Journal of Contextual Economics 138 (2018), 89 – 116
Duncker & Humblot, Berlin

Looking Back to the Future: Time Strata and Economic Analysis*

By Michael Hüther**

Abstract

In mainstream economics cultural differences, habits and mind-sets are considered to be reflected in the institutional setting. To reintroduce historical time, we combine the concept of path dependency with the concept of time strata; instead of explaining a fact isolated from its historical conditionality, the perspective moves from a contemporary phenomenon to several paths incorporated in it and questions their time-differentiated interlocking, mutual influence and conditioning. At the same time, the direction of the perspective changes: the path is analysed from today to yesterday. We use this approach to explain the particular current economic situation in Germany: namely, the strength in manufacturing and in global exports.

JEL Codes: B5, N0, O1

1. Introduction: What We Want to Know

The international debate on economic policy with regard to Germany is always centred around the question of why industry is so strong and why economic structural change is obviously persistently different from that of comparably developed countries (e.g. France and the United Kingdom). This is usually associated with the question of German export strength, which leads to sustainable irritation both at the EU level in the context of the Macroeconomic Imbalance Procedure as well as internationally in the face of criticism from the Trump administration. Answers to these questions should be sought here with the help of historical methods. After some references to the relationship between economics and historical time (chapter 2), the theoretical concepts of path dependencies and time strata are explained and brought together (chap-

* Revised version of a lecture at the conference "Heterodox Thinking in Economics," Frankfurt/Main, 8 Feb. 2018. I am grateful for valuable advice by two anonymous reviewers.

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ter 3). Subsequently, the special case of Germany is highlighted (chapter 4). Through the identifiable features of the German *Sonderweg*, corresponding path dependencies become visible for which the relevant roots in specific time strata are inquired about (chapter 5). Finally, an attempt is made to find answers to the current economic policy challenges in international discourse for key aspects of the German economy (chapter 6).

It is not about the analysis of specific historical paths in structural economic change (Ambrosius and Franke 2015), but the classification of the path of an economy as a whole. Such an investigation runs the risk of being exposed by the major critiques raised traditionally against the Historical School by economic theory. Therefore, the combination of path dependencies and time layers should be used to prevent this. The aim is to derive the relevant path from economic and historical findings in order to identify the relevant time layers as explanatory patterns for feedback loops, path changes, path stabilities. The example of Germany is intended to test the meaningfulness of this combined approach.

2. Neoclassical Theory, Historical Time, and Social Science

Economic analysis in the neoclassical standard is performed by excluding historical time. This is because historical time in an imaginary world – where neither transaction costs nor institutions play a role and the associated costs of information, adjustment and action are disregarded – does not appear in rigid structures, in culturally reinforced behavioural patterns, in developed legal systems or in historically grown institutions. Market players have homogeneous preferences and act in a culturally neutral way according to the principle of self-interest; market clearing takes place in real time. Non-economic contexts have no significance in this kind of economic analysis; uncertainty is not a relevant phenomenon. "From the economic historian's point of view, the neoclassical formulation seems to avoid all the interesting questions. It deals with a smooth world …" (North 1988 [1981], 5). In other words, "[n]eoclassical theory is simply an inappropriate tool to analyse and prescribe policies that will induce development. It is concerned with the operation of markets, not with how markets develop. … it contained two erroneous assumptions: (i) that institutions do not matter and (ii) that time does not matter" (North 1994, 359).

Economics as a part of "social science in which we are interested is an empirical science of concrete reality (Wirklichkeitswissenschaft). Our aim is the understanding of the characteristic uniqueness of the reality in which we move. We wish to understand on the one hand the relationships and the cultural significance of individual events in their contemporary manifestations and on the other the causes of their being historically so and not otherwise" (Weber, 1949, 72). This is still true today, "unfortunately, however, economics is a social sci-

ence" (Solow 1985, 328). Incompatible with the effort to produce a global economic model that is valid independently of time and space, the final result of economic analysis is "a collection of models contingent on society's circumstances – on the historical context, you might say" (*ibid.*, 329).

The attempt to grasp the contextual conditions analytically, however, also has its limits. Ultimately unsuccessful, the Historical School of political economy pursued the inductive method in their effort to derive universally valid functional relationships. Comprehensive recourse to findings in historical science to establish the empirical foundation and validation of theoretical formulations ultimately remained undefined, unspecified and arbitrary. Max Weber (1895) described the fundamental methodological problems of the Historical School, although he himself – as outlined in his academic inaugural address in Freiburg in 1895 – arrived at generalizable insights from a historical point of view. Robert Solow put it this way: "no one would remember the old German Historical School if it were not for the famous *methods dispute*. Actually, no one remembers them anyway" (1985, 328).

But even the attempt to work with economic theory in terms of economic history inevitably leads to a mixture of theoretical approaches and fundamental criticism, e.g. in the case of the work of Douglass North: "North's theoretical apparatus is a paradise for the eclectic. But for one who wants theoretical consistency and economic explanations, it is becoming increasingly problematic" (Ankarloo 1999). Perhaps the problem lies in the inappropriate assumption of economists that historical developments are consistent from a theoretical perspective. Rather, historical analysis of economic development should take place through concepts employed by the historical and social sciences.

In developing the postulate that the social sciences should be free of value judgements, Max Weber formulates the concern of these sciences: they strive for "analytical ordering of empirical reality," (1949, 54, 59). On the one hand, this can be interpreted as a consistency requirement, because the "thinking order" can be related to cause-effect relationships and system connections. On the other hand, the reference to empirical reality – the facts – entails the requirement that the theoretical reflection is not to be understood like the glass bead game. If both aspects are combined, then a substantially "thinking order" (*denkende Ordnung*) requires the appropriate selection of facts; it is inappropriate to focus on purely economic contexts from this perspective. Finally, the adjective "thinking" refers to the fact that the orders are understood dynamically, for example by considering adaptation processes and feedbacks.

Weber (*ibid.*, 36) differentiates between three categories of facts: (a) "Economic processes" in the narrower sense which are the expression of a specific economic purpose, action or orientation, such as the dynamics on financial markets and their regulation; (b) "economically relevant phenomena," which are described in a contemporary manner as contextual conditions for macroeco-

nomic events and result from different political (constitution, government action, etc.), social (social structure, aspiration for advancement, civil society, etc.) and cultural (language, religion, tradition, *habitus*, etc.) connections; and (c) 'economically determined phenomena," which are affected by economic developments and influenced by economic institutions, but which do not have a reverse impact on these themselves.

