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Networks of economic policy expertise in Germany and the United States in the wake of the Great Recession

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ABSTRACT


This article shows how the network structure of economic expertise can influence the diffusion of ideas in economic policymaking. Applying social network analysis, we analyse the networks of economic policy advice in the United States and Germany around the Council of Economic Advisors and the *Sachverständigenrat*. With the help of co-publication and institutional affiliation data, we argue that the more fragmented structure of academic expertise in Germany hindered the diffusion of new ideas and fostered continuity in the austerity paradigm. In contrast, the more connected structure of economic expertise in the United States facilitated the diffusion of ideas and changes in dominant ideas about economic intervention.

KEYWORDS Economic expertise; social network analysis; Council of Economic Advisors (United States); Council of Economic Experts (Germany)

Introduction

The crisis that hit the world economy in 2008 led to a new battle of economic ideas. Following decades of an apparent consensus around free markets and light-touch regulation as blueprints for economic policy, Keynesian ideas calling for active state intervention to counter the crisis made a surprising comeback, albeit a short-lived one (Blyth 2013; Farrell and Quiggin 2016). Prominent economic experts who were supposedly part of the neoclassical consensus seemed to now support active state intervention as an appropriate response to the Great Recession (Uchitelle 2009). An interesting feature of these debates was how quickly this new apparent consensus around state intervention emerged and then collapsed, and how different these patterns of adoption seemed to be across countries.

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In the United States and within a number of international organisations, economic experts seemed to widely adhere to the idea that fiscal stimulus was an appropriate tool for solving the crisis. In Germany, in contrast, leading economic experts only timidly supported state intervention to counter the downturn. The main economic advisory body, the German Council of Economic Experts (*Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung* - SVR) was much more reluctant to abandon the supply-side paradigm than its equivalent in the United States, the Council of Economic Advisors (CEA) (Farrell and Quiggin 2016: 2; Fricke 2017: 5–6). How can we understand these divergent patterns?

A vast body of literature has now analysed change and resilience in economic policy ideas over time and space (e.g., Blyth 2002; Hall 1989, 1993; Schmidt and Thatcher 2014). Recent research has focused on a number of factors to explain why dominant economic ideas change or persist, such as the generalisability and flexibility of ideas, the extent to which they can be mobilised only as rhetoric, their argumentative power among the public, the interests that certain ideas defend, and the institutional structures which can be more or less favourable to certain ideas (see Schmidt and Thatcher [2014] for a review). Recently, Farrell and Quiggin (2016) proposed a promising framework to explain how consensus and dissensus among economic experts shape their influence in policymaking, and how dominant ideas in policymaking are replaced. However, so far we only have a limited understanding of the factors that shape how consensus and dissensus emerge among economic experts (Farrell and Quiggin 2016: 3).

In this article, we focus on an overlooked factor, namely the social organisation of economic expertise in the form of social networks between economists. More precisely, we show how the different network structures of academic economic expertise in Germany and the United States, around the German Council of Economic Experts and the US Council of Economic Advisors respectively, could shape the diffusion of ideas about stimulus and austerity. We show that the incomplete conversion of German economic experts to Keynesian ideas coincides with a more fragmented social network which makes it more difficult for ideas to diffuse within the profession. In the United States, meanwhile, a more integrated social network could facilitate the diffusion of ideas and the emergence of a more widespread consensus in favour of economic intervention. To assess this argument, we combine tools from social network analysis, comparative political economy and the sociology of science to draw insights into the process of idea diffusion and influence.

Our study draws on two fields. The first deals with the role of ideas and economic expertise in shaping public policies. In comparative and international political economy, this field has focused on the genesis, change and resilience of ideas about economic governance (Ban 2016; Blyth 2002,

2013; Castensen 2011; Dellepiane 2015; Farrell and Quiggin 2016; Fourcade 2010; Hirschmann and Berman 2014; Schmidt and Thatcher 2014). By using tools of social network analysis, our study delves into the structural basis for the emergence of consensus and conflict, starting from the idea that the interconnectedness of economists advising governments shapes the ability of economic ideas to diffuse. We contribute to an expanding body of research using this methodology to analyse the diffusion of ideas in international political economy (Ban 2016; Helgadottir 2016). However, in contrast to existing works, which usually look at one (transnational) network at a time, we adopt a comparative approach and seek to show how variation in network structures can shape idea diffusion. In doing so, we connect to the literature on 'knowledge regimes', highlighting more comparatively the different ways whereby policy ideas are created and diffused across countries (Campbell and Pedersen 2014). Here, we focus on a smaller subset of actors (actors tied to a formal council of economic advisors) rather than the broader set of knowledge-production organisations (think tanks, etc.) constituting a knowledge regime.

The second strand we draw on looks at diffusion within social networks, considering how different network topologies can facilitate or hinder the diffusion of ideas, information or behaviours (Centola 2010, 2015; Granovetter 1973; Newman 2010). So far, this literature focussing on variation in network typology has looked at social diffusion processes in a wide variety of settings, but not between experts and/or policymakers (Centola 2010, 2015). Using a comparative approach, we seek to assess in the real world whether the mechanisms highlighted in controlled experiments or simulations can provide some insights into policymaking. Obviously, observational data come with many limitations in terms of measurement and inference compared to experimental data, but we believe that this approach can pave the way for a promising research agenda linking macro-patterns of ideational change (e.g., Peter Hall's [1993] policy paradigms) and micro-assumptions about how ideas and information diffuse among individuals (e.g., Granovetter's (1973) strength of weak ties).

