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Ordering **ORDO**: Capturing the Freiburg School’s Post-war Development through a Text Mining Analysis of its Yearbook (1948–2014)


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**Abstract**: Current research on the long-term influence of ordoliberal and neoliberal ideas is hampered by an overly static and generalised picture of the Freiburg School. To address this gap, the paper analyses all articles published in **ORDO**, the flagship journal of the Freiburg School, between 1948 and 2014. This makes it possible to distinguish three phases of post-war ordoliberalism, to identify personal continuities and breaks, and to summarise thematic, methodological, and conceptual developments. Since the analysis utilises text mining methods, such as keyword identification and Topic Modeling, and validates the results of distant reading with close reading and external data, the paper also highlights some general methodological insights for using Digital Humanities in the historical sciences.

**JEL-Codes**: B 29, C 890, K 210

**Keywords**: Ordoliberalism, Freiburg School, Text Mining, Topic Modeling, Competition Law, Ordoliberalismus, Freiburger Schule, Wettbewerbsrecht

1 Introduction

It is well established that members of the early Freiburg School, with their distinctive ordoliberal policy advice, provided the essential groundwork for estab-
lishing Germany’s social market economy after the Second World War.\(^1\) In the aftermath of the 2008 financial crisis, scholars have again emphasised the influence of ordoliberal thinking; this time to explain the Eurozone’s structural problems and the poor handling of the crisis.\(^2\) While ordoliberals initially complained that national politicians had ignored their concepts for the situation,\(^3\) they recently considered that their “brand” might have been ideologically used and abused.\(^4\) On both sides of this “battle of ideas,”\(^5\) the notion of ordoliberalism has been “overused and under-theorised,”\(^6\) not least since it is unclear which post-war scholars have significantly shaped this school after its establishment in the interwar period: “although ordoliberalism is often discussed as if it were a static and homogeneous school of thought,” Marquis notes, “in reality, it has been more of a family of ideas […] what is often perceived today to represent ordoliberalism is a set of ideas that seem frozen in the period of 1933 to 1950 or 1957.”\(^7\)

From a historical-sociological perspective on school formation, this is highly problematic. The development of an academic school is typically a joint enterprise of the founder and the surrounding environment that remains subject to signifi-

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Scholars of ordoliberalism typically distinguish three groups: the Freiburg School, as established by the economist Walter Eucken and the lawyer Franz Böhm, the sociological wing around the economists Alexander Rüstow and Wilhelm Röpke, who lived in exile during the Third Reich, and a group of practitioners like Ludwig Erhard, Federal Minister for Economics from 1949 to 1963. In contrast to this broadly defined first generation of ordoliberals that have helped erect Germany’s social market economy, the existing literature does not provide many clues as to who constituted subsequent generations. Behrens notes that ordoliberalism “spans over at least four generations;” unfortunately, however, without presenting respective lists of names. Hien and Joerges are more explicit when writing that “Hayek, Hoppmann, and Mestmäcker represent the second generation, which combined elements from the Anglo-Saxon and the Austrian schools,” but do not go into detail. There are also notions of a “third generation,” denoting those members of the Walter Eucken Institute that aim to incorporate the ideas of James Buchanan, the American economist who inspired the research field of public choice theory. A detailed treatment of the Freiburg school’s post-war history is still missing.

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12 Ibid., p. 159.
13 Most accounts of German ordoliberalism usually start from the Weimar period and stop in the immediate post-war years with Germany’s currency reform. Some individual comments on ordoliberalism’s post-war development can be occasionally found in works on German economics post-1945 or neoliberalism more generally. For example, see: P. Mirowski/D. Plehwe (Eds.), The Road from Mont Pelerin: The Making of the Neoliberal Thought Collective, Cambridge, Mass 2009; J.-O. Hesse, Wirtschaft als Wissenschaft: die Volkswirtschaftslehre in der frühen Bundesrepublik, Frankfurt a.M. 2010. The title of the recent dissertation by Rahtz suggests an analysis of ordoliberalism until the 1970s but is still limited to members of the “first generation.” See: J. Rahtz, The Politics of Order: Ordo-Liberalism from the Inter-War Period through the Long 1970s, PhD Dissertation, UCLA, Los Angeles 2017. A valuable resource are the short biographical sketches of nu-
According to sociological literature, a school is formed by a scientific community gathered around both a charismatic leader and a paradigm about the reality at hand that is the object of investigation. While the existing literature focuses on the early leaders of the Freiburg School and the economic policy change that they brought about soon after the war, this paper focuses on the larger community of scholars associated with this school throughout the post-war period. A central methodological problem encountered in most of the literature on academic schools is that while the latter appear as close-knit scientific communities from the distant perspective of modern textbooks, it is more complicated to precisely capture them in an historical analysis that considers different individuals behind the academic “brand.” For instance, when analysing the Historical School of Jurisprudence, legal historians typically focus on the ideas of Friedrich Carl von Savigny, thereby producing a narrative of theoretical and personal unity that does not correspond to the historical constitution of the school. Similar to Haferkamp’s recent multi-person approach for characterising the Historical School, this paper aims to avoid a narrowing down of the ordoliberal school to its founders by demonstrating the “varieties of ordoliberalism” without losing sight of its central topics.

To enrich the understanding of the scholars involved in subsequent ordoliberal generations and test the hypotheses in the literature about the school’s development, this paper analyses all articles published in ORDO: Jahrbuch für die Ordnung von Wirtschaft und Gesellschaft ("ORDO: Yearbook for the Order of Economy and Society") between 1948, when it was jointly established by Eucken and Böhm, and 2014. A dedicated journal is the main tool for maintaining a school’s identity through continuous collaboration, particularly when the group grows and disperses geographically. The ORDO yearbook, therefore, presents a

14 Tiryakin, Bedeutung von Schulen, p. 43.
16 Haferkamp evaluates the writings of 32 lawyers, which he attributes to the circle of the school. Among the lawyers treated are not only celebrities but also less well-known members of the school. Ibid., p. 328.
17 This term has also been recently used by: S. Kolev, When Liberty Presupposes Order: F.A. Hayek’s Learning Ordoliberalism, in: Freiburger Diskussionspapiere zur Ordnungsökonomik 21/02, 2021, pp. 1-45, here: p. 4.
18 Due to JSTOR’s “Moving Wall,” coverage ended with volume 65, 2014, when the corpus was prepared.
19 See: Tiryakin, Bedeutung von Schulen, p. 50.
suitable case study for analysing the development of ordoliberalism’s post-war development. From the outset, it was intended to influence policy, and until today, it is seen as the flagship journal of ordoliberal thought. Recently, Dyson has noted that ORDO had “a special position in establishing and certifying mainstream views” about the nature of ordoliberalism as it defined the criteria for “good” ordoliberal practice through its commissioning and refereeing. Based on an evaluation of ORDO research, this paper distinguishes three phases of ordoliberalism and describes subsequent generations’ characteristic semantics and changing research interests.

The analysis relies on the programming language “R” to perform text mining, i.e. computer-assisted analysis of large amounts of textual data, on this newly created corpus of ORDO articles. The goal of text mining is to discover relevant information hidden behind a large quantity of text, based on the assumption that the frequencies (and sometimes positions) of specific words provide information about underlying discourses and sentiments. In the last decade, the quantitative literary studies of Franco Moretti have popularised this approach in the Humanities under the heading of “distant reading.” Recently, the methods have also been incorporated in studies dealing with the history of economic thought. In particular, the three empirical parts of the paper cover the following: an exploratory analysis of the ORDO corpus, a characterisation of key ORDO authors through tf-idf scores, and the estimation of a Structural Topic Model (STM) that allows identifying the main topics discussed by post-war ordoliberals. Each method will be introduced and critically reflected upon in its specific section.

The remainder of this paper proceeds in four steps. After briefly introducing the notion of “Ordo” and the main principles of ordoliberal thought developed

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21 W. Möschel, Recht der Wettbewerbsbeschränkungen, Köln 1983, p. XXXV.
by the first generation of the school (section 2), applying text mining methods to the ORDO corpus allows answering fundamental questions about the evolution and substance of post-war ordoliberalism: Who shaped subsequent generations of the Freiburg School (section 3)? What were characteristic concepts used by and research interests of key members (section 4)? And which general thematic and intellectual trends become visible when looking at ordoliberal scholarship from a long-term perspective (section 5)? This last section also conducts robustness checks by comparing the new quantitative evidence with qualitative assessments of ordoliberalism’s development that can be found in the literature. Section 6 concludes by critically reflecting on the “distant reading” methodology and clarifying both the benefits and disadvantages of text mining in historical research on the legacy of the Freiburg School.

2 “Ordo” and Ordoliberal Principles

Early ordoliberals like Eucken frequently referred to the idea of “Ordo” (Latin for order) to deal with the disequilibria and distortions brought about by economic power, which had manifested itself rapidly in an ever-growing number of cartels and monopolies during the Weimar Republic and the subsequent Third Reich, and their desire to overcome this situation. In that sense, it served both a descriptive and a normative function. While the term’s history shows that the idea of “Ordo” has attained different forms, particularly in German economic thought, the ordoliberal variant is generally traced back to scholasticism, Christian social ethics, and natural law. For instance, Röpke’s writings contain “extensive references to natural law thinkers such as Grotius, Vitoria, Pufendorf, and Suarez, not to mention concepts often associated with the broad natural law tradition such as the *ius gentium* and the *ordre public international.*” Böhm emphasises this tradition when he writes that the thought of Ordo is “a peaceful,

27 For the rise in economic concentration at the time, see: T. Jovović, Deutschland und die Kartelle – eine unendliche Geschichte, in: JWG 2012/1, pp. 237-273.


30 S. Gregg, Wilhelm Röpke’s Political Economy, Cheltenham 2010, p. 171.
humane thought rooted in the noblest occidental tradition.”31 By connecting this “Ordo” idea with liberal thinking in his principal works, Eucken distinguished the agenda of the emerging Freiburg School from the laissez-faire liberalism prevalent during the previous century. Subsequently, the term was related to a country’s economic constitution to infer the “rules of the game,” and was used, in bold letters (ORDO), as a catchy title for the school’s yearbook, thereby becoming constitutive for the economic programme of post-war ordoliberalism.32

When talking about Ordo, ordoliberals distinguished between a given ordre naturel and a consciously instituted ordre positif.33 Explicitly within the meaning of the latter, they wished the state to set up and maintain an institutional framework that would protect the free interplay of competition, resulting in economic advantages – like price signalling and efficient resource allocation – but also in broader societal benefits.34 This belief in an ordre positif was an essential distinction to the contemporary Austrian School (and later generations of the Chicago School), which tended to assume that the competitive and humane order can arise out of itself in the sense of an ordre naturel. Within this framework of ordre positif, early ordoliberals judged policies in terms of how they fit in with the overall economic process (“interdependence of orders”)35 and its dominant steering mechanism, which is either price-based “competition for the merits” (Leistungswettbewerb) or central administration.36 Still, the concept of “ordering” competition must not be understood too broadly or too generally.37

This shared, basic conception of Ordo consisted of several interacting notions. As a result, the meaning of ordoliberalism has many dimensions and is complex, but it is not therefore unspecific or vague. Because it had roots in

33 Eucken, Grundsätze der Wirtschaftspolitik, p. 373 f.
35 It is a key feature of ordoliberal writings that they stress the embeddedness of the economy in adjacent social orders. See the excellent depiction in: Kolev, Neoliberale Staatsverständnisse im Vergleich.
Eucken’s works, a concise summary of early ordoliberal tenets about how to order the economy can best be approached from the perspective of his ideas. In essence, his work amounted to naming the functional conditions of a competitive economy that had been replaced through economic concentration and state intervention by the 1930s and early 1940s. These fundamental conditions are summarised in his seven constitutive and four regulative principles of a market economy, which are often identified as the “essence” of the Freiburg School. As will be shown, all constituent principles indeed touch upon the central issue of economic power, the extent of which early ordoliberals hoped to minimise. Moreover, these principles are general enough to provide a sufficiently broad yardstick for the later comparison with the thematic development of the ORDO yearbook. Decades after his death, Eucken’s students still referred to his principles for inspiration.

