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Devided we stand?

Professional consensus and political conflict in academic economics

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Abstract

In this paper we address the issue of the role of ideology and political preferences of publically engaged economists and contribute to the debate on consensus in economics. To do so, we conduct a social network analysis on the signatories of economist petitions, which we identify as one channel for economists to exert public influence. We base our analysis on 77 public policy petitions and presidential anti-/endorsement letters from 2008-2017 in the United States with more than 6,400 signatories and check the robustness of our results with six sub-networks. Our contribution is twofold: On the one hand we provide an extended empirical basis for the debate on consensus in economics and the role of politics and ideology in economics. On the other hand we provide a viable tool to trace the ideological leaning of (prospective) economist petitions and economists based on the social structure of petition networks.

Keywords: social network analysis; sociology of economics; consensus; public economists; economist petitions; United States.

JEL categories: A11, A13, A14, B20, B30, D04, E66, G18, I38, P16

1 Introduction

„I have always been impressed by the ability to predict and economist's positive views from my knowledge of his political orientation, and I have never been able to persuade myself that the political orientation was the consequence of the positive views."
(Rose Friedman in Friedman/Friedman 1998, 217)

Much ink has been spilled on the political and societal impact of economics and economists and the role of politics and ideology in economics in the last couple of years, particularly by scholars in the fields of economic sociology and science and technology studies, but also within economics itself. There are various instruments and channels through which economists are able to exert influence on public policy issues.

In this regard, one specific instrument of economists' engagement in public policy debates, which has gained increasing popularity in the last two decades, is the publication and support of public policy letters and petitions, which can subsumed under the label 'economist petitions' (Hedengren et al. 2010). These petitions are either addressed to the general public or to specific policy-making institutions. The main feature underlying such economist petitions is that they make recourse to the economists' profession as such, and hence, try to mobilize the professions' public prestige to intervene in public policy debates.[1] From a Bourdieusian perspective this prestige can be interpreted as a form of 'symbolic capital' (Lebaron 2006, 2018), which allows successful economists to act as 'public intellectuals' (Mata/Medema 2013), who are engaged in political and public debates and enjoy a high visibility. In this regard, we interpret the support of a petition as an attempt to proactively engage in a public debate in order to shape broader political consensus, i.e. to use one's academic prestige as an economic expert to exert political impact.[2]

Hence, due to their wide reach and their inherent political character economist petitions offer a fruitful avenue for research on the ideological orientations of what we label 'politically engaged economists'. Up to our knowledge there is hardly any research using economists' petitions as an indicator for ideological preferences and leanings within the profession. The few exceptions include Hedengren et al. (2010), who apply a qualitative classification to group economist petitions based on their main ideological message into the categories 'liberty-augmenting', 'liberty-reducing' and 'other', revealing an ideological leaning for the majority of signing

1 Commonly used phrases in economist petitions are: 'As economists, we believe …', 'As economists and social insurance experts, we …', 'We, the undersigned economists, support …', 'Economists generally think of …', 'As professional economists, we …', 'We write as economists and investment and financial experts …'.
2 For the role of economists 'symbolic capital' in public debates see e.g. Maesse 2015.

economists. Jelveh et al. (2017) in turn use Hedengren et al.'s classification scheme and data as a marker for ideological leaning.

Against this background, in this paper we aim to expand and deepen the research on economist petitions and petition-signing economists with a focus on the United States. In contrast to Hedengren et al.'s approach, however, we do not try to interpret the ideological contours of economist petitions but use them as a probe for analyzing the social structure of the population of politically engaged economists. Therefore, we analyze a unique, manually compiled dataset on 68 different economist petitions directed to either the general public or to federal policy-making institutions, and 9 letters and collections containing presidential endorsements and anti-endorsements by economists between 2008 and 2017. Applying a social network perspective on this data, we investigate economist petitions and petition-signing economists in more detail and thus aim to unveil potentially hidden political cleavages among economists in the United States.

In doing so, our paper asks (i) whether there is a politico-ideological divide among this population of politically engaged economists analogous to the dichotomic structure of the US political system, (ii) whether there are noticeable differences regarding the policy issues addressed by the petitions, and (iii) whether and how economists with high individual academic prestige or 'symbolic capital' differ in their behavior from the overall population of politically engaged economists. Hence, our contribution is twofold: First, we want to provide a novel empirical basis for assessing the political contours of economics. Second, we seek to contribute to the debate on the role of political consensus and ideological divide within the economics profession. Our main thesis is that there is a politico-ideological divide among the population of politically engaged economists analogous to the US political system and thus the majority of economist petitions are far from providing politically neutral economic knowledge.