Max Weber points out "it is self-evident that firstly), the boundary lines of 'economic' phenomena are vague and not easily defined; secondly), the 'economic' aspect of a phenomenon is by no means only 'economically conditioned' or only 'economically relevant'; thirdly), a phenomenon is 'economic' only insofar as and only as long as our interest is exclusively focused on its constitutive significance in the material struggle for existence" (1949, 65). The complexity that this creates for the "thinking order" of empirical reality makes the flight into formal theory very understandable. In the absence of a narrow framework of theoretical analysis, there is otherwise the threat of loss in the diversity and variety of historical material and thus in the arbitrariness of the resulting findings.

3. Path Dependencies and Time Strata: Two Perspectives of Historical Thinking

Even if theoretical-formal analysis and historical-empirical study are no longer juxtaposed to each other in "unbridgeable harshness" today, "the methodological impossibility of replacing the historical knowledge of reality by formulating 'laws' or, conversely, by arriving at 'laws' in the strict sense by merely stringing together historical observations" remains unchanged, as Max Weber (*ibid.*, 62) aptly argued in a polemical manner. Even today, the combination of both approaches to national economics as a science of reality succeeds only sporadically, and certainly not systematically. The fact that historical time has been largely shifted from the field of economics to history has had an impact. Another factor impacting this has been that economic history over the last few decades has also been subjected to a theoretical narrowing in terms of methodology, so that "this sort of economic history gives back to the theorist the same routine gruel that the economic theorist gives to the historians" (Solow 1985, 330). Accordingly, Robert Solow opposes an unreflective application of economic theories and models to historical questions, which is called "New Economic History" or "cliometrics."[1]

The exclusion of historical time from the mainstream of contemporary economics has significant consequences for research practice: It enables the formu-

[1] Concerning the development and critique of this approach, see Spree (1977); Stolz (1982); Meiners and Nardinelli (1986).

lation of an economic world in models without having to discuss their preconditions. It is then exclusively a matter of price formation and the change in relative prices as control logic in perfect, information-efficient markets on which homogeneous goods are traded. Risks are only a question of price and not a specific problem for the design of institutions. Cultural differences, habits and mind-sets, limited rationality, asymmetric information and transaction costs are considered to be reflected in the institutional setting and are basically irrelevant in the dominant formulation of theory.

Mainstream economic thought, characterised in this way, has proven its practical business relevance in the financial sector (Allen 2001). Neoclassical financial market economics (in the tradition of Arrow and Debreu (1954); McKenzie (1959); cf. Cochrane (2005)) acquired a mathematical elegance and was highly successful, for example in the valuation of financial derivatives. However, information problems which lie dormant at the core of every financial market transaction were not addressed. Thus, this institution-free theory enabled an industrialisation of the lending business, which stimulated new business models in investment banking. All this took place under real-time conditions, so that the need for differentiation over historical time was ignored both intellectually and habitually. Neoclassical financial market economics is an example of a methodological exaggeration of an ahistorical approach: The search for a "single monolithic model for all seasons" is misleading and simultaneously provides no stimulating ideas for an economic-historical analysis because such a global model is always disconnected from specific historical narratives by nature (Solow 1985, 329).

From an abstract point of view, the exclusion of historical time in economic analysis leads to a category of time that matters only to the extent that it is "thought of recurrently and cyclically" and that "addresses the return of what is fundamentally the same" (Koselleck 2003, 19). Time only plays a role as a systematic sequence of actions and reactions under defined conditions within theoretical-abstract regularity (routines). Time as an original constellation of conditions in space is disregarded, while the contrast between ideal type and real type is welcomed. Neoclassical growth theory, which predicts a convergence to a new steady state because of decreasing marginal returns of increasing factor inputs, does not help in understanding historical processes, since neither steady states are to be observed in reality nor do all change impulses occur at the same time. Rather, the individual paths are different in time, their temporality diverging.

3.1 Time Strata

An examination of the real world, however, does not go far if one ignores the significance of different time structures which convey themselves to us as

"temporal modes of experience" (Koselleck 1989a, 132; Köhler 2013, 53 – 63). These include (a) the *irreversibility* of events, because the before and the after are anchored in specific contexts and the continuum of past experience is broken to expectation; (b) the *structurally-related repeatability* of events as identical development, as a return of constellations and as a typological assignment of events as an expression of repetitive structures that, as conditions of possibility, situationally lead to a return of events; (c) the *simultaneity of the non-simultaneous*, which refers to different stretches of time, distinct time requirements, velocities of speeds, and implies an evaluation of the factual as well as functional connection (not yet versus no longer, earlier versus later, too early versus too late, situation versus duration (Koselleck 1989a, 132f.; Leonhard 2009)). As a result, the general reference to historical time does not in itself offer any prospects for enriching economic analysis. This changes when the diversity of time structures is tied to the concept of time strata and path dependency.

While the phrase "simultaneity of the non-simultaneous" always implies an implicit norm in which the simultaneity is made the measure of developmental desires, the concept of time strata remains analytic. This concept inquires about the fundamentally different temporal structures of developments as they derive from experience or mobilize different potentials and ideas (Leonhard 2009, 148). Otherwise, simplified interpretations of developmental differences in normative terms threaten to level out the peculiarities of spatially bounded temporality and thus make worthless the historical narrative for theoretical reflection. This includes the insight that non-simultaneity is the norm of European societies in transition, especially in accelerated change since the revolutionary epoch between 1750 – 1850 (*ibid.*, 165). The simultaneity of the non-simultaneous can be combined with the concept of hierarchy and network, of vertical and horizontal anchoring (Ferguson 2018). While hierarchy institutionalizes the paths of the past, the networks of the present-day grounds for non-simultaneity and tensions by integrating different aspects of life, different preferences, different experiences which, if they are of the same size, can result in changes in the pace of change.

The concept of "time strata" was introduced by Reinhart Koselleck (2003) as the attempt of a theory of historical time based on the general reflections mentioned above. According to it, historical time consists of several strata that effectively interweave with and mutually relate to each other without creating one-sided dependencies. The concept of time strata includes different phases of time ("time quality") as determinant in regard to a phenomenon to be classified: uniqueness, repetition structure (i.e. that institutions matter), long continuity. The benefit of a time strata theory consists of being able to measure different speeds, to visualise accelerations or delays, and thus different modes of change that testify to great temporal complexity including the fact that events can be brought back by the time distance (*ibid.*, 22).