The first and most important constituent principle in Eucken’s list (he calls it the “basic principle”) demands the establishment of a “functioning price system of complete competition” (funktionsfähiges Preissystem vollständiger Konkurrenz), which should become the essential criterion of every economic policy measure enacted by the state. While this is often equated with a broader German inflation aversion, one should at least pay equal attention to the second part of the expression (not least because monetary aspects are also dealt with in the second principle), i.e. the realisation of “complete competition.” This is an idealised market structure that enables a functioning price system in the first place and guarantees the distribution of all positions of power, which was a core feature of

39 While the constituent principles aim to establish a good order, the regulating principles serve the maintenance of order. Eucken describes these principles in: Eucken, Grundsätze der Wirtschaftspolitik, pp. 254-304.
42 Eucken, Grundsätze der Wirtschaftspolitik, p. 254.
43 Bofinger argues that Eucken’s principles, with their focus on inflation, still shape the German attitude towards monetary policy. See: P. Bofinger, German Macroeconomics: The Long Shadow of Walter Eucken, in: G. Bratsiotis/D. Cobham (Eds.), German Macro: How it’s Different and Why that Matters, Brussels 2016, pp. 8-19.
the early ordoliberal writings.\textsuperscript{44} In contrast to most Austrian School economists, Eucken thus regarded a decentralised market structure as a prerequisite to achieving such a system.\textsuperscript{45} Anything that could distort this “basic” principle, like anti-cyclical fiscal policy, exchange controls, or concentration-inducing taxes, was ruled out. Early on, Eucken pointed to the price-distorting effects of monopoly formation.\textsuperscript{46}

Secondly, the primacy of the monetary order should guarantee stable prices and the value of money because inflation has adverse effects on the functioning of fair competition. Contemporaries of Eucken were already starting to think about the relationship between inflexible prices, as caused by monopolies or administrative entities, and monetary policy. This might have been in Eucken’s mind too. However, his primary motivation behind this principle seems to have been again a concern for the competition order: “All efforts to realise a competitive order are in vain as long as a certain stability of the value of money is not secured.”\textsuperscript{47} In a similar vein, Eucken feared that powerful vested interests, politicians, or bankers might meddle with the currency and the monetary order, as he called for a strong and independent central bank that should nevertheless be subject to a “specific, compliant rule of the game” (bestimmte, konforme Spielregel).\textsuperscript{48}

Thirdly, the “open markets” principle means the absence of prohibitive tariffs and other restrictions on free trade.\textsuperscript{49} Dropping these anti-competitive measures is essential for tackling any form of economic concentration, as they facilitate the power accumulation on individual markets and endanger the general equilibrium.\textsuperscript{50} Fourthly, private property is seen as essential for economic efficiency and liberty.\textsuperscript{51} This principle is not derived from natural rights but is mainly established to generate positive incentives following the decentralisation of economic power. Eucken stressed that private property is legitimate only as long as it does not en-

\textsuperscript{44} R. Behlke, Der Neoliberalismus und die Gestaltung der Wirtschaftsverfassung, Berlin 1961, p. 54 f.
\textsuperscript{45} van Suntum et al., Walter Eucken’s Principles of Economic Policy Today, p. 7.
\textsuperscript{46} “The effectiveness of the price mechanism was already hampered by the emergence of individual monopolies and monopoly-like entities […].” W. Eucken, Staatliche Strukturwandlungen und die Krisis des Kapitalismus, in: Weltwirtschaftliches Archiv 36, 1932, pp. 297-321, here: p. 308.
\textsuperscript{47} Eucken, Grundsätze der Wirtschaftspolitik, p. 256.
\textsuperscript{48} Ibid., p. 264.
\textsuperscript{49} Ibid., pp. 264-270.
\textsuperscript{50} This is also emphasised by: S. Kolev, Ordoliberalism and the Austrian School, in: C.J. Coyne/ P. Boettke (Eds.), The Oxford Handbook of Austrian Economics, Oxford 2015, pp. 418-444, here: p. 428 f.
\textsuperscript{51} Eucken, Grundsätze der Wirtschaftspolitik, pp. 270-275.
etail power, thus opening up the possibility for breaking up monopolies;\(^{52}\) an option that is today again discussed in the context of Big Tech firms. Fifthly, “freedom of contract” is proposed only to the extent that it is compatible with competition; in other words: as long as it does not support cartels.\(^{53}\) Legally, this means that the criterion is not treated formally but in a material sense.\(^{54}\) For instance, contracts that restrain trade do not realise but abuse freedom of contract and thus constitute distortions to the competition order that need to be sanctioned.

Sixthly, the “liability” principle is targeted, again, at large monopolies and their utilisation of corporate law.\(^{55}\) Limited liability became a core feature of most incorporation statutes enacted by Western states from the early 19th century, not least because powerful interests were behind this legal innovation.\(^{56}\) If companies can become “too big to fail,” the resulting limited liability can cause serious misallocation of resources, as apparent during the 2007 financial crisis. Eucken foresaw such threats and therefore emphasised the need for market players to develop an adequate attitude toward risk to maintain the competitive order. Lastly, the principle of “continuity of economic policy” means that the latter should be both reliable and predictable for market participants.\(^{57}\) If this is not the case, firms will be confronted with high adjustments costs and unnecessary fluctuations within the system.\(^{58}\) This is particularly harmful for smaller and medium-sized enterprises (SMEs), which is why this last constitutive principle likewise aligns with the early Freiburg School’s focus on establishing a decentralised, more equal market power distribution in the economy.

This framework is complemented by four regulative principles that concern competition policy, income policy, correction of externalities, and correction of an anomalous labour supply.\(^{59}\) Together, they form an institutional regulation policy required to pass from an existing order to the desired *ordre positif*. The first regulative principle regarding reduction and control of monopoly power is

\(^{52}\) “[...] when monopolies arise, i.e. when the control of competition is lacking, the power of disposal over private property must be limited.” *Ibid.*, p. 275.


\(^{58}\) Kolev, Ordoliberalism and the Austrian School, p. 429.

the most essential one.\textsuperscript{60} If monopoly power cannot be eliminated, Eucken argued, the state is obligated to control and supervise monopolistic industries in such a manner that their prices approximate those that would have existed under the conditions of “complete competition.” This became known, through the writings of Eucken’s student Leonhard Miksch, as “as-if standard.”\textsuperscript{61} In addition, Eucken mentioned the possibility of prohibiting practices of price discrimination, emphasised that his reasoning extends also to oligopolies, and admitted that accelerating technological developments may necessitate even increased regulatory oversight in some industries. Noteworthy is also the second regulatory principle – measures regarding incomes policy – because it includes the possibility of industrial policy, i.e. competition policy’s counterpart.\textsuperscript{62} Significantly, Eucken highlighted that industrial policy is only possible as long as its application increases competitive conditions, makes prices more reflective of scarcity, and does not discourage long-term investment.

Overall, Eucken defines “Ordo” as the realisation of an economy characterised by the absence of concentrated economic power due to a consistent application of constitutional and regulative principles in economic policy. All principles had to be integrated into a unified approach to achieving this. This coherent, inclusive focus on the question of power constituted a significant difference from other neoliberal strands. It led to “serious conflicts among neoliberals about the understanding of competition, the question of monopoly, and the relation between the state and the economy.”\textsuperscript{63} As will be shown in the remainder of this paper, these conflicts would also shape the post-war development of the ordoliberal discourse. Eucken’s principles significantly impacted early ordoliberalism as an academic project since they did not only inspire further research in the areas of competition policy, monetary policy, and regulation but were also per-

\textsuperscript{60} Not by coincidence, this is the only regulative principle that is sufficiently documented in the posthumous text. This is noted by: Kolev, Ordoliberalism and the Austrian School, p. 429. To contemporaries, it was clear that this principle “occupies primary rank in terms of importance.” Behlke, Gestaltung der Wirtschaftsverfassung, p. 55.

\textsuperscript{61} See: Berndt/Goldschmidt, Leonhard Miksch’s Beitrag.


ceived as normatively binding. One should thus expect them to be reflected in later ordoliberal scholarship. This proposition can be tested by constructing a corpus with all ORDO articles and investigating their content.

3 The Post-war Development of the Ordoliberal School

The corpus of ORDO articles used in the following consists of text manually generated by optical character recognition (OCR) software. This text covers all 957 research articles published in ORDO between 1948 and 2014. All other textual elements, such as book reviews and summaries, and non-textual features, like figures and tables, were omitted. The most common pre-processing steps were conducted, such as dropping punctuation and numbers and the automatic removal of so-called “stop words,” i.e. uninformative words like “the.” Although applying stemming algorithms, which reduce words to their root form, is sometimes customary, the author opted not to use such methods here. No stemmer is perfect, particularly for German, and as a result, they can often add ambiguity to the interpretation. Figure 1 shows the number of articles and pages published per year in ORDO. On average, an ORDO yearbook features roughly 15 articles and 273 pages, but there is great fluctuation over time.

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65 Short summaries were introduced together with layout changes from 1975 onwards. Literature references at the end of the article were processed separately. Focusing only on research articles is a common strategy in the text mining literature: A. Ambrosino et al., What Topic Modeling could reveal about the Evolution of Economics, in: Journal of Economic Methodology 25, 2018, pp. 329-348.
66 Most researchers consider illustrations and tables “as ontologically different from text parts” and thus exclude them. M. Valleriani et al., The Emergence of Epistemic Communities in the Sphaera Corpus: Mechanisms of Knowledge Evolution, in: Journal of Historical Network Research 3, 2019, pp. 50-91, here: p. 86.
There are three main challenges when dealing with the ORDO corpus. First, some ORDO issues also contained English or even French articles. Although it would be possible to exclude all foreign-language articles from the corpus, doing so would remove valuable observations from the beginning, thus limiting the evidence that can be used to examine hypotheses about the history of ordoliberal scholarship. In addition, the difference in content between English- and German-language scholarship is in itself an important research question, especially since recent literature suggests an Atlantic divide concerning competition policy thinking. Fortunately, the methods used in this paper are relatively simple linguistically, using so-called “bag of words” representations that ignore word order and thus do not require consideration of complex syntactic relationships. For the following analysis, it is thus possible to include the foreign-language articles without resorting to complicated machine translation methods.

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70 This “inclusion” method is also advocated by: C. Lucas et al., Computer-Assisted Text Analysis for Comparative Politics, in: Political Analysis 23, 2015, pp. 254-277.
A second challenge is the temporal heterogeneity of the corpus (Figure 1). Interestingly, years with particular large volumes of ORDO, both in terms of articles and pages, seem to correspond with economic crises, such as 1979 (oil price shock), 1997/98 (Asia crisis), and the years following 2008 (financial and Eurozone crises), suggesting that there is an academic or editorial reaction towards these economic phenomena which might indicate increased demand for ordoliberal policy advice in such crisis contexts. In a similar vein, ordoliberal rhetoric and tools proliferated in the wake of the transition processes after 1989. These publication volume patterns are critical to take into account. The following analysis uses relative word frequencies instead of absolute word frequencies and relies on methods such as Topic Modeling, whose interpretative quality is not biased by volatile publication patterns.