In this paper, we seek to draw insights from the latter strand of literature to improve the former. First, some approaches that focus on ideas, such as policy paradigms, do so without paying much attention to the social structure in which they are embedded. We start from the assumption that economic ideas, whatever their intrinsic characteristics, require social channels to diffuse, and we endeavour to uncover how the shape of these channels can facilitate or hinder the emergence of expert consensus, which in turn influences the ability of experts to influence policymaking.

In the following sections, we provide an overview of the literature on ideational change in economic policymaking and how a focus on network topology can improve it. Our empirical analysis is conducted in two steps: first, we qualitatively assess variation in the patterns of consensus and dissensus

among economic experts in the United States and Germany. Second, we deploy tools of social network analysis to map networks of economic policy expertise in the two countries, before discussing some caveats and avenues for further research.

Ideational change and resilience in economic policymaking

The analysis of ideas and expertise in economic policymaking has now been the focus of a vast body of literature (Blyth [2002]; Christensen [2017]; Hall [1993], among others). Different approaches emphasise different factors to account for resilience and change in dominant ideas. Hall's (1993) pathbreaking analysis of economic policymaking in Britain was extremely influential in popularising the idea of policy paradigms as 'frameworks of ideas and standards that specify not only the goals of policy and the kind of instruments that can be used to attain them, but also the very nature of the problems they are meant to be addressing'. The basic assumption of this approach was that economic policymaking could not be derived exclusively from actors' interests or institutions, especially in times of uncertainty such as large economic crises, but had to rely on 'cognitive maps' of the world which could provide insights into the causes of economic problems and how to solve them. In Hall's perspective, the trigger of ideational change was the appearance of 'anomalies' in the paradigm, or the appearance of facts that could not be explained within the existing paradigm. Change was mostly driven by exogenous factors and characterised by long phases of stability alternating with brief periods of radical change. Hall's original approach provided little focus on actors as agents of change and assumed that, in line with Kuhn's study of science, change happened through revolutions. Moreover, it did not consider that actors may not completely adhere to it (Carstensen 2011). Blyth (2002) adopts a fairly similar approach to Hall with regard to punctuated equilibrium but puts greater emphasis on agency and the battle of ideas in times of crises (for a synthesis, see Blyth [2013]).

While Hall and Blyth looked primarily at ideational change, a more recent strand of literature has looked at ideational resilience, namely how liberal ideas about economic governance have maintained their primacy even following the global financial crisis. This can be considered a puzzle in Hall's framework since 'anomalies' did not lead to paradigm change (Schmidt and Thatcher 2014). Schmidt and Thatcher emphasise a number of factors which can account for why certain ideas persist despite radical changes in their environment. They highlight the plasticity of (liberal) ideas which makes them more adaptable to changes in the environment, the difficulty of actually assessing their effectiveness because they are essentially rhetorical, the 'common sense' nature of some of these ideas (e.g., that one should not spend more than one earns), the interests of powerful actors in maintaining

certain dominant ideas, and the nature of institutions in hindering or favouring certain economic policy ideas.

A connected strand of literature focusing more on the actors rather than the ideas has focused on economic expertise, with a focus on how the authoritative specialist knowledge of a specific group of actors (economists) can shape their influence over policymaking (Christensen 2017). The most influential approach of the role of expertise in international politics was Haas's (1992) concept of 'epistemic communities'. While Haas understood professional consensus to be the norm within expert communities, other research has started to look at the field of expertise as a space of conflict between actors proposing different policy alternatives. This is notably the case of recent research in comparative and international political economy, which focusses on economic expertise as a relatively autonomous organisational field partly closed to the outside (Campbell and Pedersen 2014: 3). This strand of research explains how alliances between experts, politicians and bureaucrats shape policies, or focusses on the internal structure of professions and academic fields. In this perspective, ideational change may happen not only because of transformations in the external environment, as assumed by Hall, but also endogenously, as a result of the evolution and diffusion of new ideas within expert communities.

In a recent paper, Farrell and Quiggin (2016) highlight how professional consensus and dissensus have shaped the influence of economists in policymaking. They show that it may be easier for expert communities characterised by consensus to influence policymakers, while dissensus tends to weaken this influence because it allows policymakers to pick and choose the experts who support their particular policy agenda. Recent research in international political economy uses tools of social network analysis to highlight how experts are connected and how ideas can therefore diffuse, shaping the ability of experts to form a consensus and thereby influence policymaking. The basic premise of these studies is that the diffusion of ideas and norms about policymaking happens through social connections between actors, either through organisational affiliations (in universities or think tanks, expert committees, international organisations), co-authorships or citations (Ban 2016; Helgadottir 2016). In this paper, we draw on these studies to analyse how the typology of expert networks can shape idea diffusion. Farrell and Quiggin convincingly show how ecologies matter and how consensus and dissensus shape the policy influence of experts. For their part, Ban (2016) and Helgadottir (2016) make use of formal social network analysis to show how social connections can act as channels for ideas to diffuse. However, these approaches do not show how *variation* in the organisation of networks may shape the ability of ideas to diffuse among experts and mediate the reception of ideas. This is an important gap because Campbell and Pedersen (2014: 3–4) have shown that different 'knowledge regimes' – the way the production of economic policy

ideas is organised across countries – have acted as important filters for the reception of neoliberal ideas across countries.