This cannot be combined with neoclassical theoretical approaches especially concerning the assumption of decreasing returns to scale and the speed of convergence. Instead, it requires various methodological approaches (Koselleck 1989b, 144); this is particularly true because the concept of time strata deals with the simultaneity of the non-simultaneous or variations of temporal depth structure, i.e. increasing as well as decreasing returns to scale. It is superimposed on a variety of repetitive structures, each with different speeds and accelerations (Köhler 2013, 60). Events therefore become historical phenomena, because they can claim the three dimensions – uniqueness, recourse to a repetitive structure, and embedding in long duration. Historical time – this becomes clear once the time strata concept is discussed as the attempt to seek an orderly understanding of development – is different to the time concept of the natural sciences, i.e. chronological time.

3.2 Path Dependency

Another important factor in this context is the concept of path dependency, which becomes important because of self-reinforcing feedbacks and is a consequence of a specific process's own history (David 2001, 19). The concept can explain the reduction of options contrary to theoretical or technical optimality (lock-in effect and irreversibility of once chosen solutions).[2] This can be described for economic solutions, location developments and for the formation of institutions where high start-up costs and specific experience and system knowledge make a future change almost impossible and in any case very unattractive (North 1981). In economic theory, "positive feedbacks," "self-reinforcing mechanisms" and "lock-in-effects" – as preconditions for path dependencies – lead to difficulties, since the resulting solutions or paths may reflect increasing returns to scale and are not necessarily an expression of economic efficiency (transaction costs), but can be based on chance (Arthur 1994, 1 ff., 111 ff.; Beyer 2005). In other words, path dependency "refers to a property of contingent, non-reversible dynamic processes, including a wide array of processes that can properly be described as 'evolutionary'" (David 2001, 15).

Different explanations for path dependencies have evolved. This applies, on the one hand, to the factual context: technical conditions, institutional circumstances, learning system and learning behaviour, as well as attitude issues in social change. On the other hand, this applies to the identified mechanics: high fixed or start-up costs, coordination effects, adaptive expectation formation, increasing marginal returns, and transaction costs. The simple consideration of

[2] A frequently cited example is the QWERTY keyboard, which is neither ergonomically optimal nor technically suitable for computer keyboards but was adopted as a learned and practiced system for the mechanical typewriter (David 1985; Beyer 2005, 7–9; David 2001, 22–25).

path dependencies leads to a historicization of the object but does not yet offer theoretical access. Progress can be established when inquiring about the generation of paths, the feedback in the path, the conditions of the path change as well as the path stability. Here the meaning of the term "lock-in" is significant, "it simply is a vivid way to describe the entry of a system into a trapping region – the basin of attraction that surrounds a locally (or globally) stable equilibrium" (*ibid.*, 25 ff.).

Individual studies show that a path can be very narrow and easy to change (Ambrosius and Franke 2015, 309). In the specific context of network infrastructures, the formulation and implementation of standards and norms prove to be game changers, because these determine the costs of the path change (*ibid*.). On the one hand, increasing complexity of the system opens the door to differentiation, on the other hand it requires standardization due to the high learning costs. In the case of a technology-dominated industry, such as semiconductor manufacturing, an acceleration of technical progress – and thus an acceleration of path-related feedback or even a transformation of the chosen path – can be achieved through targeted management (Schubert, Sydow and Windeler 2013). It requires mutual monitoring and coordinated control of technological development and organizational change. Path intensification and path changes are equally possible. Ultimately, the relative costs of each solution in comparison with others, which result from the coordination performance or the coordination failure of the given path-dependent system, are decisive (David 2001, 25). This is where the tensions that manifest themselves through the conflict between network and hierarchy in the simultaneity of the non-simultaneous are at work.

3.3 Path Dependencies and Time Strata

Potentially multiple equilibria are resolved over the long term of historical analysis by chance, due, for example, to expectation formation or timing and sequencing, resulting in a lock-in (path dependency): "Where learning effects and specialised fixed costs are the source of reinforcement, usually advantages are not reversible and not transferable to an alternative equilibrium" (Arthur 1994, 118). Since there is no universal analytical framework for the resolution of multiple equilibria, "we need to allow for the sequence in which actions occur or economic choices are made" (*ibid*., 119). This opens up the argumentation for the systematic integration of historical processes. The analysis of geographical structures of economic activity and the formation of industrial clusters, for example, cannot be traced back in isolation either to economic conditions or to historical-political coincidences, but to an interaction of both categories (*ibid.*, 99 ff.).

Clusters and networks cause divergent developments in economic areas because external effects (in the sense of regional club goods) and transaction costs (agglomeration advantages) become effective in different ways and contest hierarchies. *Networks* are unstable, subsisting on the spontaneous, ever-evolving order. They rest on the power of weak connections which tend to be of a chance nature: so-called structural holes which separate non-redundant sources of information (Burt 2002; Ferguson 2018, 36 f.). Networks have a special power to bridge these structural holes, especially when different networks and sources of information can be positioned in relation to one another. This often succeeds thanks to new technologies for information sharing and communication, as well as because capital flows and financial intermediation have the potential to link networks. The success of such bridging efforts necessitates an openness of the actors involved, and thus a willingness to meet on equal footing and look beyond existing hierarchies. History provides numerous examples which illustrate the tension between hierarchies and networks or – in other words – between the simultaneity of the non-simultaneous (Hüther *et al.* 2018, 19 ff.; Leonhard 2009).

In addition, breaks in path dependencies due to technical innovations and institutional changes need to be explained as the fighting-back of hierarchies. Paths are no straitjackets for economic development like hierarchies. Therefore, path dependencies are not fundamentally counter the liberal notion that individuals and societies in a democratic state always have the opportunity to change something. However, an analysis of path dependencies in combination with relevant time strata can make clear where the costs of the intervention are particularly high or low and where the chances of a path change are correspondingly low or high. Irrespective of the prescriptive implication of this historical approach, it provides explanations for differences in the economic, technical or social changes of individual states.

The concept of path dependency expands in connection with the concept of time strata; instead of explaining a fact isolated from its historical conditionality, the perspective moves from a contemporary phenomenon to several paths incorporated in it and questions their time-differentiated interlocking, mutual influence and conditioning. At the same time, the direction of the perspective changes: the path is analysed from today to yesterday. If this is attempted, the result is the emergence of *thinking orders of facts* in which time strata and path dependencies are *combined.* This obviates what the historical analysis of economic modelling can offer: "If the proper choice of a model depends on the institutional context – and it should – then economic history performs the nice function of widening the range of observation available to the theorist" (Solow 1985, 329; see also Stolz 1982, 11). At the same time, this provides an answer to the observation that "New Economic History" and "cliometrics" has lost significant influence because it argues neoclassically and does not put forth any stimulating ideas that arise from a historical point of view and are incorporated

into theoretical analysis (Meiners and Nardinelli 1986, 521; Stolz 1982, 7, 10 ff.).