Third, it is certainly debatable whether everyone who has published in ORDO can be treated as ordoliberal or if one must restrict the sample to a pre-defined list of authors. In the extensive literature on ordoliberalism, three popular names are especially controversial: Alfred Müller-Armack, Ludwig Erhard, and Friedrich Hayek. Compared to the ideas of early ordoliberals discussed in the previous section, Müller-Armack, whom Sally calls “the odd man out in the German neoliberal tradition,” represents a more interventionist, outcome-oriented approach. For instance, he supported counter-cyclical macroeconomic policies to assure full employment. Similarly, Erhard’s practice-oriented vision of “prosperity for all” goes far beyond the social policies advocated by most early ordoliberals.

73 Mimno, Computational Historiography, p. 3.
74 Sally, Ordoliberalism and the Social Market, p. 248.
75 It is thus appropriate to distinguish between the Cologne-based school associated with Müller-Armack and the Freiburg School around Eucken. V. Vanberg, "Ordnungstheorie" as Constitutional Economics – The German Conception of a "Social Market Economy", in: ORDO 39, 1988, pp. 17-31.
76 As a consequence, one has to keep the expressions ordoliberalism and Social Market Economy conceptually separate. J. Lange-von Kulessa/A. Renner, Die Soziale Marktwirtschaft Alfred Müller-Armacks und der Ordoliberalismus der Freiburger Schule Zur Unvereinbarkeit zweier
Erhard never published in ORDO, and Müller-Armack’s presence in the corpus is minimal, with three articles spread over 29 years (1948, 1970, 1977), which implies that they can be ignored in the aggregate.

Hayek, by contrast, has published numerous times in ORDO, meaning that his semantic footprint in the corpus will impact the text mining analysis. For many historians of economic thought, this would not pose a problem since several indices suggest an overlap between Hayekian thinking and ordoliberalism. When founding the Mont Pèlerin Society in 1947 to promote reformed liberalism, Hayek was joined by Eucken and Röpke.77 One year later, Hayek’s seminal essay entitled Wahrer und Falscher Individualismus appeared in the first issue of ORDO. Eucken had sought Hayek’s cooperation to promote the new journal.78 Eventually, Hayek became Eucken’s successor as the department chair in Freiburg between 1962 and 1969. Nevertheless, a close reading of his writings clarifies that he differs in his views on taxation, the relationship between the state and the market, and competition law;79 i.e. all aspects that played essential roles in Eucken’s constitutive and regulative principles surveyed above. In comparison with Hayek, the liberalism of the Freiburg school seems more moderate.80 These differences need to be born in mind, as the presence of Hayek in the corpus is statistically significant compared to Erhard’s and Müller-Armack’s.

As an exploratory analysis of the ORDO corpus quickly makes clear, the uncertainty regarding ordoliberal post-war generations mentioned in the introduction might be explained by the untimely deaths of key figures. Eucken’s early death – he died in 1950 while delivering a series of lectures at the London School of Economics – prevented him from working out his thoughts on Ordnungspolitik in more detail.81 As Röpke remarked in a letter to Hayek: “Eucken’s

death is truly the worst thing that could hit us. I think like you: we must now close the ranks all the closer.” 82 This break was exacerbated by Eucken’s promising student Miksch dying in the same year. 83 In 1966, Röpke died, too, and his biographer suggests that his relatively early death might explain why his writings did not receive the attention accorded to other free-market economists in the 1970s. 84 The cumulative effect of these personal tragedies is highlighted when listing the 20 most influential authors in ORDO, measured by the number of published articles (Figure 2). 85 Of the first-generation ordoliberal scholars, only Lutz, Röpke, Böhm, and Fritz W. Meyer are visible, while the remaining 16 names belong to ordoliberal scholars of subsequent generations. From a purely quantitative point of view, later ordoliberal authors such as Hans Willgerodt, Hans Otto Lenel, Walter Hamm, and Alfred Schüller have been much more influential than some of the initial “founders.”

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83 Feld, Köhler, and Nientiedt, Ordoliberalism, Pragmatism and the Eurozone Crisis, p. 8.
84 Gregg, Wilhelm Röpke’s Political Economy, p. 4.
proxy that might miss the impact of vital figures. This can be seen from a comparative glance at the Freiburg School’s transatlantic cousin, the Chicago School, which can be classified, especially in its early decades, as belonging to the same neoliberal family as the German ordoliberals. In the case of the Chicago School, research has established that Aaron Director, a Russian-born economist who had been recruited by Hayek and stayed at Chicago University from 1947 to 1966, played a significant role in the newly forming generation. However, he barely published articles and instead focused on his teaching obligations, which eventually started a new way of thinking about competition law matters. When reading the early issues of the *Journal of Law and Economics*, which was the main forum for the Chicago School, one notices the influence of Director only in a couple of seminal papers that explicitly thank him for his assistance in the footnotes. While the following analysis would miss such a figure by focusing on visible research output in ORDO, the literature on ordoliberalism does not suggest the presence of a similar “hidden” figure like Director. Instead, ordoliberals regarded themselves as public intellectuals, and accordingly, their theory was driven by the idea of experts helping to design the economic order scientifically. Even those who eventually exerted political influence, like Röpke and Mestmäcker, continued to publish frequently, as Figure 2 underlines.

Once one has identified influential ORDO authors in this way, it is possible to gain a more dynamic perspective on their work by plotting the distribution of

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their articles over time (Figure 3). Every black point in this plot represents a single ORDO article, corresponding to the unit of observation in the corpus. The thick horizontal lines indicate the statistical mean. The light vertical lines represent the theoretical interference interval (calculated as 95% Bayesian Highest Density Intervals). Together, the mean and the interference band help approximate an author’s most influential years in terms of their impact on the inner-school discourse. One can distinguish between ORDO authors primarily publishing between 1950-1970, 1970-1990, and 1990-2010, thereby establishing periods of post-war ordoliberalism.\textsuperscript{91} Another measure for grouping scholars into the same cohort would have been age. However, this paper’s focus on ordoliberal priorities and their change over time means that it is more helpful to abstract from the individual researcher’s biography and focus on their work’s most significant contribution to the overall school-internal discourse, a point taken up again below.

As shown by Figure 3, the group of ordoliberals responsible for the school’s transition to the post-war period was still defined by the writings of Böhm, Röpke, Lutz, and F.W. Meyer.\textsuperscript{92} They were supported by Ernst Heuss, who had completed his doctorate at the University of Freiburg in the last year of the war and later habilitated in St. Gallen. By the 1960s, there was already a transition to the ideas of Hayek, who returned to Freiburg from Chicago to take over Eucken’s former chair in 1962. Between 1970 and 1990, Helmut Gröner, Hans Otto Lenel, Ernst-Joachim Mestmäcker, Christian Watrin, and Hans Willgerodt formed the core of a second generation. They were supported by Böhm, who was still publishing up until 1975, thereby representing an essential element of orthodoxy in the school’s development. Finally, the period between 1990 and 2010 was characterised by a plethora of authors, especially Gerd Habermann, Walter Hamm, Wernhard Möschel, Dieter Schmidtchen, Alfred Schüller, Manfred E. Streit, Viktor Vanberg, Roland Vaubel, and Wilhelm Meyer. For the first time, a direct connection to the interwar founders had disappeared due to Böhm’s death. However, since some authors, like Hamm and Schüller, had already published in earlier decades, the structural break between the second and the third generation seems less severe.

\textsuperscript{91} The statistical mean of the publications, as illustrated by the horizontal lines, was used as a rough cut-off point.

\textsuperscript{92} One obtains a similar categorisation of the Freiburg School’s development if one visualises, as an alternative proxy, the counts of ORDO articles per decade per key author.
Fig. 3: Diachronic View on the Most Productive ORDO Authors.

The diachronic depiction in Figure 3 underlines the vital role played by Mestmäcker, who published almost continuously in ORDO and thereby formed an essential element of continuity in the school’s post-war period. This quantitative evidence is in line with notions in the literature: According to Hien and Joerges, it was mainly “Ernst-Joachim Mestmäcker, a student of Böhm’s, who was the leading theorist and also the most influential representative of the new generation.”93 In his popular account of “Ordo-globalists” and their post-war impact on the international and European legal order, Slobodian likewise stresses the role played by Mestmäcker.94 Similar statements could be made concerning ORDO authors like Christian Watrin, who lived from 1930 to 2020, or Hans Willgerodt, who published even more regularly than policy-oriented Mestmäcker and had an almost equally long life as an author in ORDO. Two conclusions can be drawn from this. First, it might be more suitable to speak about phases or periods of

93 Hien/Joerges, Dead Man Walking?, p. 152 f.
94 Note that Slobodian’s definition of these globalists goes beyond the Freiburg School in the narrow sense. See the criticism by: S. Kolev, Yet Another Neoliberal School? Geneva and Its Ordoglobalists: Comments on the Book by Quinn Slobodian, in: ORDO 69, 2018, pp. 523-528.
ordoliberal scholarship than generations. As a student of Böhm and teacher of Möschel, a figure like Mestmäcker belongs, academically and demographically, to the second generation. Still, he was most present in the ORDO yearbook during a time that one would instead associate with the third generation. Second, vital elements of continuity, as represented by Mestmäcker, Watrin, and Willgerodt, mean that from the perspective of ordoliberalism as an academic school, the most significant generational change might have been happening only in the last couple of years. The following sections characterise the three periods of ordoliberal scholarship through characteristic keywords and commonly discussed topics.

4 Ordoliberal Keywords Over Time

The previous section has identified three generations or phases of post-war ordoliberalism in terms of the most productive ORDO authors. To get an impression of each generation’s shared topical concerns and typical rhetoric, one can start by calculating the most characteristic terms that each of its respective members used when writing articles for the yearbook. In the following, keywords are identified via a weighting scheme popular in the early information retrieval literature. How characteristic a word is in a text depends not only on its frequency in that text but also on how often it is commonly used. This is taken into account in the so-called tf-idf method, which adjusts a term’s importance for how rarely it is used.\(^{95}\) This means a text is analysed based on its position within the overall corpus: “The idea of tf-idf is to find the important words for the content of each document by decreasing the weight for commonly used words and increasing the weight for words that are not used very much in a collection or corpus of documents.”\(^{96}\) A word used by an ordoliberal author is therefore characteristic for this specific author if it frequently appears in their ORDO articles but less often in other articles.

First, a technical note. To create the following tf-idf figures, the author removed all conventional stop words by applying the standardised stop words lists for German and English, words with less than three characters, and those year dates in which an ORDO yearbook was published to generate easily com-

\(^{95}\) The formula consists of tf (number of times a term occurs in a document), df (number of documents that contain each word), and idf (defined as: 1 / df). The formula is \(\text{tf-idf} = \text{tf} \times \text{idf}\).

\(^{96}\) See: Silge/Robinson, Text Mining with R.
prehensible and intelligible outputs. Following Wehrheim’s approach to analysing economic writings through text mining, other ORDO-specific stop words were included in the list based on an iterative process. Most words added in this way conform to three types of stop words: obvious OCR errors (e.g. “6ind” instead of “sind”), the author’s names (as they are usually repeated in the header on every second page of an ORDO article), and so-called “boilerplate,” i.e. uninformative words that are not related to the main content but are featured, for technical reasons, in most articles (such as copyright information and date of download). A separate table lists all manually selected stop words to show that the corpus has not been manipulated for desired results (Online Appendix Table 1). Besides giving insights into the articles of these authors, calculating tf-idf figures helps identify frequent OCR errors, which typically lead to terms with high tf-idf scores, such as “6ind.” For similar reasons of comprehensibility, the calculated tf-idf values were multiplied with a larger factor when plotted, as this does not change their relative values but brings more orientation to the x-axes.

Fig. 4: Characteristic Terms for the First Period of ORDO (1950-1970).