We build on this idea but operationalise these national differences as different network topologies – that is, different ways economic experts are connected to each other and to the broader economic profession. To understand how different types of networks shape the circulation of ideas, we turn to the literature in sociology and physics to examine the impact of network topologies on the diffusion of social phenomena.

Network topology and idea diffusion

Ideas, information and behaviours spread through populations via social contacts (Centola 2010: 1194; Granovetter 1973). Many political and social behaviours are believed to be shaped by individuals' social networks of colleagues and friends (Abrams *et al.* 2011). Similarly, expert consensus and adherence to a specific set of economic policy ideas can be assumed to take place through social contacts between experts, for instance via joint research work, attendance of the same doctoral programmes or membership in the same organisations. Van Gunten *et al.* (2016: 1045) show for instance that economists close to one another in co-authorship networks tend to share similar latent ideologies. Of course, causality can go both ways: experts may share social ties because they share particular ideas, rather than the other way around. However, it is reasonable to assume that ties that exist within expert networks *precede* ideological affinities and are not defined by them: people may attend the same elite graduate programmes in economics because of the quality of their education and the professional prospects they offer, and not necessarily because of their ideological orientation.

Based on this idea, the topology of the network in which experts are embedded can have an important influence on the ability of ideas to spread and of consensus to emerge around a set of ideas. In the specific context of economic expertise, the structure of the expert network can be shaped by the propensity of experts to co-author publications, to have attended the same universities, or to be members of the same organisations, which in turn is shaped by the institutional setting, or 'knowledge regime' (Campbell and Pedersen 2014). The number, nature and density of these links can vary significantly across countries. If one focuses on academia as a relevant subset of the 'knowledge regime', for instance, the United States seems to have a much more centralised and hierarchical academic system than most European countries, as well as more widely accepted prestige hierarchies: elite institutions essentially recruit graduates from other elite institutions, whereas less prestigious institutions seek to recruit graduates from elite institutions. As a result, the 'centralized and highly connected positions of higher-prestige institutions enable substantial influence, via doctoral

placement, over the research agendas, research communities, and departmental norms throughout a discipline' (Clauset *et al.* 2015: 4; see also Burris [2004]). In contrast, such a clear hierarchy is difficult to find in continental European countries, where knowledge production within academia is less centralised and less uniform (Afonso 2016).

If network structure influences the way ideas diffuse, which type of network topology is most prone to idea diffusion? There are two competing hypotheses about how the typology of networks can shape the diffusion of ideas and behaviour. The first hypothesis, drawn from the physics and epidemiology literature, assumes that ideas diffuse like diseases: a single exposure to an 'infected' source of ideas will spread the idea further. In this perspective, centralised networks with many long ties seem to be the most prone to rapid diffusion, which leads to the most complete pattern of contagion (Newman 2010). Hence, one central actor connected to all the other actors in a network should lead to a complete pattern of contagion. This idea relates to what Granovetter (1973) showed in his seminal work on the strength of weak ties: actors with weak ties outside their immediate circle have better access to information. Such 'long ties' reduce the number of steps necessary to diffuse through different parts of a network and should therefore help ideas and behaviour spread more quickly and completely (Centola 2010: 1194). In general, networks with higher densities should favour more contacts between actors and a more complete diffusion of ideas. More densely connected networks notably provide a larger number of possible paths between nodes, thereby reducing the ability of nodal actors to block the flow of ideas. In an article also using simulations, Sueur *et al.* (2012) show that decentralised networks are less likely to create a consensus around common norms than centralised networks.

The second hypothesis discussed in the literature which links network topology with diffusion assumes that beliefs and social behaviours are different from infectious diseases. For individuals to adopt a particular set of ideas, they must receive reinforcement from multiple sources and observe that many actors close to them have already adopted a set of ideas before they adopt it themselves (Centola 2010: 1194). This requires a different type of network topology. Namely, networks clustered into distinct cliques should be more favourable to the spread of belief systems because each clique works as an 'incubation box' for ideas to convince actors and spread further. This is notably what Centola (2010) found in his study of the spread on health behaviour online, which showed that clustered networks with only 'short ties' spread social norms faster and farther than random networks characterised by many long ties. However, it should be mentioned that these works do not assume any predetermined hierarchy between nodes, which does not seem to be a realistic assumption when analysing expert networks. Indeed, previous research has shown that the global economist network is an

emerging ‘small world’ – that is, there is a low average path length compared to the scale of the network with a clear hierarchical structure where individual ‘star’ economists have great influence (Goyal *et al.* 2004). Algan *et al.* (2015) come to a similar conclusion while looking at the economics profession. Nevertheless, it is worth assessing these two hypotheses in conjunction: can different levels of receptiveness to new economic policy ideas be linked to different network structures?

Methods and cases

In this article, we compare Germany and the United States, the two largest economies in Europe and North America respectively, whose economic policies shape the world economy far beyond their borders. Each country possesses an official advisory body of experts to advise the government on economic matters (Farrell and Quiggin 2016; Wallich 1968).

