, so the employment in the UK and the USA should fall faster than in the CME economies. As the analysis has shown, this is really the case.

In sectoral decline of employment, the UK and USA are followed by Belgium and the Netherlands, both traditional countries of trade with a favourable location in the heart of Europe and by the North Sea. It might well be assumed that business opportunities in trade have crowded out industry with growing internationalization especially in these countries.

From the findings, the following groups of nations are distinguished by their success and inclination towards manufacturing:

- Industry-oriented managed winners (CME): Austria, Finland, Germany, Sweden
• Trade-oriented managed winners (CME): Belgium, Netherlands
• State-led industrial long-term losers (CME): France, Italy, Spain, Japan
• Industry-adverse market economies (LME): UK, USA

The VoC approach renders meaningful results. This notwithstanding, institutions may largely vary within its groups. Regional embeddedness seems to lead countries towards common equilibria, at least if guided by strong overarching institutions like the EU, as the example of the far less socially unequal UK in comparison to the USA shows. Also geographic pre-conditions play an additional role, as the trade-orientation of seaborne nations like Belgium and the Netherlands illustrates which have acted as logistical hubs and acquired respective wealth for centuries. Moreover, there is a tendency of firms in countries with large home markets (especially Japan and the USA) to limit their activities to national borders.

When comparing the findings of the actual study with the history of early industrialization, the very deep cultural roots of varieties of capitalism and the resultant path dependency become even more clear. The early economic success of the UK and the USA was driven by entrepreneurship and a hands-on approach relying on trial-and-error methods rather than on applied natural science. Once something new was there and worked well, investments into continuous improvement were often omitted. Further improvements were very limited, as the British steel industry shows. It required ten times more basic energy per ton than the German by the end of the 19th century (Przywara, 2006). Also then, available private venture capital rather went into risky endeavours promising higher profit margins then into traditional technology.

The situation in Germany and France was and is different. Both are drawing from a long tradition of academic education in natural and engineering sciences.

• In Germany, the role of the state was that of a facilitator, rendering necessary common resources like schools and universities to let firms succeed in their respective markets. Due to its decentral organization by federal states, the state influence was always limited.
• France is a very different case. Being unified already in medieval times, its central power was traditionally very strong.

The French state organized the very successful catch-up modernization of France after World War II and so even added to the high expectations of the citizens concerning its role in the national economy. The strong position of its president was a temptation to intervene in times of economic downturns. By switching to 35 weekly working hours at full wage compensation, France weakened its international bargaining position in an instant. This burden could not be carried even by the then-strong French economy. In the sense of overstretching the capacity of a basically vital country by central measures, this is 18th century history repeating.
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