97 These measures were intended to remove so-called “boilerplate,” which is a common step in pre-processing. See: Boyd-Graber, Mimno, and Newman, Care and Feeding of Topic Models.
Figure 4 plots the ten most characteristic words (in the following marked in italics), as measured by the tf-idf metric, for each member of the ordoliberal school’s first-generation, based on their ORDO articles. In cases where words have the same tf-idf value, these were additionally mapped so that some lists extend beyond ten words. Böhm’s word profile sets the standard tone under which early Freiburg research can be summarised: Starting from the ideal of complete competition, which imagines an orderly structure with “countless” (zahllos) economic actors, all cartel-like or monopoly-like economic structures are strongly criticised.99 If everyone has to orientate themselves to the “market price system” (marktpreissystem), Böhm reasoned, the economic power of individual market participants is minimised, and thus an order that is not only economically but also legally and socially advantageous is realised.100 As indicated by the term “traders” (gewerbetreibende) in his tf-idf profile, his competition theory was based on the influential idea that the introduction of freedom of trade, as enacted in the German Trade Act of 1869, had established an “economic constitution” that needed to be backed up by the state.101 As can be seen from his word profile, the same questions were also on the mind of Heuss, who, after having habilitated in Switzerland, became a Rockefeller Fellow in the US and was primarily concerned with American antitrust policy. In his ORDO articles of that early period, he dealt with integrating the phenomena of imperfect competition into the ordoliberal world view, and especially into Eucken’s theory of market forms,102 and reflected on the usefulness of US antitrust law,103 which had served as an inspiration for its European counterpart.104 The term cello-

99 The underlying theoretical model of complete competition becomes also visible in the tf-idf word profiles of important early ordoliberals not plotted here, such as Miksch (gleichgewichtstendenz, konsumfreiheit, grenzproduktivitäten), Eucken (monopolbildung), and Rüstow (familienbetriebs).


101 For the influence of Böhm’s ideas, see: F. Utz, Preuße, Protestant, Pragmatiker: der Staatssekretär Walter Strauß und sein Staat, Tübingen 2003, pp. 113-121.


phane in his word profile points to the issue of market definition, as the classic example of this problem in US antitrust law is the so-called cellophane case.105 The next word profiles by F.W. Meyer, Lutz, and Röpke point to a second thematic area that shaped the early post-war ordoliberal discussion: monetary policy. Consistent with Eucken’s constitutive principles, F.W. Meyer dealt with inflationary and savings processes, Lutz with the gold standard system and its consequences, and Röpke with the currency systems after the war. While Röpke – together with Rüstow – represents the sociological, romanticist strand of ordoliberalism, he “very largely shares the ordoliberal precepts of the Freiburg School.”106 Together with Böhm and Lutz, he thus builds an influential element of continuity within the group of ordoliberals that managed the school’s transition into the post-war period, potentially helping to preserve key concepts. While Röpke continued writing about the importance of curbing cartels, his post-war work focused on reconciling Christian values, rural customs and communities, and economic liberalism by combining economic questions with ethics and cultural critique.107 Röpke’s frequent public statements regarding European and international relations demonstrate a change of opinion in the second half of the 1950s,108 underlining that a diachronic approach to ordoliberalism is necessary. In light of Eucken’s competition-centred constitutional principles discussed above, it is noteworthy that Röpke opposed the creation of the European Economic Community (EEC), which would institutionalise a strong competition law on the supranational level – and thus out of the orbit of national states’ protectionist motives – due to his more global vision for trade.109 He made his free-market case against

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107 Röpke’s decentralisation vision has therefore been labelled a “liberalism from below.” Ibid., p. 132.


109 It is important to point out that Röpke was not opposed to the ideals behind the Schuman Plan and the Treaty of Rome per se, but simply questioned whether the closed integration model that was underlying these plans would be helpful in achieving peace and welfare gains. This is also noted by: Gregg, Wilhelm Röpke’s Political Economy, p. 160.
the EEC also in the ORDO yearbook. Röpke’s post-war focus on questions of economic and political integration is reflected in his tf-idf word profile through words like wirtschaftsintegration, großraum, and marshallplan.

The historical context of the discussion of F.W. Meyer, Lutz, and Röpke must be seen in the system of “forced foreign exchange management” (devisenzwangsbewirtschaftung), which likewise appears in Röpke’s word list and meant that foreign currency could only be imported and converted into the local currency to a very limited extent. Ordo- and neoliberals at the time regarded this as a violation of their principles, comparable to an infringement of human rights. Given this context, Röpke feared that the EEC would force inflation on Germany since only in this way could free trade and fixed exchange rates be maintained. In his quest to fight this phenomenon of so-called “imported inflation,” Röpke was supported by Lutz, the ordoliberal expert on the theory of money and currencies, whose word profile captures these research priorities well (währungseinheiten, deflationsdruck, einfuhrrestriktionen). Lutz had advocated for freely fluctuating currencies because he thought that divergent wage behaviour would make stable rates impossible. During the post-war period, he assumed influential positions in the ordoliberal network.

It is interesting to note that the word profile of Lutz mentions the role of gold twice (goldwährung, goldbestand). Ordoliberals had always been keen on emphasising that a stable currency is necessary, as Eucken’s constitutive principles illustrate. For Röpke, the gold standard even implied socio-cultural bonds, tradition, and the rule of law. Only gradually did post-war ordoliberals accept that autonomous economic policies of other countries precluded a return to the gold standard. Still, this motive kept popping up in later issues of the yearbook, when modern ordoliberals in the tradition of the Austrian School welcomed the

111 Slobodian, Globalists, p. 121 ff.
113 Oliver, German Neoliberalism, p. 146.
114 From 1948 to 1975, Lutz helped edit ORDO, and in 1954, he became co-founder of the Walter Eucken Institute.
115 For instance, Röpke associated the gold standard with socio-cultural bonds, tradition, and the rule of law. See: Slobodian, Globalists, pp. 58, 155, 170.
fact that the Euro acted as a proxy of the gold standard, as this promised that Europe as a whole would “internalise traditional Germanic monetary stability.”  

Compared to the lists discussed so far, the remaining one by Hayek clearly stands out. His rather abstract word profile, which includes words such as coercion (zwang) or civilisation (zivilisation), indicates that he was primarily concerned with liberal-theoretical problems like the principles of a liberal social order, the theory of democracy, or the constitution of a free state. In his ORDO essays, Hayek tried to show that the demand for individual freedom is ultimately based on the insight into the inevitable limitations of our knowledge, corresponding to the argument he had most famously elaborated in *The Constitution of Liberty* (1960). This insight also shaped his depiction of competition as a “discovery procedure,” which greatly impacted post-war ordoliberal scholarship on competition law but diverged from the more static understanding of complete competition espoused by early ordoliberals. Hayek’s general language reflects his epistemological interests, which, in turn, had been influenced by his academic biography, as he himself elaborated in a remarkable ORDO article from 1954 that dealt with the principles of a competitive economic order:

“Since I am addressing German readers in particular here, I would like to explain briefly from which point of view I want to – and can alone – treat the problem [the competitive economic order; A.K.]: I speak in a very definite sense as a theorist. Not only am I not very familiar with particular problems of Germany, but I am also not primarily interested in the immediate problems of practice.”

This is a strong difference from writings on the competitive order by early ordoliberals, whose thinking on “Ordo” had been significantly shaped by the “particular problems of Germany,” such as the 1923 hyperinflation or the economic

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and political disintegration experienced in interwar Weimar. Hayek explained his distinctive focus with his “wanderings,” first to England and then to the US, as a result of which he always had to face readers “who knew much more than I did about the more concrete circumstances that determined the practical problems of the day.” Therefore, in his contributions, he opted to discuss “the most general, in a sense time- and place-less problems.”\textsuperscript{123} The observation that Hayek’s different research interests were also reflected in a different language could contribute to the debate on the extent to which his ideas were compatible with ordoliberalism or changed the latter permanently.\textsuperscript{124}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure5.png}
\caption{Characteristic Terms for the Second Period of ORDO (1970-1990).}
\end{figure}

As Figure 3 revealed, the composition of the group of key ORDO authors became more complex and interwoven in subsequent decades. From the 1960s onwards, younger authors such as Gröner, Lenel, Mestmäcker, Watrin, and Willgerodt entered the scene, and between 1970 and 1990, they represented the most produc-

\textsuperscript{123} Ibid., p. 6.
tive contributors to the inner-school discourse. Their word profiles, plotted in Figure 5, illustrate their diverse research interests. Gröner’s focus on energy policy is visible in his keyword list (energiepolitische(n), energiewirtschaftsgesetz). In his ORDO articles, he tried to show that the production of electricity was, contrary to the claims of German industrialists, perfectly compatible with a market economy and outlined an “ordering policy” adapted to the energy sector.125 In line with the early Freiburg tradition, he identified market power instead of competitive processes as the most common cause of friction in this sector.126 His calls for rivaling energy sources and competitive actions are echoed in the corresponding tf-idf list (konkurrenzenergien, wettbewerbsaktionen), too.

As a student and collaborator of Müller-Armack, Watrin is typically counted among the representatives of the ordoliberal school.127 After dealing with market access barriers and foreign trade theory in his early academic work, his ORDO articles reveal a clear interest in more abstract economic and socio-political debates, not unlike Hayek. On a relatively abstract level and in engagement with classical authors such as Karl Popper or Karl Marx, he analysed the relationship between individual freedom, the role of the state, and the demand for equality and democracy from an ordoliberal perspective,128 as reflected in his tf-idf word profile. For example, in the dispute over the university as a political institution, he demanded that it be defended as a “place of competition of ideas.”129 Elsewhere, he argued that competition protected “people in their role as citizens, as taxpayers, and as consumers.”130 It is probably representative of this period in the post-war ordoliberal discourse how Watrin makes use of Hayekian ideas and integrates them into the rule-centredness of ordoliberal thought. Regarding business cycle and monetary policy, for instance, he argued that human capabilities are insufficient to predict the future and that discretionary policies in these areas should therefore be replaced by rule-based policies, which help protect against

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128 A representative example is: C. Watrin, Grenzen der Gleichheit in einer freiheitlichen Ordnung, in: ORDO 30, 1979, pp. 159-175.
politically conditioned fluctuations.\textsuperscript{131} Later in his life, he gave his Hayekian leanings an institutional basis.\textsuperscript{132}

Since Lenel had received his doctorate from Eucken in Freiburg in 1942 and was later his research assistant, he is generally considered to belong to the second generation of the Freiburg School,\textsuperscript{133} in line with the temporal focus of his ORDO publications (Figure 3). Frequently using examples like the subsidies and legal regulations for coal mining in the Ruhr region\textsuperscript{134} or the public investments in the German Federal Railway,\textsuperscript{135} he described how the competitive order outlined by Eucken’s principles could be kept functioning. In the contemporary debate on the optimal size of enterprises in a modern Western industrial society, which had to survive systemic competition with the Soviet Union, he called for “remaining aware of complete competition as the guiding principle.”\textsuperscript{136} Explicitly following early ordoliberals like Röpke, he cited economic and social reasons for having fewer large enterprises. This debate is reflected in his tf-idf word profile, which includes the expressions “degree of concentration” (konzentrationsgrad) and “company growth” (unternehmenswachstum). Lenel explained why the criticism often levelled at the model of complete competition at the time – that it was too theoretical and only related to a static equilibrium – was inaccurate. While he admitted that some objections were justified, he maintained that they left the essence of Eucken’s conception untouched.\textsuperscript{137} With this compromise, he opened up the competition theory of the early Freiburg School for a timely development without moving away from the principles and normative values of the founders. This becomes particularly clear in his criticism of the German Act against Restraints of Competition (GWB), which Böhm had helped to

\textsuperscript{132} In 1998, Watrin founded the Friedrich A. von Hayek-Gesellschaft.
negotiate but still was, for Lenel’s taste, not radical enough against concentrated economic power.\(^{138}\)