These considerations, in terms of their intention, are consistent with those of Douglass North, who combines different strands of theory to explain economic performance from a historical perspective: a theory of demographic change, a theory of human capital formation, and a theory of institutional change, the latter split into a theory of property rights, a theory of the state, and a theory of ideology (North 1988 [1981], 7 f.). According to North, paths can stabilize depending on mutual institutionalizations, where limited rationality by the actors is present as are transaction costs (Beyer 2005, 9). These are theoretical approaches for classifying and understanding the relevant path dependencies, path instabilities and path changes which relate to the research question and point backwards to explain economic reality over various stretches of time. If current economic success is linked to the valuation of the capital stock, then its conditions and significance – such as the institutional framework, the population, accumulated human capital, and the level of knowledge – are the relevant factors to be subjected to historical analysis. This may, in individual cases and not in general, help to shed light on the part of the significance of path dependencies that is not easily understood and cannot be grasped economically (North 1997; Ankarloo 1999).

Table 1

Path Dependencies and Time Strata – a Systematic Approach

Mechanisms for path dependencies	**Path stabilisation**	**Path destabilisation**	**Time concept / Time strata**
Increasing returns to scale	Self-reinforcement	Competition, black swan	Repeatability / Acceleration / Speed
Sequences	Irreversibility	Internal inconsistency	Irreversibility
Functionality	Systemic purpose	Disruption	Irreversibility
Complementarity	Interaction	Disorder	Repeatability
Power	Power enforcement	Disruption	Simultaneity of the non-simultaneous
Legitimacy	Rules, sanctions	Disorder	

Source: Author's Own Conceptualization based on Beyer (2005, 18).

Looking at the different mechanisms for path dependencies, they can be combined with the conceptualization of time-strata theory to identify the potential for path stability and path change (table 1). It concerns the systematic question of what was at the same time chronological unequal in the sense of historical time and therefore expresses a particular temporality on the one hand and promotes this on the other hand (Leonhard 2009, 166). Therefore, it is not about the normative question where something should lead, but about the ana-

lytic question of what comes from where. And it has nothing to do with any idea of convergence that is of utmost importance in economics, such as in growth theory. Because convergence always asks for a development goal and thus attains normative quality. Instead, concepts of different temporality are combined here in order to locate and explain the real phenomena of a time layer through different paths, development patterns and velocities.

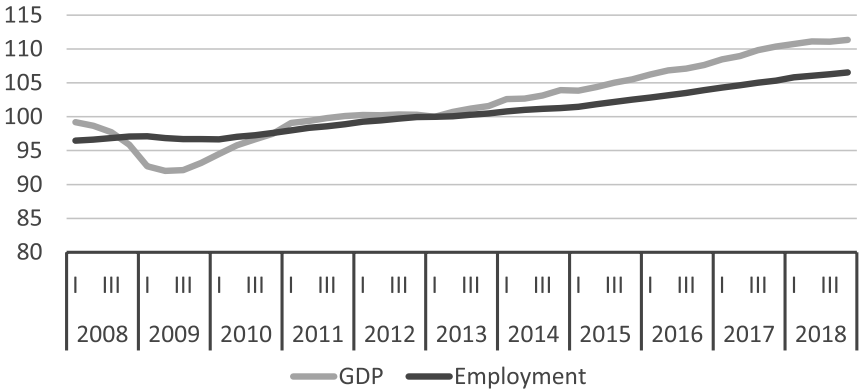
4. Germany: Always on a *Sonderweg*?

The economic-industrial potential of the German economy is chosen as the subject of investigation for the combined approach of path dependence and time strata. "Every historical space is constituted by the time with which it can be measured, which makes it politically or economically manageable" (Koselleck 2003, 9). Such a space of history is constituted by a certain autonomy and seclusion, borne by a special power of its historical paths.

Since the global financial and economic crisis was overcome in 2011, the German economy has not only been strong, but it has also nearly seen a linear development in terms of production and employment. Apart from a transitory dip in gross domestic product during the first quarter of 2013, the economy's performance has deviated from the traditional economic cycle and raises the question of what the reasons for this are (figure 1). Internationally, this issue has led to critical reactions for quite some time. Already in 2010, the associated export position and the surplus in the current account balance were judged to be a burden for the other economies.[3] The criticism was directed at allegedly insufficient wage growth and unsatisfactory investment activity, especially by the state. More recently, there have also been accusations that Germany is using the monetary union to manipulate exchange rates (von Petersdorff 2017).

The answers to the question and the criticism that can be heard in the public debate are not very helpful. The reference to factors that do not apply specifically to the German economy, but to the entire euro zone, for example, is not convincing (Hüther 2017a). This applies to the argument that the ongoing economic expansion is explained by the low price of oil (over an extended period of time) and low interest rates, together with a euro exchange rate advantageous for exports. The argument that ageing societies should make appropriate arrangements through net capital exports abroad and thereby achieve a current account surplus is correct, but such demographics do not automatically entail persistent current account surpluses, as the case of Italy demonstrates. In addition, it was not really difficult for German companies to respond flexibly to

[3] Cf. Christine Lagarde's criticism of the German trade surplus since 2010, see Spiegel Online (2010). In regards to the opposite position, see Hüther (2018).



Source: Federal Statistical Office of Germany; German Economic Institute.

Figure 1: Gross Domestic Product and Employment in Germany, Values Adjusted for Season, Working Days and Prices, Index: 2013Q1 = 100

changing dynamics in foreign markets in the period under consideration. This suggests that the supply side of the German economy is currently dominant. In fact, demand problems have been of secondary importance to companies for some time, as surveys on this subject and the development of capacity utilisation illustrate (Wohlrabe and Wollmershäuser 2018).[4]