Our empirical analysis consists of two parts. First, to measure our dependent variable, we qualitatively assess dissensus and consensus among economic experts in Germany and in the United States, looking at their position towards Keynesian ideas – more precisely the use of fiscal policy to stabilise the economy during recessions. Regarding consensus and dissensus, we look in particular at the policies supported by the economics profession as a whole in both countries (using surveys of the economics profession in both countries)¹ and those advocated by the two advisory bodies we focus on, using their publications, opinions voiced in the press and secondary literature.

The second part of our analysis consists in an exploratory social network analysis (SNA) in which we compare the structure of the networks around the SVR and the CEA in Germany and the United States, respectively, in order to assess whether different levels of consensus and dissensus can be linked to different social network structures. For our social network analysis, we use 2-mode, or *affiliation*, networks in which each node represents either an economist or an institution (Faust, 1997). Our actors are the economists, and our subsets consist of economic organisations. We consider two types of ties in building our networks, namely co-authorship (economists-economists) and institutional affiliations (economists-organisations), bearing in mind that these are of course imperfect proxies for channels of contact between economic experts. Co-authorship and institutional affiliations nevertheless provide a feasible and systematic source of measurement used by other researchers in this area (Ban 2016; Beyer *et al.* 2017; Helgadóttir 2016; Pühringer 2016). The co-publication data were extracted from the Web of Science database with the help of the ‘Science of Science’ (Sci2) tool (Sci2 Team, 2009), and the data on institutional affiliations was extracted from the Research Papers in Economics (RePEc) database (Federal Reserve Bank

of St. Louis). For the visualisation and analysis, we used the software Gephi (Mathieu, Heymann, and Jacomy, 2009).

As a starting point, the analysis focuses on members of the CEA and SVR from 2005 to 2015.² In the United States, we also included the academic members of the Presidential Economic Recovery and Advisory Board (PERAB), which was created by President Barack Obama in response to the crisis.

Starting with these initial economists,³ we construct two 2-mode networks of economic policy advice. For each country, we added the 10 most academically influential economic institutions according to the ranking provided by the IDEAS website, which is part of the RePEc database (Federal Reserve Bank of St. Louis). For Germany, these institutions include think tanks, the European Central Bank, the Bundesbank and university departments. For the US, besides the World Bank, the International Monetary Fund, the Federal Reserve Board and the National Bureau of Economic Research (NBER), only university departments made the top ten. The World Bank and the IMF, however, had to be replaced. Although they are based in the US, their economists are recruited worldwide, and only three economists in the network map were affiliated with either one of them.

Economic expertise in the United States and Germany: resilience and change

In this article, we focus on the German SVR and the US CEA as the two central advisory committees in charge of providing economic advice to their respective governments (Campbell and Pedersen 2014; Wallich 1968). This comparison needs to take into account the different institutional setups of these two advisory committees. The most important aspect is that the CEA is part of the federal administration and appointed by the president (Campbell and Pedersen 2014: 299), while the SVR is formally an independent body which appoints its own chair (Campbell and Pedersen 2014: 299, 139; Wallich 1968: 349). This institutional setup allows for greater levels of partisan influence in the United States. Campbell and Pedersen (2014: 299ff) also found lower levels of consistency in economic ideas in the United States than in Germany, with more ‘flip flopping’ in the United States.⁴ This potential source of bias will be discussed later.

Looking at the whole population of economists in the two countries (Figure 1), we can observe differences in attitudes towards state intervention, but also convergent developments in the wake of the financial crisis (Beyer *et al.* 2017). First, US economists have tended to be more supportive of the use of fiscal policy tools to stabilise the economy prior to the crisis. The time span measured differs, but in 2006, 28.8% of German economists disagreed with the idea that fiscal policy was an effective tool, while only 13% of US

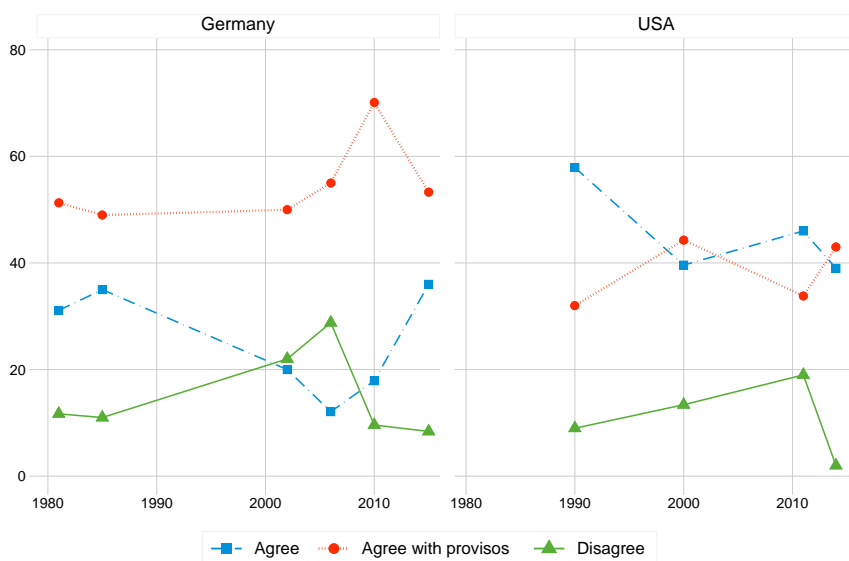


Figure 1. Survey responses to the statement “Fiscal policy is an effective tool to stabilise the economy”. Own elaboration based on data by Fricke (2017), Fuller and Geide-Stevenson (2014), IGM (2014).