As a nephew of Röpke, Willgerodt had close ties to ordoliberals and their network early on.\(^{139}\) His highest-ranked tf-idf words capture his argument that despite Erhard’s success in implementing ordoliberal reforms after 1948, the elements of planning (\textit{zwangswirtschaftlichen Gegenkräfte}), collectivism, and protectionism remained strong,\(^{140}\) implying the need for more ordoliberal reforms centred on “complete competition.”\(^{141}\) The presence of \textit{staatsverwaltung} in his profile points to an article that Willgerodt published in the 1979 yearbook, in which he discussed the question of whether the state administration provides the public services desired by the citizens in an expedient and cost-effective manner.\(^{142}\) This echoed how ordoliberals at that time rediscovered the basic problems of fiscal policy, finance, and public choice that they had ignored to a large extent during the initial phase of “strong state” thinking; a research priority that would become even more prominent in the subsequent third phase of post-war ordoliberalism. In light of the constitutive and regulative principles of Eucken discussed above, it is noteworthy that Willgerodt continued to support an active state as an indispensable prerequisite for the creation of a liberal order, in line with Bonefeld’s claim that the Freiburg School’s initial ideas on state authority were “very durable.”\(^{143}\) He emphasised that Hayek’s warning against a “presumption of knowledge” should not be misinterpreted as a “presumption of


\(^{139}\) In 1963, he succeeded Alfred Müller-Armack as Professor of Economics at the University of Cologne, a position that he held until his retirement. Moreover, he acted as editor of the ORDO yearbook for many years.


ignoreance," whereby liberal scholars would have to abstain from recommending any kind of economic policies. Viewed in connection with Watrin’s Hayekian leanings and Lenel’s skepticism of the Austrian School’s *laissez-faire* tendencies, this suggests that the influence of Austrian thinking on post-war competition thought, which became noticeable in ORDO from the 1970s onwards, was, initially at least, contested within the ordoliberal community.

As mentioned earlier, Mestmäcker was another vital figure in the school’s post-war development, who eventually replaced Böhm as the primary spokesperson for competition law matters. Many of his ORDO articles reflect this legal specialisation, although part of them also display his more wide-ranging interests in questions of legal theory and the philosophy of history. Born in 1926, he was a whole generation younger than the first ordoliberals, which is why his writings were shaped less by the influences of the First World War, hyperinflation, and Great Depression than those of the founders. In 1953, Mestmäcker received his doctorate from Frankfurt University. Here, he also completed his habilitation in 1958 under Böhm, who had joined the faculty in 1946 after receiving a call from Walter Hallstein, the later Commission president. During this time, Frankfurt had become an important hub for ordoliberal thought. Since 1945, Kronstein had been an “avowed supporter of the ordoliberal model,” which led Böhm to bring him to Frankfurt as an honorary professor in 1951. In these years, a strong academic-political network between Mestmäcker, Kronstein, Böhm, Hall-

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145 See also the discussion in: *Kolev*, Ordoliberalism and the Austrian School, p. 436 f.
146 This scepticism towards the Austrians is emphasised by Horn, who calls Lenel the “Reichsverweser des Euckenschen Denkens.” *Horn*, Zur Einführung: Hans Otto Lenel (*1917), pp. 315, 317.
149 This is also noted by: *Slobodian*, Globalists, p. 208.
150 Hallstein had been appointed Professor in 1941, and had become President of the university in 1946.
stein, and Kurt Biedenkopf solidified. The intention of ordoliberals to transform Frankfurt into a post-war centre for their school is visible in a personal letter Böhm sent to Eucken on December 9, 1949:

“We think that it is intolerable if Frankfurt does not finally receive an economics faculty that corresponds to its rank. [...] Even if you could not decide to accept the call – which would be a hefty blow – we still expect a great deal from you coming here as soon as possible [...]. It would be extremely important that things remain in a state of flux and that the latent tendencies to distort us that exist here [latenten Durchkreuzungstendenzen, die es hier gibt] are not nourished and encouraged in any way. Röpke was here the other day. He negotiated for a guest professorship in Wiesbaden, and it looks as if something will come of this. It is also essential that the question of Lutz be raised. You can imagine that there is resistance to such a strengthening of Freiburg’s influence. For this reason, too, haste is called for.”

While these plans never bore fruit, the role of Frankfurt in ordoliberalism’s post-war development also became essential for the development of European integration, a topic that was frequently discussed in ORDO at the time. In 1950, Röpke took up a visiting professorship in Frankfurt and met Hallstein, whom he would then recommend to Adenauer to lead the German delegation during the negotiations on the Schuman Plan. Legal scholars acknowledge that the Treaty of Rome, which constitutionalised the freedom of competition in supranational European law, brought about a “far-reaching victory for the ordoliberal doctrine.” In the 1960s, Mestmäcker advised the European Commission on applying the Treaty, and his tf-idf word profile includes a reference to the “system of undistorted [unverfälschten] competition” that he had helped put in place on the supranational level. Due to this political influence, Mestmäcker grew

154 Hennecke, Wilhelm Röpke, p. 184.
155 Since the early 2000s, Mestmäcker has begun to see the ordoliberal elements of European competition law as threatened because the Commission has shifted from a notification system for cartels to a system of self-assessment. W. Oswalt, Die falschen Freunde der offenen Gesellschaft, in: W. Eucken, Wirtschaftsmacht und Wirtschaftsordnung, Münster 2012, pp. 87-152, here: p. 144.
into a “leadership role” of the post-war generation of ordoliberals, which is reflected in his ORDO publications that regularly appeared after his political stint. His list of keywords reveals that he was concerned with questions of private law (privatrecht(s), privatrechtsordnung), having been the Director at the Max Planck Institute for Comparative and International Private Law from 1979 to 1994. However, his school-internal leadership role was not entirely uncontested: At least for Walter Oswalt, a grandson of Eucken’s, Mestmäcker might have improved competition law but did not sufficiently pursue his teacher’s concept of an “economic constitution directed against the existence of large corporations any further.” Mestmäcker’s different, and perhaps more pragmatic, understanding of the “economic constitution” might be explained by his desire to combine Böhm’s initial ideas with Hayekian thought. Again, this underlines the notion that the ordoliberal phase between roughly 1970 and 1990 can be understood through the Freiburg School’s increased engagement with the ideas and language of Hayek. At least, this was certainly the impression of Edith Eucken-Erdsiek, who feared a Hayekianisation of the original Freiburg programme after her husband’s death – and, as subsequent citation analysis and Topic Modeling will show, this fear was not entirely unfounded.

During the third phase of post-war ordoliberalism, capturing the ORDO articles published between 1990 and 2010, a more fundamental transition occurred, at least on the level of personnel. Several key writers contributed during this period – namely Gerd Habermann, Walter Hamm, Wernhard Möschel, Dieter Schmidtchen, Alfred Schüller, Manfred Streit, Viktor Vanberg, Roland Vaubel, Wilhelm Meyer – and their tf-idf word profiles are plotted in Figure 6. Since their work can be discussed here only briefly, it makes sense to focus on writers like Möschel, Schmidtchen, Streit, and Vanberg, who continued the competition discourse that had shaped the ordoliberal school since Eucken’s principles, albeit from different angles that illustrate the post-war “varieties of ordoliberalism.” However, as the tf-idf word profiles of Hamm (arbeitsplatzangebot, soziallasten), Schüller (wohlfahrtsstaatlich, zahlungsbilanz), and Vaubel (deregulierung, privatisierung) illustrate, other third-generation authors were more concerned with the immediate problems that the German economy, and particularly its labour market and welfare system, faced in the aftermath of reunification. In this, they

157 See also: Behrens, Ordoliberal Concept of ‘Abuse’ of a Dominant Position.
158 Oswalt, Die falschen Freunde der offenen Gesellschaft, p. 144.
159 As described by: Slobodian, Globalists, p. 206 ff.
followed the orientation of German economists and experts more broadly, which is another reason why the ordoliberal discussion of competition issues at the time is more illuminating for this paper’s purpose of identifying school-internal trends.

The closest connection to the early arguments of Eucken and Böhm can be found in the ORDO articles by Möschel, whose tf-idf profile includes classic competition law expressions like fusionskontrolle or oligopolmißbrauch. Just like the first generation of ordoliberals, he promoted a firm competition policy that did not shy away from the unbundling of larger companies, combined the idea of competition law with the concept of the rule of law (later promoted by Hallstein at the European level under the ordoliberal-sounding expression of the Rechtsgemeinschaft), and vehemently advocated the independence of the competi-

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161 See the topic trends in: Wehrheim, Im Olymp der Ökonomen. Similar: Küsters, In Search of Ordoliberalism.
163 See: Idem, Die Idee der rule of law und das Kartellrecht heute. See also: Idem, Ex ante-Kontrolle versus ex post-Kontrolle im Recht der Wettbewerbsbeschränkungen, in: ORDO 52, 2001, pp. 63-73. For the proximity of Hallstein’s Rechtsgemeinschaft to ordoliberalism, see: H.
tion authority, analogous to the ideas of some early ordoliberals on the independence of the central bank. Like his doctoral supervisor Mestmäcker, Möschel was a member of influential advisory bodies, including the Monopolies Commission and the Scientific Advisory Board at the Federal Ministry of Economics. At the beginning of 2020, he received the Walter Eucken Medal for his contribution to the further development of the ordoliberal research programme.

While Schmidtchen’s word profile contains some expressions that are closely related to strict, rule-based competition law as imagined by early ordoliberals like Böhm (formbasierte, verbotsnormen), a closer reading of his ORDO articles shows that he actually argued in favour of the opposite, namely a more discretionary, welfare-based competition policy aimed at maximising economic efficiency. This led to repeated disputes with Mestmäcker, which also played out in the pages of ORDO. From a methodological perspective, Schmidtchen’s tf-idf word list thus underlines the need always to supplement distant reading with close reading, approximating a “blended reading” approach, to avoid “false positives.” Nevertheless, his word profile accurately captures that his arguments formed an essential part in the ordoliberal discussions of competition at the time, as Mestmäcker’s repeated comments clearly illustrate, and established another element in the plurality of opinions voiced within ORDO.

Another prolific writer in this field was Streit, who took over Hayek’s Freiburg chair for economic policy in 1968 and was replaced in 1995 by Viktor Vanberg. Most of his ORDO articles were published only afterwards, which explains why his work was classified into the third period. Clearly inspired by Hayek’s |

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165 On the question of whether central bank independence was a key feature of early ordoliberalism, see: *Feld/ Köhler/Nientiedt*, Ordoliberalism, Pragmatism and the Eurozone Crisis.


understanding of institutions and knowledge as cognition problems,\textsuperscript{169} his market process theory significantly changed the early ordoliberal notion of competition. More in line with an Austrian understanding of competition than the early ordoliberal one, Streit conceptualised competition as a mixture of knowledge generation about transaction costs, the usage of property rights, and the activation of incentives.\textsuperscript{170} This Austrian influence becomes visible in his tf-idf profile, including the terms \textit{selbstkoordination} and \textit{mustererkennung}.\textsuperscript{171} Concerning European integration, Streit propagated “integration from below.” Despite the semantic similarity to Röpke’s thinking, the two approaches differ: While Röpke mainly was concerned with the necessary socio-cultural underpinnings of any integration attempts, Streit referred to competition among national political alternatives (\textit{systemwettbewerb} in his word profile), again echoing Austrian preferences.