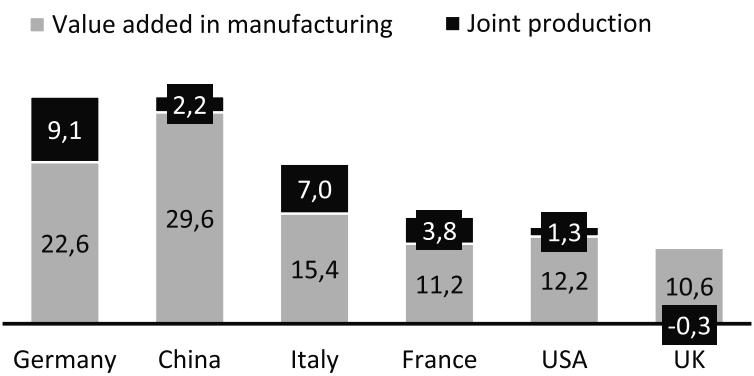
If one examines the supply side of the German economy, the high share of industrial value added is initially striking in international comparison.[5] However, this not only refers to a noticeable difference in the level of industry importance – its share in Germany is more than twice as high as in the United States, the United Kingdom and France – but also to the dynamics over the past two decades. While de-industrialisation continued in most developed economies, it stagnated in Germany. A longer-term comparison with France and the United Kingdom reveals interesting results. While in 1970 the United Kingdom had an industrial share of just under 40 per cent like Germany, the corresponding French share was 25 per cent at the time. France has never been comparably industrialised, but, as in the United Kingdom, its share is only 11 per cent today. Since 1995, the difference in these values between France and Germany has almost doubled from 6.5 percentage points to 12.5 percentage points. In the United Kingdom, industry suffered greatly from wage policy conflicts and constant strikes and was finally completely relegated to the sidelines of the

4 Cf. the economic surveys by the German Economic Institute for the years after 2014 available at https://www.iwkoeln.de/themen/wachstum-und-konjunktur/konjunkturumfrage.html.

5 For further explanatory remarks, see the study by the German Economic Institute (2015).

British economy with the "big bang" liberalisation of capital markets in the financial centre in London.

These economic characteristics and differences are reflected on the one hand in the development of employment. In February 2019, employment in the manufacturing sector reached a high of just below 5.7 million persons, thus increasing by 110,000 compared to the previous year and exceeding the low of April 2010 by more than 780,000 persons (Statistisches Bundesamt 2019). Industrial employment in other EU states and the United States has continued to decline and started to stabilise or increase at a historically low level since 2010. On the other hand, the structural differences in the national economy are reflected in the export ratios. German companies were able to benefit in particular from the European Single Market, as the German export ratio has more than doubled from 20 per cent to 47 per cent since 1994. In the other EU countries, there have also been increases over this period, but by no means to the same extent. The export ratio in France, Italy and the UK increased from between 20 and 25 per cent to around 30 per cent. The case of Italy is astonishing, since industry there has a higher share (15.4 per cent) than in France and Great Britain (Hüther 2017b).



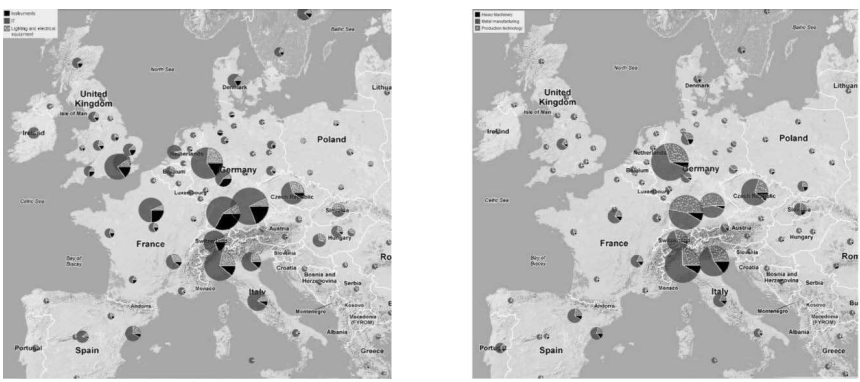
Source: OECD, German Economic Institute.

Figure 2: Value Added Share of Total Value Added, in Per Cent, 2014

The differences in the entrepreneurial business model for the industrial sector reveal an interesting finding. Over the past two decades, German industrial companies have increasingly entered into partnerships with service providers and have thus developed the ability to offer their corporate customers (B2B) diverse solutions to problems (Grömling and Lichtblau 2006, 70 ff.). This can be seen in the importance of integrated production from industry and service

providers, which is substantially different from other European economies as well as the United States and China (figure 2). The data obtained for the integrated effect are based on an analysis of interrelationships found in input-output data and indicate the extent to which industry creates value added in the services sector that would not exist without it. The chart clearly shows how differently the supply side of globalised economies develops as a result of structural change. The integration effect metric indicates the ability of industrial suppliers to differentiate themselves. At the same time, it becomes clear in which direction the tertiarization of the economy is heading and where the driving forces lie. In Germany and Italy, tertiarization is driven through industry, while in the United Kingdom the two sectors have evidently decoupled for the most part in terms of value added.

The importance of integrated production has its roots in the geographical structure of German industry, with its clusters spread widely throughout the republic and integrated into value-added structures at the respective locations due to long company histories. On the one hand, this enables a deeper partnership along the value chain all the way to the service providers and, on the other hand, a joint development of relevant resources and infrastructures. The European Cluster Observatory clearly illustrates how strongly the relevant industrial sectors are concentrated in Central Europe and how spread out they are geographically (figure 3).



Source: European Cluster Observatory, 2016.

Figure 3: Clusters in German Manufacturing:
Clusters for Metal Industry and Machinery Construction (left),
Clusters for IT and Electrical Engineering (right)

As can be derived in the form of a hypothesis from the findings so far, the regional structure and location distribution of German industry has special significance for its performance today. In fact, this geographical structure, coupled

with the steady growth of employment and production in Germany, has led to a situation where regional disparities have fallen in terms of the usual measure of distribution, even from 2005 to 2014, thus producing a greater convergence of the economic sub-regions (district level) (Braml and Felbermayr 2018). Economic development in Germany has not only been less cyclical, steadier and less dramatic in the recent past, but it has also become more regionally balanced as a result. In the European Union as a whole, however, there has been no further convergence since the 2008/09 crisis, but rather a divergence (Goecke and Hüther 2016). While convergence has been increasing in Germany since then, divergence has been rising in France and the United Kingdom (Braml and Felbermayr 2018, 47). If one considers the importance of regional divergence currently propagated regarding the emergence of populist forces, the intra-German convergence should be kept in mind (*ibid.*, 48; Hüther and Diermeier 2019).

When asked about the causes of this strikingly different economic development in comparison to other industrialized countries since the financial and economic crisis in 2008/09, the usual points mentioned in the recent past (wage development, investment activity, etc.), hardly provide convincing explanations at all. Given the longer-term effective and robust performance on the macroeconomic supply side, the explanation can only lie in specific supply-side conditions. In principle, this refers to the works of Werner Abelshauser, who described the 19th century as the phase of shaping the institutional framework of the "corporate German market economy" and thus mobilized different historical contexts for the present (Abelshauser 2004, 28 ff.). In comparison to correspondingly developed national economies, the German location has the following special characteristics (Hüther 2014, 145 ff.): (1) the great importance of regional clusters and networks with the consequence of a strongly integrated sector of industry and service providers, (2) a high standard of vocational education and training in the dual system, (3) the well-developed value-added research (industrial integrated research), (4) the hundred year old tradition of social partnership and collective bargaining autonomy with its power to compromise and finally (5) social benefits through the early and comprehensive introduction of social insurance. These aspects should be classified by bundling path dependencies and time strata.