economists disagreed in 2000. After the crisis broke out, however, in both countries there was a clear increase in support for fiscal policy as a tool to stabilise the economy. This is interesting because the widespread idea that German economists as a whole are hostile to state intervention is not confirmed, echoing other research arguing that German economic thinking is not only much less homogeneous and orthodox than commonly assumed, but also that there is considerable flexibility within the ordoliberal paradigm (Jacoby 2015).

However, there may be a significant difference between the total population of academic economists and those actually providing advice to governments on matters of economic policy. Indeed, we can observe a stark contrast between the type of advice provided by the CEA and the SVR in the wake of the crisis.

In the United States, the CEA was an active voice in favour of fiscal stimulus (Farrell and Quiggin 2016: 7). It issued a number of reports advocating for and justifying programmes of government spending to combat the crisis. This echoed a broader movement within the discipline, which seemed to be witnessing a quick conversion of mainstream economists towards government spending. The meeting of the American Economic Association in 2009, for instance, demonstrated the rediscovery of discretionary spending by the economics profession (Uchitelle 2009). In the United States, the financial crisis corresponded with the arrival of a new Democratic administration and

a CEA composed of people with already favourable ideas towards fiscal stimulus, or who had been converted by the crisis. The most prominent example was its involvement in the design and evaluation of the American Recovery and Reinvestment Act (ARRA). In its third assessment report, the CEA noted for instance that the ARRA had created between 2.2 and 2.6 million jobs.⁵

In contrast, German economic experts within the SVR were much less receptive to new ideas about economic stimulus. This is interesting because, as shown above, within the broader economics profession, one could observe a marked shift towards more support for fiscal policy activism to fight the crisis. In spite of this, the SVR only reluctantly supported a counter-cyclical policy in late 2008, at a time when stimulus packages were already under way elsewhere. Moreover, it seems that SVR members did not change their ideational framework, but adapted it to fit the new reality. The new argument was that state failure in the US due to easy lending of the Federal Reserve caused the crisis and that this exceptional circumstance allowed for the stimulus, which should then be quickly followed up by fiscal consolidation, debt brakes and stronger rules.⁶ More broadly, prominent German economists, such as Hans-Werner Sinn from the WIFO institute in Munich, actively opposed the intervention of the European Central Bank in financial markets to counter the crisis. Axel Weber, a former member of the SVR and Head of the Bundesbank, resigned in protest of the ECB's active bond-buying programme while he was a leading candidate to become the next ECB president. The SVR briefly supported a fiscal stimulus – while simultaneously putting its efficacy in doubt – and came quickly back to fiscal orthodoxy as a leading principle for economic policies (Sachverständigenrat 2010). This was demonstrated by its 2014–2015 report entitled 'More Confidence in Market Processes' (Sachverständigenrat 2015). In the report, the SVR criticised the ECB's intervention to buy government bonds, defended Germany's budget surpluses and opposed what it called 'action-ism', criticised the introduction of a minimum wage, cast doubt on the idea that inequalities had increased, and advised against increasing public investment (Fricke 2017: 6–7; 51–52). These and similar instances even led long-time SVR member Peter Bofinger to lament, 'no matter what the topic, it's four to one against me,' adding 'I'm the last Keynesian – and I feel like the last Mohican' (Economist 2015). These examples of the strong entrenchment of non-interventionist economic ideas make the short concession of the SVR towards fiscal stimulus in late 2008 surprising.

The network structure of economic expertise

An interesting difference between US and German economic expertise is the stark difference between the positions of the CEA and the SVR in spite of the fact that general opinions about economic intervention within the economic

profession as a whole have evolved in similar directions in both countries, albeit somewhat protractedly in Germany. While we see a correspondence (or relative consensus) between the economics profession and the government's advisory body in the United States, we see a relative disjuncture (or dis-sensus) between economic advice and the economics profession in Germany.

While this could be attributed to partisan differences, or party-driven patterns of selection of the experts on these advisory bodies, the fact that the SVR has a considerable degree of autonomy seems to go against this conclusion. Can these different positions be linked to a different network structure that allowed *ordo-liberal* ideas to stay in important nodal positions? If our hypothesis about the network determinants of consensus is correct, we should observe a more centralised and connected structure of economic expertise in the United States, while in Germany we would expect a network fragmented in distant clusters that could impede a complete diffusion of ideas. Analysing the two networks of economists separately can give us insights into different diffusion patterns of economic ideas. We analyse this by comparing the ease of interaction within both networks through indicators such as average path length, network density, degree distribution modularity and clustering. Below, Table 1 presents comparative statistics on our two networks.