Vanberg, who also headed the Walter Eucken Institute from 2001 to 2010, combined the traditional Freiburg School approach with public choice theory.\textsuperscript{172} Public choice had been established as a research field in the 1960s by James Buchanan, with whom Vanberg had worked for many years, and assumes that political phenomena must be modelled and evaluated according to economic models.\textsuperscript{173} This differs not only from “classical liberal principles of no-harm, fair play, consent, and contractual commitment”\textsuperscript{174} but also from earlier ordoleliberals, who had put more faith in the “strong state” and the incentives of bureaucrats and politicians: “It is a liberal myth that members of the civil services are always inclined to destroy the liberal system”, Willgerodt had still maintained in his 1979 ORDO article mentioned above, adding: “Many of the successful liberal reforms were promoted by civil servants not only in the common interest but also in the interest of a well-functioning public administration itself.”\textsuperscript{175} In addition to integrating public choice, Vanberg diverged from early ordoliberal-

\textsuperscript{172} Starting with: Vanberg, "Ordnungstheorie" as Constitutional Economics – The German Conception of a "Social Market Economy".
\textsuperscript{173} Ötsch/Pühringer, Marktradikalismus als Politische Ökonomie, p. 99.
\textsuperscript{174} See also: J.L. Coleman, Markets, Morals, and the Law, Oxford 2002, chs. 3 and 5.
\textsuperscript{175} Willgerodt, Wirtschaftsordnung und Staatsverwaltung, p. 217.
ism by using Hayek’s neuroscientific conception of freedom, which differs from Eucken’s Kantian understanding of freedom, and by supporting, like the Austrians in general, notions of legal systems competition instead of a legal level playing field. As Vanberg himself noted in 2001, his concept of “freedom of competition” (Wettbewerbsfreiheit) was quite different from the understanding held by other authors ascribing themselves to the ordoliberal school.

The procedure of obtaining central words via relative frequency analysis of a tf-idf weighted corpus is admittedly a crude method of measuring the keyness of terms. Another approach is to determine distinctive features from log-likelihood tests, which can be implemented in R using the quanteda package. In the sense of a robustness check, this was used as an alternative for determining keyness. The method is illustrated in the Online Appendix using the example of a direct comparison of Hayek with all other ORDO authors since the previous analysis suggests that Hayek’s language differs from that of his liberal peers. This impression is substantiated by the log-likelihood test (Online Appendix Figure 1). Frequent terms with a high Keyness-value are indeed very distinctive for the Hayekian language: words like “rules” (Regeln), “society” (Gesellschaft), and “individualism” (Individualismus) play a prominent role in Hayek’s contributions to the ORDO journal. Notably, the list includes expressions like “civilisation” (Zivilisation), “violence” (Gewalt), and “justice” (Gerechtigkeit) that were also captured by Hayek’s tf-idf word profile (which included Zwangsgewalt und Gerechtigkeitssinn), thus corroborating the use of this method. By comparison, the list of terms with a high Keyness-value for the reference group, i.e. all ORDO authors except Hayek himself, includes “federal republic” (Bundesrepublik), a word absent from Hayek’s abstract essays.

A final piece of text mining evidence about the keywords and literature shaping the three phases of post-war ordoliberalism identified above can be gained by looking at whom ordoliberal scholars cited in their articles. When pre-processing the ORDO corpus, each article was separated into its full texts (which will also form the basis for the Topic Model in the subsequent section)

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179 Thanks to the anonymous reviewer for this valuable pointer. See: K. Benoit et al., quanteda: An R Package for the quantitative Analysis of textual Data, in: Journal of Open Source Software 3, 2018, p. 774.
and its literature list, as placed at the end of each article. As these literature lists grew significantly over time, it is instructive to focus on relative term frequencies. By plotting the extent to which prominent economists or lawyers were referenced in ORDO, it becomes possible to trace the main paragons that post-war ordoliberals relied upon (Figure 7). This helps quantifying, and nuancing, the processes of memorising and forgetting involved in the construction of the ordoliberal tradition described by Dyson, who claims that the work of “once-seminal figures” like Röpke and Rüstow became increasingly marginalised within the Freiburg School community.180

![Fig. 7: Relative frequency with which specific writers were referenced in ORDO articles over time.](image)

During the first phase of post-war ordoliberalism, ORDO writers still frequently referred to the school’s founders like Eucken, Böhm, Röpke, Rüstow, and even Miksch, in line with the above finding that critical writers of the time stuck to the inter-war model of “complete competition.” In the second generation, between the 1970s and 1990s, one observes a decline in references to these “traditional” ordoliberals and a simultaneously rising reliance on the works of Hayek, Erich Hoppmann, and Gerard Radnitzky, indicating the “dynamic competition” model that became prevalent at the time and replaced the earlier static focus on market structure.181 Since the start of the third phase of post-war ordoliberalism

180 Dyson, Conservative Liberalism, Ordo-liberalism, and the State, p. 124.
in the 1990s, ORDO writers often mention Buchanan and Vanberg, who had introduced the former’s public choice approach to German ordoliberalism, as well as Erhard, who had not published in ORDO but whose name now became a shorthand for an earlier successful period of the social market economy. Finally, the admittedly low but continuous share of references to “classic” writers like Smith, Marx, Schumpeter, and Keynes illustrates that ORDO authors, beyond the horizon of contemporary economic problems and methodological fashions, have also repeatedly dealt with more general philosophical or theoretical questions concerning the intersection of economics and law.

5 Applying a Structural Topic Model to the ORDO Yearbooks

In 1978, Mestmäcker noted: “If this yearbook [ORDO; A.K.] has shown a high degree of continuity since the first volume was published in 1948, this is not least thanks to the work Franz Böhm has devoted to the yearbook as editor and as an author.”182 Today, more than sixty years of post-war ordoliberal scholarship have created a vast collection of ORDO articles that is too large to be read in detail by a single person. Is there still a “high degree of continuity”? This section presents a computational method known as Structural Topic Modeling (STM) for identifying patterns and testing hypotheses about ordoliberalism as a school of thought, using the ORDO corpus that has been explored in the previous section through frequency statistics. As will become evident, this method can help structure such an extensive collection of text and quantify trends, which align with external measures and qualitative evidence.

The probably best known Topic Model is Latent Dirichlet Allocation (LDA), which goes back to Blei et al. in 2003 and was initially used for information retrieval in computer science and linguistics.183 Topic Models aim to identify a predefined number of latent topics without a prior which words belong to it; in

other words, they are algorithms for discovering the main discourses within a large but unstructured collection of documents without prior labelling.\footnote{184} They have been described as a “way of extrapolating backward from a collection of documents to infer the discourses [...] that could have generated them.”\footnote{185} In the past years, the algorithm has been adapted to various data types and research purposes. Building on the tradition of probabilistic Topic Models, Roberts et al. established a new generation called Structural Topic Model (STM), which can be implemented in R through the \textit{stm} package.\footnote{186} In contrast to standard Topic Modeling, it permits researchers to incorporate metadata, i.e. external information about each document, such as author name or year of publication, into the computational estimation of the topics. This allows for quantifying topic-metadata relationships and, therefore, hypothesis testing.\footnote{187} STM is a method of supervised learning, in contrast to LDA, which belongs to the class of unsupervised learning methods.

So far, scholars have applied Topic Modeling most frequently for descriptive purposes.\footnote{188} For instance, Grimmer used a Topic Model to measure how US senators publicly explain their political work in over 24,000 press releases,\footnote{189} Quinn et al. summarised congressional speeches,\footnote{190} and Hansen et al. examined the deliberations of the Federal Open Market Committee.\footnote{191} Two recent research projects within the field of economic history relied on Topic Modeling to structure


\footnote{187} Distinct reading applications often frame \textit{longue durée} arguments as hypotheses that can be tested computationally. See: T. Underwood, Distant Horizons: Digital Evidence and Literary Change, Chicago 2019, p. 122.


the lengthy annual reports of the German Council of Economic Experts, also asking questions about underlying intellectual developments.\(^{192}\) Similarly, researchers have used the STM extension to capture critical content in, for instance, international newspapers\(^ {193}\) and surveys.\(^ {194}\) The author has previously used STM to explore all speeches given by ECB Executive Board members.\(^ {195}\)

Within this quickly growing literature, a recent strand that uses Topic Models to retrace changing themes in a specific journal comes closest to the following analysis. While earlier attempts at analysing publication trends were dependent on the manual classification of articles and self-created categories, Topic Models promise to make this classification process less arbitrary, biased, or erroneous. For instance, Ferri et al. complement the accounting history literature by analysing the contents of a leading journal in the field with Topic Modeling, thereby assessing the relative prevalence of research areas and their evolution over time.\(^ {196}\) Similarly, Lüdering and Winker used Topic Modeling to derive a disciplinary history from the *Journal of Economics and Statistics*.\(^ {197}\) Mimno explores multiple Classics journals, thereby showing that Topic Models can also be helpful in conducting comparisons.\(^ {198}\) These papers rely on the more traditional Topic Modeling approach via LDA and Gibbs sampling without incorporating the benefits stemming from the *stm* package. By estimating an STM for the corpus of ORDO yearbooks, this chapter aims to advance this strand of literature.

How does Topic Modeling work? Despite their variety in technical setup and application contexts, Topic Models are united by the fact that they constitute generative language models. Given the number of topics that should be produced, the model places together, in an iterative process, words that appear in the same texts more frequently than one would expect by chance. It is assumed that the author starts their work by deciding what topic the document should be about.

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192 See: Wehrheim, Im Olymp der Ökonomen; Küsters, In Search of Ordoliberalism.
198 See: Mimno, Computational Historiography.
through implicitly determining its topic shares. The actual writing is interpreted as choosing words from a specific vocabulary, determined by these topic shares.\textsuperscript{199} The computational goal is to use the words one can observe to estimate the topic structure, which is not directly observable. Topic Modeling can thus be understood as an attempt at “reverse-engineering” the author’s intentions as proxied by the corpus.\textsuperscript{200} STM introduces two ways in which metadata can affect this process of “reverse-engineering.” Whereas in topical prevalence, the metadata values of the various documents affect the frequency with which a topic is discussed, in topical content, they influence the word probability distribution within a topic.\textsuperscript{201}

Taken together, the method allows for identifying so-called topics. Since some words occur relatively more often in some texts than others, they are more likely to be used when the topic in question is discussed.\textsuperscript{202} In other words, topics are constituted by words that co-occur together and form themes. The resulting list of words can be interpreted as a topic “because terms that frequently occur together tend to be about the same subject,”\textsuperscript{203} in line with the natural understanding of language as relational. An ORDO article is defined here as a mixture of such topics, meaning that a single document can be composed of multiple topics. Preparing the results, the word cloud in Figure 8 gives an example of a topic appearing in the ORDO corpus. As can be seen, the cloud consists of numerous education-related words such as “unemployment” (arbeitslosigkeit), “employee” (arbeitnehmer), and “vocational training” (berufsausbildung), implying that one can attach the label Labour Market Policy (topic 31). Of course, the respective labels can differ to a certain extent between readers. Using Topic Models, subjective assessments are not omitted, but they occur later in the process.\textsuperscript{204}

\textsuperscript{199} Wehrheim, Economic History Goes Digital, p. 87.
\textsuperscript{202} Mohr/Bogdanov, Introduction - Topic Models, p. 546 f.
\textsuperscript{203} Blei, Topic Modeling and Digital Humanities, p. 9.
\textsuperscript{204} Wehrheim, Economic History Goes Digital, p. 90.
When estimating a Topic Model, it is common to remove infrequent terms depending on a manually set threshold. The final corpus for the STM consists of 956 articles, a 57,836 words dictionary, and 1,790,482 tokens. In addition, the number of topics must be selected, which involves a trade-off: assuming too few topics results in distinct issues being concealed, while assuming too many topics results in several unstable word clusters referring to similar issues. The statistical literature describes at least four different measures for calculating the ideal number of topics, which run several models with varying numbers of topics and then identify the respective measure’s extremum. However, these

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205 The *stm* R package helps evaluating how many words and documents would be removed from the ORDO corpus at different word thresholds (Online Appendix Figure 2), which correspond to the minimum number of documents a word needs to appear to be kept within the vocabulary. Adopting such a threshold helps not only zooming in on post-war ordoliberalism’s most relevant discourses, it is also a convenient way to deal with the words misspelled by the OCR software. While the analysis suggests that a threshold of about 20 would reduce the number of infrequent words significantly and thereby facilitate the computational problem, the author still selected a low threshold of 3, meaning that only words that appear in less than three articles are omitted. This choice is driven by the desire to keep specialised economics vocabulary, comparable to the tf-idf words explored above, within the corpus. The threshold of 3 leads to a removal of 241,557 of 299,393 words due to frequency.