5. A Combination of Path Dependencies from Different Time Strata: A Model for Understanding Germany's *Sonderweg*

The five special characteristics of the German economic system identified here point to a longer history, at least one that extends far beyond the beginning of industrialisation. This is the essential difference and extension to the analysis

of Abelshauser (2004 31). Let us first follow the five characteristics along their paths over the time strata identified. Finally, in conclusion, one dependency will be discussed from the point of view of different time strata. In table 2, important conditions have been assigned to the five previously identified characteristics across historical time, each of which can be designated as a time stratum. The view is redirected from the present Germany. For the nineteenth century, Prussia's influence is not honoured separately, but assumed to be consistently influential. For here, after 1815 (in the German Confederation), the most progressive forces were mobilized through the release of market forces and the overcoming of the estates; the political-political backwardness was less important for the question of economic conditions and economic progress.

This compilation contains institutional characteristics of the German *Standort* (i.e. location), "that structure human interaction" (North 1994, 360). Institutions here are defined widely as factual institutions, organizations, rules, values, perceptions, and actors. These came into existence and effectiveness under different conditions in different settings, they are defined via human interaction specific paths of economic processes, of economically relevant phenomena, and of economically determined phenomena. Combining time strata theory and the conception of path dependency offers some insights into patterns of economic performance in the overall process of economic change (*ibid.*, 366). The additional value of the approach of the time strata results from the fact that different avenues of development can be combined in retrospect.

A common driver for the selected characteristics of the German economy can be found in the *federal structure* which has a long tradition of shaping the formation of state authority. While the development of modern state institutions since the early modern era took place at the level of the central state in Western European countries, above all France, the Netherlands and England, it took place at the level of principalities in Germany (Hüther 2014, 147 ff.). In the 16th century, the territorial state first developed out of the conflict that families of nobility had over the sovereignty of the state, later through the restriction of the nobility's manorial estates in the territory and the integration and containment of the estates of the nobility, church dignitaries and cities (Schulze 1987, 204 ff.).

The financing requirements of the *Reich* and the tax collection required for this in a principality had a useful effect, which helped to enforce a restriction on the privileges of the manorial estates. This along with the increasing complexity of government tasks required a renunciation of the autocratic regent and a specialisation of state administration, which in many respects characterised modern administrative action (government's own buildings, archives, official regulations, fixed working hours). Thus "the territorial and individual sovereignties, which had also evolved historically, increasingly developed into early modern statehood, without, however, now being in a position to shake off the last remnants of pre-modern state ties to the Reich and advance towards full state sovereignty" (Schilling 2000, 704).

This development was strongly linked to principalities' increasing affiliation with a religious denomination. After the Peace of Augsburg in 1555, which permanently recognised the ownership rights of the Lutheran estates and granted them freedom of worship, and the death of Pope Paul IV in 1559, the Council of Trent was reopened in 1562, in reaction to the Reformation and internal Catholic reform efforts. This "Catholic reform" contributed to the development of cultures defined by denomination over the following decades (Schulze 1987, 253 ff.). The denominational unity of the territory was to be secured or even restored; yet both denominations exhibited astonishing parallels. "The standardization of religion thus became the beginning of the modern 'reason of the state'" (Schulze 1987, 258).

Schilling adds that "[i]n regard to territorial state-building, the smallness of its area had a great impact on Germans' future social history and historical-political culture. This is because the principality was particularly close to its subjects." This was expressed in the fact

> the great majority of Germans experienced the early modern state in the form of medium- to small-sized territories, primarily as a welfare and civil service state. This had consequences for the political mentality: Germans became accustomed to the fact that the prince and his civil servants "took care of the 'common good' and the spiritual and material happiness of their subjects in soon all-encompassing 'policy' legislation (Schilling 2000, 708).

While people in England and the Netherlands regulated the public themselves and early liberal theories of society gained momentum and received encouragement, the forerunner of the modern welfare state developed in the German territories. This illustrates the overarching connections that emerged from the traditions of the medieval *Reich* in the light of the multi-territoriality and multi-denominationality of the 16th and 17th centuries.

It also follows that the German nation-state formation in 1871, unlike the preceding English or French one, did not take place within the old European framework of estate-based societies, but under the conditions of an international system which was essentially shaped by global economic interests and the structures of mass societies (*ibid.*, 714). The effects of the formation of modern statehood at the level of the principalities and thus the German form of the "territorial state" type is concentrated in the political institutions, economic structures and social orientations. This federal structure defined the area of action and the scope of policy; the actions taken by princes were more visible to the citizens than in Western European nation states and their consequences were attributable. This concentration and proximity resulted in a special sense of political responsibility that extended deeper than in centralised states. At the same time, the citizens in smaller units felt a greater connection so that participation in the public conditions of one's own daily life and the search for compromise seemed more promising. In tangible terms, it is possible to formulate

Table 2

Characteristics of the German Economy in Historical Crosshairs

Paths / Time strata	Regional clusters and networks of industry	Dual system of vocational training	Research transfer / proximity to industry / love of technology	Collective bargaining autonomy / social partnership	Social reform / social security
Middle ages		Guild system			
Early modern era	Statehood in principalities Proximity to prince		State universities		Statehood in principalities Proximity of the prince to the people
First half of the 19th century	Small states in German Confederation German Customs Union 1834	Industrialisation: fear of job security and of deprivation			Industrialisation: Income uncertainty in the event of risks
German Reich	Acceleration of infrastructure expansion; Resources for research and development; Diversified quality production Modern Business Law (Company Law 1884; Commercial Law 1897; Civil Law 1900)	Unification of the Reich without a Reich idea Types of jobs – Technical professions (Industrial Act, Craftsman Protection Act of 1897)	Unification of the Reich without a Reich idea – Affinity for science / science policy – Secondary schools – Kaiser Wilhelm Society – Industry research cooperation – technical Universities, – Univ. of applied sciences	Trade unions First collective bargaining agreements Associations as organizational structure of business representation	Introduction of social insurance (sickness 1883, accident insurance 1884, old age 1889)
First World War	Heavy industry for armaments: Hindenburg Programme 1916			Auxiliary Services Act 1916 (Workers' Committees)	