The two constructed 2-mode networks are $N_A = (n_1, \dots, n_{404})$ and $N_G = (n_1, \dots, n_{184})$. The American network, N_A , has 966 edges, while its German counterpart, N_G , has 338 edges. A node, n , can be either an academic institution, n^a , or an economic institution n^i . Each co-publication between two economists is weighted as 1 and each additional co-publication is added on top of that, indicating a stronger connection. Institutional affiliation is always weighted as 1. The maximum edge weight is 25 in N_A and 7 in N_G . The average weighted degree is higher in N_A , indicating a higher tendency to co-publish in the United States.

We have 15 distinct communities in N_A and 9 in N_G . In Germany, these communities represent all the SVR members but Bert Rürüp, who does not have enough connections on his own and therefore shares a community with

Table 1. Comparison of the German and US economists' 2-mode networks.

	N_A	N_G	Difference ($N_A - N_G$)
$\sum n^{a,i}$	404	184	220
$\sum g$	966	338	628
\emptyset degree	4782	3674	1,108
\emptyset weighted degree	6.713	5.174	1.539
Network diameter	15	9	6
Number of communities	7	8	-1
\emptyset path length	3.371	3.547	-0.176
Graph density	0.012	0.02	-0.008
Network modularity	0.714	0.776	-0.062
\emptyset clustering coefficient	0.655	0.680	-0.025

the SVR. Peter Bofinger⁷ and Isabel Schnabel each have very small communities and are close to sharing one with the SVR as well.

In N_A , we see more connections between the different advisers, causing many to share communities and therefore be better linked not only via the CEA but also to other economists and institutions. Overall, this puts N_A further on its way to be a fully connected network. N_A 's structure also has hierarchic tendencies, as ascertained by previous research on the economic profession and expressed as 'the tight management of the discipline from the top down' (Algan *et al.* 2015: 2; Beyer *et al.* 2017; Goyal *et al.* 2004). We can see this centralisation in the apparent dominance of the community which occupies parts of the network's centre and combines with the NBER and Harvard University, two important institutions of idea dissemination. The CEA is also close to this community.

Because of the way we built our networks, we would have suspected an even stronger tendency towards star formations around the initial economists. While visually this is certainly the case (especially in N_G), we find the overall average clustering coefficient to be closer to one than zero, which indicates some level of cliquishness. However, most of the initial economists have a local clustering coefficient close to zero, which is shown in star formations around them. The unexpected high average clustering coefficient is caused in part by the tendency of many economists to publish in groups of three or more, which leads our networks to have many triangles (Total triangles $N_A = 745$; $N_G = 161$). This gives the majority of economists who do not have any further connections a clustering coefficient of 1.0, which skews the average. Overall, the networks in Figures 2 and 3 give the impression of a system of interlinked stars with a high degree of clustering among them. This star formation is also observable in the numbers, with the highest individual degree centrality being 14.6 (N_A) and 9.8 (N_G) times the average.

Mostly due to this lack of institutional interlinkage, communities are much less interconnected in N_G and therefore form separate islands. This indicates that isolated German economists may have been less able to influence German mainstream economics, given the reluctance of German mainstream economists before the crisis to even consider fiscal stimulus as a viable policy choice (Dullien 2008). Moreover, these isolated islands could have also been instrumental in returning German politics so quickly to business as usual by holding on to fiscally orthodox ideas and providing politicians with arguments as soon as the uncertainty of the crisis receded from the network of economists. In line with the hypothesis that centralisation allows for more consensus, a lack of centralisation may also allow for more diversity in ideas. Still, there is a prevalence of a strong *ordo-liberal* paradigm as described by Pühringer (2016) and shown in N_G , where most of the 'north' can be counted as close to *ordo-liberal* ideas, since the advisers Lars P. Feld, Wolfgang Franz and Volker Wieland are members of *ordo-liberal* think tanks such as the Walter-Eucken