206 Grimmer/Stewart, Text as Data.

207 See: R. Arun et al., On Finding the Natural Number of Topics with Latent Dirichlet Allocation: Some Observations, in: M.J. Zaki et al. (Eds.), Advances in Knowledge Discovery and Data
measures only provide a range, not an exact number of topics. Moreover, they “only deliver the optimal number of topics in a technical sense,” while the best number “depends on the research question.”\textsuperscript{208} Manually selecting the topic number to find a “decent middle ground”\textsuperscript{209} is therefore not an expression of arbitrariness but an acknowledgement of the trade-off between distinctiveness and interpretability. Here, the final specification assumes 50 topics, not least because the resulting model produces several topics that can be compared with Eucken’s principles. As a robustness test, a data-driven approach to selecting the number of topics can be conducted by calculating the held-out log-likelihood and performing a residual analysis.\textsuperscript{210} A figure in the Online Appendix compares the results along both criteria, based on estimations of STM models for 10, 20, ..., 90, 100 topics (Online Appendix Figure 3). While the data are not entirely conclusive, they support selecting 50 topics, as this number minimises the residual and achieves an acceptable trade-off between enough detailed topics and sufficient semantic coherence, thus representing a “decent middle ground.”

As noted above, STM can capture how much each topic contributes to a document based on observed metadata because it allows researchers to include covariates as independent variables for the prevalence of topics. Since different scholars wrote different ORDO articles in different years, it makes sense to allow this topic prevalence to vary with metadata about authorship and year of publication. This enables the STM to capture that some authors prefer writing about a specific topic that is uninteresting to most of the academic community and that some years experienced significant events that increased overall scholarly output regarding a related subject. Accordingly, topic prevalence is defined as a function of the “author” variable, which is coded as the full name, and the variable “year,” which is an integer measure of years running from the first ORDO yearbook (1948) to the last issue available online (2014).\textsuperscript{211} On this basis, the

\textsuperscript{208} Wehrheim, Economic History Goes Digital, p. 113, fn. 63.
\textsuperscript{209} Grimmer, A Bayesian Hierarchical Topic Model for Political Texts, p. 12.
\textsuperscript{211} The variables were entered additively, and the year variable was allowed to have a non-linear relationship in the topic estimation stage (in technical terms, it was estimated with a spline). For details, see: Roberts/Stewart/Tingley, stm: R Package for Structural Topic Models, p. 9.
model can be estimated through “spectral initialisation,” a computational process that has been found empirically to produce the best results consistently and ensures that the same results will be generated each time an STM is calculated for the ORDO corpus. Here, the model converges after 54 iterations.

As the STM produces groups of words that have a high probability of occurring together, topics are usually labelled by looking at their respective top-scoring words. Scholars usually focus on the first few words for each topic. In addition to this standard list of highest probability words, the researcher can calculate three other types of word lists for each topic. These alternative word profiles depend, in turn, on the measures “FREX,” “Lift,” and “score.” FREX weights words by their overall frequency and how exclusive they are to the topic. Lift weights words by dividing by their prevalence in other topics, giving higher weight to words that appear less frequently in other topics. Like Lift, score divides the log frequency of the word in the topic by the log frequency of the word in other topics. By calculating the high-ranking terms for each of these four metrics, each topic that frequently appears in ORDO can be inferred by looking at four specific word lists. For reasons of transparency, the words constituting the topics should be included in every publication using Topic Models. Such a list with all 50 topics, labels, and respective word profiles can be found in the Online Appendix (Table 2).

For a diachronic perspective on key topics discussed in ORDO, one can plot the estimated proportion of particular topics over time (Figure 9). Note that the model allows these variables to temporarily have negative values, as it estimates their expected value given a specific set of words in a yearbook. The topics plotted here were selected because they exhibit temporal patterns that help illuminate the development of post-war ordoliberalism.


215 Usually, topics evoke specific associations, so that reasonable labels can be inferred relatively quickly. If a topic lacks a straightforward interpretation, it is helpful to read the texts that exhibit a large share of this topic to get a better sense of the word list and thus the appropriate label. Moreover, it is a common source of misunderstanding and criticism of Topic Models that topics do not necessarily have to describe a straightforward theme, but can rather represent clusters of methodological words, days of weeks or general descriptive language.

216 This is also demanded by: Wehrheim, Economic History Goes Digital, p. 90.
As might be expected, the initial ideas of Eucken about “ideal types” (T23) and of Böhm about the “private law society” (Topic 42) featured heavily in early volumes of the yearbook when both founders still lived. The subsequent drop in the proportion of both topics suggests that not all theories of the founders survived.\(^2\)\(^1\) Other features of the early Freiburg School proved more time-resistant: the “sociological” ideas promoted by Röpke and Rüstow were still discussed long after these two first-generation members had died, and the respective proportion of Topic 48 even increased over time. Similarly, the second-largest topic includes several religious terms and deals with articles on the relationship between state and church (Topic 21). This testifies to ordoliberalism’s protestant roots,\(^2\)\(^1\)\(^8\) which apparently continued to be relevant. Both features – an affinity for sociological or religious ideas – represent normative elements that separated post-war ordoliberalism from the more technical, increasingly mathematised US economics mainstream.\(^2\)\(^1\)\(^9\) As the two peaks of Topic 13 indicate, ORDO articles

\(^{217}\) The short-lived upswing of Eucken’s idea-type based order theory in the 1990 yearbook can be explained by the comparison of economic systems along the dichotomy of socialism versus capitalism that was often drawn at that time. See, e.g.: H. Kammler, Interdependenz der Ordnungen: Zur Erklärung der osteuropäischen Revolutionen von 1989, in: ORDO 41, 1990, pp. 45-59.


\(^{219}\) On this methodically-united economics mainstream, see: M.D. Vroey/L. Pensiero, Grounded in Methodology, Certified by Journals: The Rise and Evolution of a Mainstream in Economics (LIDAM Discussion Papers IRES 2021015, 2021, pp. 1-34). In general, see: M. Fourcade, The Con-
Anselm Küsters dealt with Hayek most extensively around 1980 and 2000, i.e. long after his stint at the Eucken Institute. This aligns with the rise in articles about evolutionary phenomena in the 1980s (Topic 27) and the previous qualitative discussion, which suggested that second- and third-generation ordoliberals debated the extent to which Hayekian ideas were compatible with the early Freiburg School. The overall impression is also consistent with stylometric analysis, i.e. the quantitative study of writing style, conducted separately by the author, which identifies a Hayekianisation of language in ORDO between 1975-1995 and 2000-2010. Perhaps it was less the writing of Hayek than the writing about Hayek that had a decisive influence on post-war ordoliberalism. Finally, the third generation's turn to Buchanan and more mainstream US economics since the early 2000s is illustrated by the occurrence of topics dealing with public choice (Topic 4), constitutional economics (Topic 14), and New Institutional Economics (Topic 6) at precisely this time.

A striking feature of Figure 9 is the volatility of individual topics. To a certain extent, this reflects that the ORDO yearbooks contain several special issues focusing either on one dedicated author, such as Hayek, or on one topic, like the Maastricht Treaty. This implies that the shares of all topics that do not align with these special issues rapidly drop in the respective year, only to re-surface again in the subsequent yearbook. More generally, these volatile patterns illustrate that the 50 estimated topics often deal with highly specific subject matters or methods, so one would expect that they feature only in a small set of ORDO articles written by domain experts. To get a more robust picture of the thematic development in ORDO, one can follow the procedure described by Wehrheim in his digital history of the German Council of Economic Experts. Starting from a similar-sized topic model calculated based on the Council’s reports, Wehrheim aggregates the estimated individual topics into broader meta-topics, such as “labour market.” These meta-topics allow for a more accurate picture of underlying topical trends, as they smooth over minor fluctuations, OCR errors, and unprefective labelling. Here, all 50 estimated ORDO topics are categorised according to the labels developed by Bönker et al. in their manual classification of ORDO.

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221 As Slobodian rightly notes, in much of the scholarship, “the name of Hayek [...] often operates as a free-floating signifier more than an index to an actual historical figure.” Slobodian, Globalists, p. 5.

222 See: Wehrheim, Im Olymp der Ökonomen, p. 74.
abstracts until 1998: competition policy, regulation, monetary policy, social policy, trade policy, fiscal policy, and industrial/technology policy (Online Appendix Table 2).223 By adopting the categories of this bibliographic study, one can later use its results as external validation for the STM.

![Fig. 10: Selected Economic Policy Categories over Time. Source: own STM.](image)

While the previous figure allowed for flexible y-axes to make the temporal development of particular topics more visible, Figure 10 uses fixed axes to emphasise the different extent to which these categories of economic policy were addressed in ORDO over time. Competition policy was prominently discussed in the 1950s when ordoliberals like Böhm, Eucken, and Miksch were engaged in establishing West Germany’s Competition Act, the GWB.224 The second peak around 1980 might be related to the consequences of the second GWB amendment of 1973, which was particularly important as it introduced merger control. The extent to which industrial or technology policies were discussed was comparatively smaller but less volatile. It reached its most considerable magnitude in the 1990s, when ordoliberals discussed this topic under “location competition”

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223 See: F. Bönker/A. Labrousse/J.-D. Weisz, The Evolution of Ordoliberalism in the Light of the Ordo Yearbook: A Bibliometric Analysis, in: A. Labrousse/J.-D. Weisz (Eds.), Institutional Economics in France and Germany: German Ordoliberalism versus the French Regulation School, Berlin 2001, pp. 159-182. All topics that could not be aligned with one of these categories were classified as “other.” See Online Appendix Table 2.

(Standortwettbewerb) in Europe, especially after the Maastricht Treaty. The development of the monetary policy category in ORDO corresponds with the “stagflation” period in the 1970s and the more recent troubled monetary policy period when the ECB hit the “lower zero bound” and ordoliberals became increasingly critical of its actions. This is evidence that helps validate the model, as it is common in the Topic Modeling literature to compare topics that deal with specific economic developments, such as inflation, with related, real-world data. In contrast, the proportion of articles dealing with regulation, in a broad sense of the word, remains on a high plateau throughout the post-war period, as one would expect from an academic school that situates itself at the intersection of law and economics. The social policy peaks are related to the idea of a Konzertierte Aktion (Topic 41) in the late 1950s and 1960s and, at the turn of the century, to post-reunification unemployment, targeted by the labour market and welfare state reforms commonly known as “Hartz IV” reforms. Clearly, the discussion of trade policy was of most importance in the immediate post-war years, when the international economic system was in flux, with a short-lived comeback in the 1990s when third-generation ordoliberals like Vanberg took the fall of the Soviet Union as an opportunity for sketching a new constitutional political economy of international trade.