November Revolution				Stinnes-Legien-Agreement	
Weimar Republic	The great disorder (hyper-inflation to economic crisis; currency stabilization); Austerity approach (Brüning)	Continuing education schools (Constitution Art. 145)		Works Council Act 1920; Constitution Art. 159 Freedom of Association; Ordinance on Conciliation 1923	Unemployment insurance 1927 (*AVAVG*)
Third Reich/ World War II	Regulatory policy 1934 – 37 characterized by criticism of industrialization, experiences of the global economic crisis. Resource scarcity and autarchy; Military oriented infrastructure; Heavy industry for armaments	Reich School Act 1938 (Complete introduction of industrial vocational training)	Aryanization of the universities; Brain drain	Centralization and Leadership principle (Führerprinzip); General price and wage freeze	
Federal Republic	Currency Reform 1948; Price liberalization; Bundesbank 1957; Competition Act – GWB 1957; Metal and electrical industry, chemistry …		Integrated research together with industry/Max Planck Society/Fraunhofer Society, etc.	Integration of Refugees; Basic Law Art. 9 / Collective Bargaining Agreement Act/Works Constitution Act	Pension reform 1957; Nursing care insurance 1995

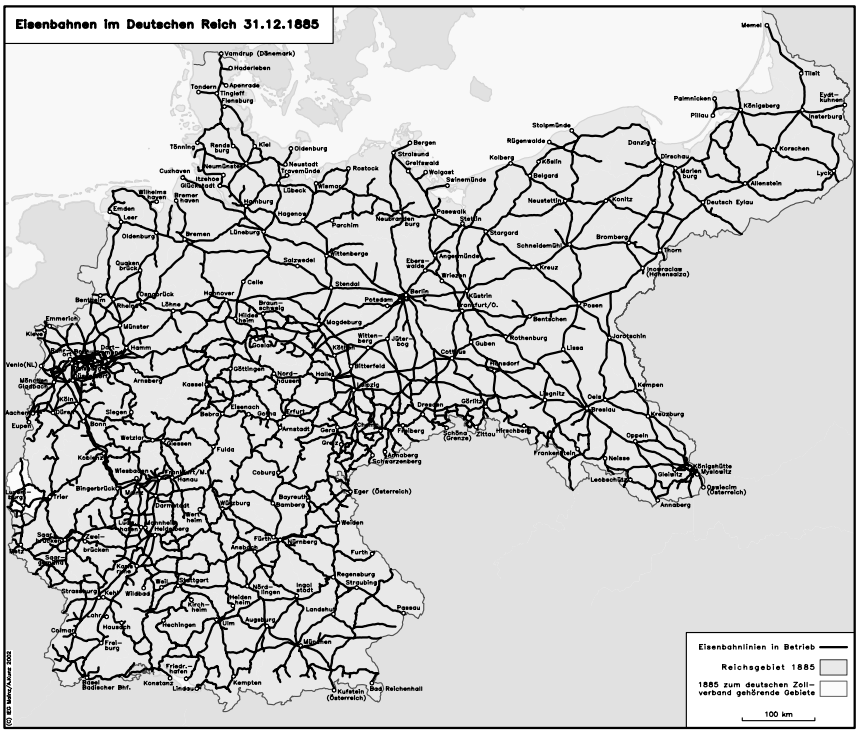
derivations for each of the five identified characteristics, which, however, do not all relate equally directly to the outlined findings on German federalism:

5.1 Regional Clusters

As a consequence of the political, social and mental smallness of space the advantages of the division of labour and knowledge in Germany could initially and primarily also have an effect in a left-behind area. The economic policy of the 35 individual states of the German Confederation in the 19th century until the unification of the *Reich* was primarily a location policy. This resulted in regional economic cycles and a variety of centres of industrialisation where raw material production was possible at low cost. A customs union and railway construction made it possible for the Bismarck Reich as a whole to profit as economic benefits spilled over into formerly less industrialized regions until the end of the 19th century. The expansion of the railway network with its polycentric structure (figure 4), which therefore expanded much faster than in Great Britain and France, was of great importance for the development of the heavy industry that was particularly influential in the German *Reich*. Particular momentum was observed after the Franco-Prussian war when French reparation payments had an impact through infrastructure investments and debt relief.

5.2 Dual Vocational Training

In the absence of a convincing *Reich* idea – in the sense of "stimulating traditionlessness" (Plessner 1959, 82, translation by author) – Germans' unconditional, even enthusiastic embrace of the new *Reich* in 1871 led to an amplification of sciences and technology as well as to a specialisation of the work which remained foreign to other nations."There is a subject for every interest and a field for every subject. One impetus behind the technical-industrial development and an idea that is consistent with the formation of a capitalist working society, which is designed to keep dividing the working process and to steadily refine or transform it, is that the human is first and foremost a professional and a specialist" (*ibid.*, 166, translation by author). These points illustrate the background for the emergence of dual vocational training, which – apart from also existing in Austria and Switzerland – is still an important unique aspect of the German (economic) location. The political goal of stabilising the otherwise economically declining middle class of craftsmen, small traders and small farmers and preventing proletarianisation through wage dependency in large-scale industry led to the amendment of trade law in 1897 with the Craftsman Protection Act (*Handwerker-Schutzgesetz*). The apprenticeship system was reorganised, and the traditional training schools became the new, compulsory vocational schools as of 1900, so that the dual system became a reality after the turn of the century.



Source: IEG and Kunz (2002).

Figure 4: German Railway Network, 1885

5.3 Science as its Application

In addition, the systematic opening of higher education to the world of technology and innovation at all levels of education is important. This can be seen in the introduction of *Realgymnasien* (secondary schools permitting graduation (*Abitur*) without knowledge of Greek), the *Oberrealschulen* (another type of secondary school) without Latin, the promotion of and granting of equal status to the technical universities (right to confer doctoral degrees in 1899 / 1900) as well as finally (here initially catching up in comparison to other states) the systematic development of non-university research through the establishment of the Kaiser Wilhelm Society in 1910 and the establishment of industrially integrated research. At the same time, since this completely opened up the possibility of obtaining access to all university degree programmes without having Greek as a subject in school, it mobilised a potential that was created with the *aporia* of a convincing and binding *Reich* idea and based on the embrace of industry and technology. Economic pressure, but also the political possibilities

of this fundamental and ground-breaking reform, drew on the positive attitude that the population and the elites had towards technical-industrial development "with titanic love of the world" (*ibid.*, translation by author) as a working nation.