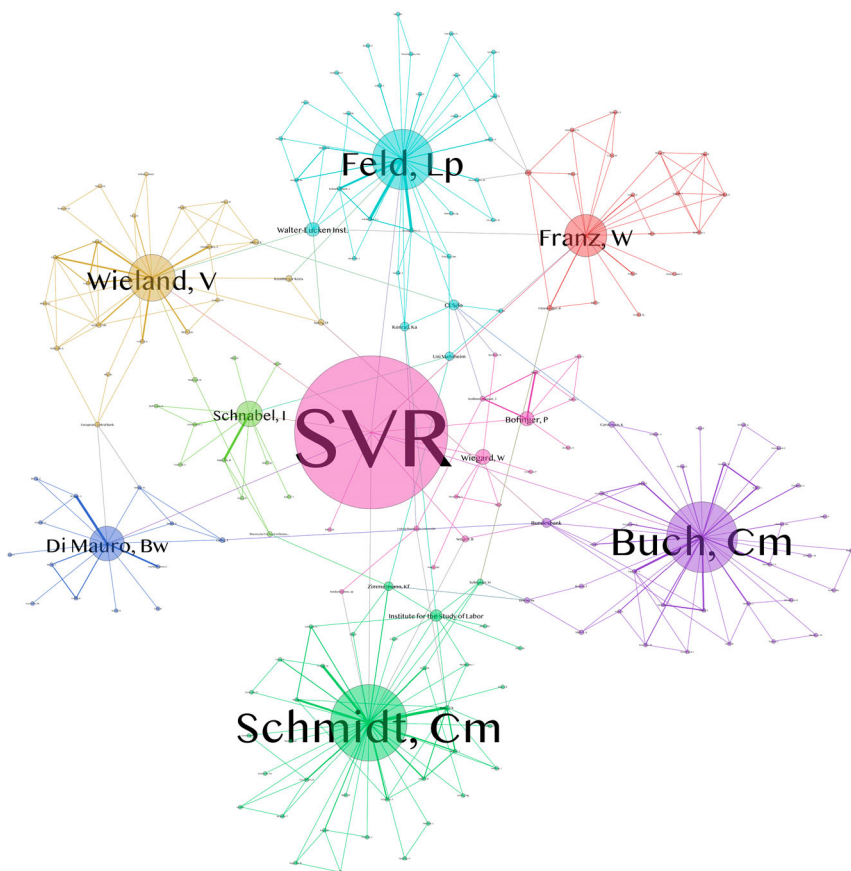


Figure 2. Social network of German economists, institutions and main advisory body.
Note: Nodes are sized by eigenvector centrality, and the colour represent modularity class.

Institut and the Kronberger Kreis. In contrast, the Keynesian ‘alternative’ is only represented by Peter Bofinger.

Our 2-mode networks depict the structure of the economic profession in both cases and show the importance of institutions as intermediaries, especially for N_A . However, for the analysis of network indicators, it was necessary to transform our networks into 1-mode networks, since our software cannot distinguish between the different types of nodes. Therefore, we transformed our networks into 1-mode networks (N'_A and N'_G) by converting intermediary links of institutions to direct links between academics. The numbers of edges are therefore multiplied in the new networks by 5.2 for N'_A and by 1.4 for N'_G . This has several other effects on the networks, as shown in Table 2.

Considering the relatively small *average path length* compared to the networks’ scale, both networks are close to what constitutes small worlds (more

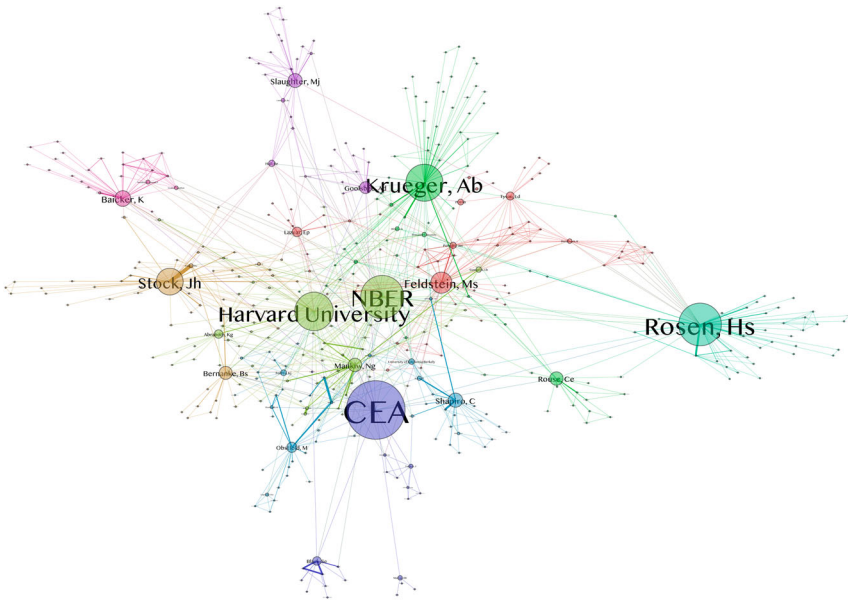


Figure 3. Social network of US economists, institutions and main advisory bodies.

Note: Nodes are sized by eigenvector centrality, and the colour represents its modularity class.

so N_A), which reflects Goyal *et al.*'s (2004) findings of the economic profession being an emerging small world. Moreover, in terms of path length, we find that in N'_A the average path is shorter by 0.149. The overall *degree distribution* is similar in both cases (with most nodes having 3, 2 or 1 edges), however with higher extremes in N'_A and an overall higher *average (weighted) degree*. Therefore, in terms of these indicators, we find N'_A to have higher connectivity.

For *clustering*⁸ and *modularity*,⁹ our results show a slightly lower average clustering coefficient (by 0.047), and a higher network modularity (by 0.37) in N'_G . These two indicators represent the division of the networks into separate communities. The former indicates that in Germany there is a stronger tendency towards star formations and overall less interconnectedness between

Table 2. Comparison of the German and US economists' 1-mode networks.

	N'_A	N'_G	Difference ($N'_A - N'_G$)
$\sum n^a$	392	173	219
$\sum g$	5028	468	4560
\emptyset degree	25.653	5.41	20.871
\emptyset weighted degree	30.3723	7.064	23.308
Network diameter	4	3	1
Number of communities	7	8	-1
\emptyset path length	2.526	2.675	-0.149
Graph density	0.066	0.031	0.035
Network modularity	0.283	0.653	-0.37
\emptyset clustering coefficient	0.866	0.819	0.047

nodes, while the latter shows that in Germany economists are more divided into communities and are well connected within the community but sparsely connected to outsiders, thereby creating isolated islands. Lastly, *graph density* points in the same direction. Despite the larger scale of N'_A and thereby a higher number of potential edges, N'_A is shown to be further on its path towards a fully connected network.