Besides the effect of the year of publication on topic wording, the STM also captures the effect of the author variable as a further metadatum. This can illustrate the identified “varieties of ordoliberalism” in the post-war period. During the discussion of the second and third generations of the Freiburg School, the diverging interpretations of Hayek’s work were mentioned several times. His tf-idf word profile suggested that Hayek’s characteristic language, quite unlike that of other early ordoliberals, might be evidence in the debate on whether he should be counted as ordoliberal. By plotting the effect of the Hayek “author” variable on the 50 main topics in ORDO as estimated by the STM and contrasting his impact with the impact of Eucken’s authorship on ORDO articles, one can ex-

226 See, e.g.: Wehrheim, Im Olymp der Ökonomen, pp. 77, 98, 102, 114, 128, 143.
228 For this debate, see: Kolev, When Liberty Presupposes Order; Wohlgemuth, The Freiburg School and the Hayekian Challenge.
tend this argument (Figure 11). As visible in the stark swings in the topic distribution, the two authors – Hayek and Eucken – followed different research interests and drew upon different topic vocabularies.

**Fig. 11:** Estimating the Topical Difference between Hayek’s Articles and Eucken’s Articles.  
Source: own STM.

While Eucken was much more likely to discuss issues related to competition law (T12, T20, T33), in line with his principles, the model estimates a much higher probability of Hayekian texts dealing with the relationship between state and church (T21) or civil liberties (T44). This decisive role of the “author” variable

229 The 50 estimated topics are plotted in descending order. For reasons of clarity, only the labels for the topics with the greatest difference are given. The other labels can be inferred from Table 2 in the Online Appendix.

230 This result remains the same if one replaces Eucken with another first-generation ordoliberal, such as Böhm. Here, too, there are strong differences in the topic structure. In comparison, the swings in the topic distribution are much smaller when comparing other first-generation ordolebrals, such as Eucken and Böhm, with each other. For reasons of space, these additional figures have not been printed here.

231 The high proximity of the Hayek author variable to T21 can mainly be explained with the fact that this topic includes words such as *gesellschaft*, *menschen*, *freiheit*, and *staat* (see Online Ap-
concerning Eucken’s and Hayek’s ORDO articles cannot be explained entirely by the latter’s affinity to the English-speaking academic world, as his ORDO contribution were all translated into German.

While many applications of Topic Modeling restrict themselves to an analysis of the estimated topics, it is preferable to critically evaluate the model. Research has shown that human judgments of topic quality can sometimes be contrary to purely statistical measures. A better approach for assessing the quality of the algorithm’s output is thus to validate them against other data that probably have a certain relationship with the estimated topics. To have a benchmark against which the topics estimated by the STM can be assessed, one can draw on the above-mentioned bibliometric study that analysed all ORDO yearbooks published between 1948 and 1998 (Table 1). Based on its respective abstract, Bönker et al. allocated each ORDO article to its related economic policy field. Since the individual categories were adapted above to create meta-topics, the thematic trends resulting from the manual abstract-based classification by Bönker et al. and the thematic trends estimated by the STM can be compared. However, since this bibliometric study dates back to 2001, it only captured yearbooks up to 1999. As the STM presented in this paper is based on an ORDO corpus that stretches until 2014, all ORDO articles that were not captured by Bönker et al., i.e. all articles published between 1999-2014, were manually classified by the author through the same procedure, i.e. by reading their abstracts, to enable comparisons for the whole period of analysis.

Appendix Table 2). In contrast, Hayek was much less religious than the early ordoliberals and more sceptical of the church, which he discusses only briefly in one ORDO article, namely his first one. See: F.A. Hayek, Wahrer und Falscher Individualismus, in: ORDO 1, 1948, pp. 19-55, here: p. 20.


234 Bönker/Labrousse/Weisz, The Evolution of Ordoliberalism, Table 5.2 (absolute numbers).

235 Of the 337 ORDO articles published between 1999-2016, 200 articles could be classified according to their field of economic policy. As in Bönker et al., the remaining biographical (36), theoretical (94), and country-specific (7) articles were excluded. This manual classification was initially done by the author as part of a research project on the German Council of Economic Experts. See: Küsters, In Search of Ordoliberalism, p. 29.

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From Table 1, one can observe that competition policy was highly relevant throughout the ORDO yearbook's existence, so it is not particularly useful for comparing trends. Instead, it makes more sense to focus on categories with more variance, like monetary policy, which was particularly prominent between 1961 and 1980, industrial policy, with its peak between 1981 and 2000, and social policy’s heightened relevance in the early post-war years of Germany and again after the country’s reunification in 1990. Notably, all three trends were also captured, albeit in slightly different proportions, by the STM (Figure 10). At the same time, there are also some divergences: the STM estimates that trade policy was already relevant in the first issues of the yearbook, which aligns with the author’s close reading, and its estimation of the proportion of articles dealing with competition law is much more volatile compared to the relatively constant proportion suggested by the abstracts. When comparing the trends indicated by both the ORDO meta-topics and the articles’ abstracts with the priorities indicated by Eucken’s initial principles, one gets a sense of the Frei-
burg School’s changing preferences over time. In line with the qualitative discussion in the previous section, the focus on competition law, monetary stability, and regulation, which had characterised Eucken’s principles, was not omnipresent. Post-war generations also dealt extensively with other topics, such as trade policy and social policy, which had been less crucial to the programme of the founders.

6 Conclusion

By defining three generations of ORDO authors along the lines of their scholarly outputs, Table 2 summarises the results of this paper. Key authors like Böhm, F.W. Meyer, Hayek, Heuss, Lutz, and Röpke transported the early ordoliberal ideas into the post-war period, preserving the school’s semantic and conceptual focus on issues of economic power and freedom, which led to clear policy recommendations in the fields of competition law and monetary policy. The second generation, characterised by the writings of Gröner, Lenel, Mestmäcker, Watrin, and Willgerodt between 1970 and 1990, adapted the previous model of “complete competition” and introduced, following the basic ideas of Hayek, more dynamic arguments. As a result, ORDO authors also dealt with newer subjects like industrial and technology policy or European integration. After reunification, social policy became increasingly relevant given Germany’s labour market and welfare state problems. During this third phase of post-war ordoliberalism, shaped by Habermann, Hamm, Möschel, Schmidtchen, Schüller, Streit, Vaneberg, Vaubel, and W. Meyer, ordoliberals reconsidered the relationship between the state and private freedom. This was inspired by the import of concepts from New Institutional Economics, Public Choice, and the burgeoning Industrial Organisation literature. As the heated discussion between Mestmäcker and Schmidtchen during this period illustrated, there were increasing “varieties of ordoliberalism” that centred, in turn, on different visions of what fair competition amounted to.

Although this classification may not be entirely surprising for experts on German ordoliberalism,236 it is the first quantified, corpus-linguistic account of post-war ordoliberal history that captures the development until the 2010s. By

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236 In particular, the three phases of post-war ordoliberalism derived from the ORDO yearbooks roughly align with the contours of Freiburg 1, 2, and 3 sketched by Dyson. See: Dyson, Conservative Liberalism, Ordo-liberalism, and the State, p. 123.
analysing the impact of ORDO writers and their articles through productivity figures, characteristic keywords, estimated topic shares, and bibliographical references, it becomes possible to come to a nuanced assessment of the processes of memorising and forgetting involved in the construction of the ordoliberal tradition. In addition, it is hoped that the concise and chronological portrayal given here will enable researchers wishing to contribute to the rapidly growing literature on neoliberalism to draw on a more dynamic picture of ordoliberalism since current neoliberalism research still too often uses a blanket picture of the Freiburg School, seemingly frozen in the 1930s, as a guide for comparisons with more recent policy instruments. This is particularly important as many of these international researchers might not be able to access the German language ORDO yearbooks due to language barriers.

Tab. 2: Defining ORDO Generations

<table>
<thead>
<tr>
<th>Phase</th>
<th>Period</th>
<th>Representatives</th>
<th>Vocabulary</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>1950–1970</td>
<td>Böhm, Hayek, Heuss, Lutz, F.W. Meyer, Röpke</td>
<td>Focused on monopolies, cartels, freedom, knowledge</td>
<td>Competition law, Monetary policy</td>
</tr>
<tr>
<td>Second</td>
<td>1970–1990</td>
<td>Gröner, Lenel, Mestmäcker, Watrin, Willgerodt</td>
<td>Inspired by Hayek and dynamic competition models</td>
<td>Industrial and technology policy, European integration</td>
</tr>
</tbody>
</table>

As the analysis of the ORDO yearbook was based on the use of digital text mining methods, the paper also provided an opportunity to reflect on the use of Digital Humanities methods in historical scholarship on a more general level. It showed that as long as the corpus is complete, even simple descriptive statistics can help clarify complex questions such as identifying the authoritative members of an academic generation. In particular, the seldomly used tf-idf metric should be highlighted, as it was far more informative in analysing the ORDO articles than the most frequent words. In addition, calculating the tf-idf metric proved helpful in quickly identifying common OCR errors so that they could be incorpo-
rated into the stop word list in an iterative process. This could be a promising approach to systematise the iterative refinement of stop word lists for the specific use case. The estimated STM captured trends consistent with qualitative assessments of post-war ordoliberalism and external data, such as the inflation rate or abstract-based classifications. This was particularly true for the aggregated “meta-topics,” which helped smooth over minor fluctuations, OCR errors, and unprecise labelling. This evaluation and external validation should become standard when using Topic Modeling in historical research.\(^{237}\) Still, it was indispensable to closely read representative texts, either selected due to high tf-idf words or a high share of a particular topic, to rule out “false positives.” This “blended reading” illustrates that quantitative and qualitative techniques should not be seen as substitutes but as complements.

Overall, the text mining evidence assembled in this paper, based on a digital corpus-linguistic analysis of all ORDO articles published between 1948 and 2014, aligns with the sociological description of school formation and development. Supported by geographical proximity (Freiburg in Weimar, the Third Reich, and early post-war period, later Cologne and Frankfurt), the ordoliberal school developed based on a shared idea regarding economic power in a free economy. This idea was specified by the “father” of the school, Eucken, whose principles included normative assumptions that his followers initially shared. In later decades, the ordoliberal school differentiated itself in terms of content and methodology, as could be seen, for example, in disputes about the integration of Hayekian thought or the adaptation of a more modern, welfare-based competition law standard. To a certain extent, these post-war “varieties of ordoliberalism” reflected that the circle of ordoliberals was constantly expanding, at least if one considers the number of prolific ORDO authors. Nevertheless, a certain continuity was preserved due to some long-lived and active ordoliberals, like Böhm and Röpke in the first post-war decades and Willgerodt and Mestmäcker later on. The question as to whether this mixture of methodological updates, generational change, and continuity has taken ordoliberal post-war research too far from its conceptual roots remains open to further study.

**Acknowledgement:** This paper draws on a dataset constructed as part of a larger research project on the influence of ordoliberalism on competition law. The resulting doctoral thesis, entitled “The Making and Unmaking of Ordoliberal

Language. A Digital Conceptual History of European Competition Law,” was accepted by Goethe University, Frankfurt am Main, in June 2022 and will be published as a monograph by Klosterman in 2023. Chapter 3 of this thesis analyses the ORDO corpus through Topic Modeling but limits itself to the competition law discourse. In contrast, this paper focuses on the development of ordoliberalism as an academic school and the entire thematic breadth of the ORDO yearbooks. For helpful comments, the author is grateful to Stefan Vogenauer, Andreas Wagner, Stefan Kolev, and the anonymous reviewer.

Bionote

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Supplementary Material: The online version of this article contains supplementary material (https://doi.org/10.1515/jbwg-2023-0004). Online Appendix Fig. 1: Calculating Keyness; Online Appendix Fig. 2: Finding a Threshold; Online Appendix Fig. 3: Model Search Across Numbers of Topics; Online Appendix Table 1: Custom Stop Word List; Online Appendix Table 2: A Topic Model with 50 Topics, 956 Documents, and a 57.698-word dictionary.