5.4 Collective Bargaining Autonomy

Sometimes, necessity in a crisis can only be resolved with innovation. This is the case with the emergence of collective bargaining autonomy at the end of the First World War. The Stinnes Legien Agreement of 15 November 1918 laid the foundation for collective bargaining autonomy a few days after the assumption of legislative power by the German *Reichstag* and the abdication of the emperor to prevent a soviet republic (*Räte-Republik*) and the complete socialisation of trade unionists and employers (Krüger 2018). The employers' associations recognised trade unions as representatives of the workforce for the first time and agreed to regulate working conditions through collective bargaining agreements. At the same time, the establishment of workers' committees in the factories (later works councils) and the introduction of the eight-hour working day were agreed upon. What was viewed as a contract of fundamental importance to trade unions in the relationship between capital and labour was a strategic alliance for entrepreneurs out of necessity. Fearing a socialisation of their factories in the November Revolution, they signed the agreement a few days after the outbreak of the revolution on 9 November 1918. Nevertheless, collective bargaining autonomy – protected both by the Weimar Constitution (Article 159) and by the Basic Law (Article 9) – became a cornerstone of the German economic order and continued to be developed into a social partnership. This ensures that compromises are made at lower transaction costs and that there is an ability to act in other areas (e.g. further development of dual vocational training).

5.5 Social Reform

The tradition of German principalities caring for their subjects, which in the early modern era was due to the proximity of the prince to his subjects and to whom he had to offer an appropriate policy of care in line with his responsibility, was reflected in two particular developments in the late 19th century. On the one hand, a system of security for major life risks in the industrial world was developed at an early stage under Bismarck. The world's first modern social security system was established in the form of social insurance. Without the historical roots in the development of statehood at the level of the principalities, it is impossible to explain why this social innovation took place precisely in Germany and not in the previously industrialised England with its social injustices documented just as early – one need only to think of Friedrich Engels

(1845) *Die Lage der arbeitenden Klasse in England*. On the other hand, from this perspective, the foundation was also laid for the dual vocational training system that had already been introduced. What makes this vocational training so special is the involvement of employers and the need for social partnership cooperation. Both of these factors led to the stabilisation of corporate structures and the social partnership and thus offered a potential for recruitment that did not exist elsewhere.

It is therefore worth immersing oneself in the complexity of the time strata, taking their interaction seriously, in order to be able to understand not only the different speeds, but also different times of economic development. Understanding the key characteristics of the German business model in their historical dimension leads to a complex time strata structure: An important stratum is the early modern era (emergence of modern statehood), as well as the decentralised political power structure of the German Confederation in the 19th century and later the period from the unification of the *Reich* to the First World War. And in Germany, politics has never been tried to question the resulting industrial structure in principle, as was the case in the United Kingdom with the "Big Bang" in October 1986 under Margaret Thatcher. The path embarked on in the form of the federal structure of the state was also never doubted – except during the National Socialist dictatorship – and remained strong.

6. Policy Implication from Economic History: The Case of Germany's Export Strength

The preceding chapter makes it clear what is possible when historical findings are employed for economic argumentation: the reflection of formal economic theory in the accumulated experience of a society. History structured by time strata begs for explanation. The rule is: history is not invoked to support neoclassical economic preconceptions to reinvent itself as if it were consistent with neoclassical theory (Ankarloo 2006, 18). Otherwise – as in the case of "New Institutional Economics" – theoretical innovations may not solve the problems of the "non-realistic, asocial and ahistorical foundations of neoclassical economics" (*ibid.*, 1).

Economic policy derived in this way gains practical relevance, and costly aberrations in real-time economics can be prevented. Of course, there are overarching theoretical insights, such as the mechanics of market laws or overexploitation of a common resource, such as the tragedy of commons (Ostrom 2009). Therefore, securing social capital is about a sensitive organization of institutions – the definition of incentives, of rules and regulations. Commons are threatened by erosion if there is a large number of users and a large circle of those affected, and therefore informal norms or self-disciplinary mechanisms do not apply. The stabilizing effect of social capital is based on the well-

founded expectation that the given trust will be reciprocated by trust. It follows that there is no reason for a systematic pessimism in the presence of commons if the institutional framework is properly designed.

It can now be argued that effective social capital in a historical situation reflects the experiences of individuals in line with the institutional framework. This seems possible if the perception of individual experiences does not diverge too much. Here, in particular, the conviction of historical contingency should have an effect, which should be more pronounced the deeper the paths are connected with recognizable advantages for the people. In any case, it has been sufficient for Germany to secure a certain substratum of historically shaped structure – the industrial creation of value in a regional balance – and not to put it at risk as elsewhere (e.g. in UK with the Big Bang of freeing financial markets in 1986). In this vein, our historical analysis inquired about a framework of institutional analysis to understand better what makes a path more stable or open to change and to shift to another one.

Therefore, we have to move into "historical times that point beyond the experience of individuals and generations. In this case, these are empirical propositions which were offered before the generations living together and which will in all likelihood continue to have an effect beyond these generations" (Koselleck 2003, 25, translation by author). The combination of specific experiences with fundamental insights will create the power to start a new path or to prolong the existing one. An institutional economic analysis would reveal whether historical paths continue, strengthen themselves or break down. It must be examined whether and to what extent the institutional design can also be helpful for social capital, i.e. community-encompassing commons. Then the incentives and the possibility structure for the bundling in social capital are favorable in order to use historical experiences.

However, fundamental findings also need to be qualified. The tragedy of the commons, for example, is only theoretically inevitable; its actual possibility is very different historically and culturally depending on the inner social bond (Ostrom 2009). Thus, it can be concluded: It is profitable for economists – and ultimately for society – to argue in historical time strata and to give historical time room in theory. Helpful theoretical approaches and concepts elude the overall consistency requirement in the sense discussed at the beginning (Solow 1985). This is inevitable when historical reality takes the lead instead of economic theory. The complexity of relevant time strata defines the need for explanation and appropriate theoretical concepts. At the same time, of course, a lot of attention and devotion must be paid to consistency.

The combined analysis of time strata and path dependencies for the German case (still heavily industrialized and export-oriented) can also be appreciated in terms of economic policy. If it is a combination of far-reaching paths that have consistently stabilized over time, current economic policies – if they take the

importance of the supply side seriously – cannot change that much. Accordingly, the scientific advisory council at the Federal Ministry of Economics and Energy does not come up with a convincing package of measures in an interventionist manner to reduce the international balance of current account surpluses (Wissenschaftlicher Beirat, 2019). This may be disappointing, but at least the analysis reveals why the hurdles for a change of condition and thus path aberration for the German economy are so high and what the costs are.

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