It is difficult, if not impossible, to properly map the diffusion of ideas throughout a network; however, our comparative approach shows that the US economic profession is better connected, which may facilitate a quicker diffusion of ideas and a more complete conversion, causing the apparent Keynesian consensus described by Farrell and Quiggin (2016). In contrast, the more fragmented nature of the German profession delayed the emergence of a consensus on stimulus, while the importance of *ordo-liberal* academics in nodal positions and the reinforcing nature of their separate islands hindered a full ideational change despite the uncertainty created by the crisis.

Conclusion

In this paper, we have taken the first steps into a previously unexplored approach: comparing network structures of idea diffusion within communities of economic experts. Our aim was to deepen our understanding of how economic ideas shape policymaking by looking at the 'social infrastructure' of expertise. A comparison of social networks in two countries made it possible to go beyond existing analyses in the field, which usually looked at only one network. Of course, it is clear that network topology is only one factor influencing diffusion and consensus building; our network analysis was exploratory and gave us limited insights into causality, as it is indeed difficult to observe ideas actually diffusing. It is therefore important to assess alternative explanations and outline avenues for future research.

First, our analysis assumes a relatively high level of autonomy of the field of expertise. However, an idea can only be successful if it is able to attract enough political support, which depends on the alliances struck between experts, politicians and economic actors in 'linked ecologies' (Seabrooke and Tsingou 2009). Future research should look not only at the social connections linking economic experts among themselves but also at the ways they are tied to politicians and other stakeholders, possibly with different types of links than those that we measure here. In this respect, the different institutional role of the two advisory bodies analysed here also entails different levels of independence: the SVR is formally more independent from government than the CEA. While one could think that the greater support for stimulus policies by the CEA may be a result of the greater political control held by the Obama administration, we should also mention that activist policies had

also been used at times by the George W. Bush administration, thereby questioning a systematic role of partisan influences.

Second, the added value of our approach was to adopt a comparative focus in order to allow for a comparison of network topologies. This approach, however, comes with a number of problems. As Algan *et al.* (2015) show, economics is more globalised than many other academic disciplines, and looking at national contexts may be problematic because ideas clearly cross national boundaries. In this context, a growing body of scholarship has looked at the concept of transnational, namely how actors convert economic paradigms into local contexts (e.g., Ban [2016]).

In the future, an analysis combining a comparative and transnational approach that takes more into account the interaction between economic advice and (local) politics would provide a clearer picture of how ideas shape economic policymaking. An even more ambitious approach could use dynamic networks and look more closely at the diffusion of ideas and the timing of change. Such an approach would require a data collection effort and resources far beyond those employed in this article.

Notes

1. Unfortunately, there is no comparative data source which could allow us to track the dominant view among economic experts in Germany and the United States in a truly systematic manner. Hence, we draw on separate surveys conducted by Fricke (2017) for Germany and Fuller and Geide-Stevenson (2014) for the United States, as well as a qualitative assessment of opinions expressed publicly in the press. It must be specified that these surveys cover the whole economics profession and not the subset of economists involved in some way in policy advice.
2. In the US they are Jason Furman, Sandra E. Black, Jay Shambaugh, Austan D. Goolsbee, Cecilia E. Rouse, Christina D. Romer, Donald B. Marron, Edward P. Lazear, Carl Shapiro, Katherine G. Abraham, Alan B. Krueger, James H. Stock, Betsey Stevenson, Maurice Obstfeld, Katherine Baicker, Matthew J. Slaughter, Ben S. Bernanke, Harvey S. Rosen, Kristin J. Forbes and N. Gregory Mankiw, and in Germany they are Christoph M. Schmidt, Peter Bofinger, Lars P. Feld, Isabel Schnabel, Volker Wieland, Beatrice Weder di Mauro, Bert Rürup, Wolfgang Franz and Claudia M. Buch.
3. The network visualisations we present include more advisers in the surveyed period than the number of seats, because membership in the CEA and the SVR changes over time. In the German case, there are 10 instead of the regular five advisers; in the US case, there are 20 (24 with PERAB) instead of three. Higher turnover rates in the US explain this difference.
4. Wallich (1968: 349) had already noted that 'The CEA has long been a reliable spokesman for successive administrations. The SVR has been, with rare exceptions, a vigorous critic of the government in power'.
5. <https://obamawhitehouse.archives.gov/blog/2010/04/14/council-economic-advisers-releases-a-new-report-recovery-act>
6. In their 2008/09 annual report, while criticizing the first German stimulus package for not being ambitious enough, the SVR argued that the market

paradigm should not be questioned and that Germany should return as soon as possible to its path of fiscal consolidation. Following suit, in their 2009/10 report, the experts criticize the government's plans for tax cuts.

7. Peter Bofinger is the member of the SVR nominated by the trade unions (one member is always proposed by the trade unions and one by industry associations) and the only SVR member who is associated with Keynesianism.
8. The clustering coefficient ranges between zero and one. A node with a coefficient of zero would resemble a star, since its neighbours would not be interconnected with each other; at one, we have a clique where each of the node's neighbours is connected with each other.
9. Networks with high modularity have dense connections between nodes within modules but sparse connections to nodes outside the module.

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No potential conflict of interest was reported by the authors.

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