We label economists as 'politically engaged' if he or she supports at least one public policy petition or presidential anti-/endorsement letter of our sample. Therefore, a self-selection bias is given with regard to the overall population of US economists. However, the more than 6,400 petition-signing individuals (mostly economists) in our sample also represent a considerable part of the overall population of US economists. To offer some comparison: Frist, according to its self-declaration the American Economic Association has currently about 20,000 members. Second, 19,550 economists were employed in the United States in 2017 (Bureau of Labor Statistics 2018). Third, between 1997 and 2006 about 9,100 economics PhDs were conferred (Finegan 2014).

The remainder of the paper is structured as follows. Section two provides an overview of the literature on the political and public impact of economics and the debates on consensus within the economics profession. Section three introduces our unique dataset and the methodological approach applied in this paper. Section four delivers the main empirical results of our social network analysis of economist

petitions, which are then discussed in contrast to the existing empirical literature. Section five offers some concluding remarks.

2 The impact of economics and the question of consensus among economists

During the last decades economics as a profession has gained influence and power in many countries and in a diversity of social contexts (Christensen 2017; Fourcade 2009; Offer/Söderberg 2016). Thereby, the ways in which economists influence public opinion and policy are complex and multi-faceted (Hirschman/Berman 2014). It includes research on the political power of economic ideas (Hall 1989), the performativity of economic models (Callon 2006; Cochoy et al. 2010; Heimberger/Kapeller 2017) as well as the political impact of 'economic imaginaries' (Jessop 2013; Sum/Jessop, 2013).

The questions how and to what extent economists influence public opinion is connected to the more general debate about whether there is consensus among economists about economic policy issues (Frey et al. 1984; Fuller/Geide-Stevenson 2003; Gordon/Dahl 2013). In this context it was repeatedly discussed whether political partisanship and ideology play any role within the economics profession (Avsar 2011; Mayer 2001), in economists' reasoning (Horowitz/Hughes 2018, Jo et al. 2012) and in their policy recommendations (Backhouse 2010; Backhouse/Medema 2012).

Based on comprehensive surveys of American Economic Association members several studies find that there is indeed a considerable agreement on a wide range of issues such as the welfare implications of eliminating trade barriers, the pivotal role of economic growth for improving well-being or on general microeconomic propositions (Fuller/Geide-Stevenson 2014; Whaples 2009). Nevertheless, these studies also reveal some disagreement within the field – especially with regard to specific macroeconomic issues such as taxation. In addition, these studies also show significant differences between economists of opposing gender. May et al. (2014) and May et al. (2018), for instance, found that the policy views of female US and European economists differ significantly from their male counterparts. These differences pertain to core policy issues such as labor standards, the gender wage gap or equal opportunity policies. In general, female economists are more supportive of government intervention. Against this backdrop it is unsurprising that female US economists tend more towards liberal positions and political left parties than their male colleagues (Hedengren et al. 2010; Klein et al. 2013).

Gordon and Dahl (2013), while focusing on the elite segment of economists, analyzed the responses on policy issues of a panel of 51 economists at elite research universities and report a strikingly high degree of consensus among them. The authors stress that the richer the economic literature and the stronger the empirical evidence on a specific issue, the higher is the level of consensus, at least

at the elite segment of the hierarchically structured economics discipline (Fourcade et al. 2015). Overall, they found no empirical support for an ideological divide along different camps – not even on macroeconomic issues as claimed in the context of the 'freshwater-saltwater' controversy, although van Gunten et al. (2016) claim to have identified ideological heterogeneity within the very same data-set by applying a principal components analysis by uncovering a latent ideological dimension. Against the backdrop of this finding van Gunten et al. (2016, p. 1046) conclude that 'consumers of economic expertise must exercise healthy skepticism faced with the claim that professional opinion is free of political ideology'.

Whereas most of the studies on consensus in economics focus on professional economists, some authors also address the role of economists and economic experts in public debates. In this spirit, Sapienza and Zingales (2013) compared policy views of a panel of leading US economists with a representative sample of American citizens. They found strong differences between these two groups, especially in areas with a high level of consensus among economists or in cases, which address technical questions such as the predictability of stock prices. Johnston and Ballard (2016) argue that the responsiveness of citizens to economic expert opinions is positively correlated with the trustworthiness of the economic experts.

Summing up, the question of the role of ideology and political preferences as well as the debate on consensus in economics is studied by several scholars with different disciplinary backgrounds, using primarily surveys and statistical methods. In contrast to this literature, in our paper we seek to contribute to these debates by providing a social network perspective on politically engaged economists. Hence we aim to examine the social structure of this subgroup of economists, who intend to exert influence on public policy issues. Up to our knowledge, there is hardly any research on the social structure of networks of politically engaged economists. Flickenschild and Afonso (2018) conduct a social network analysis on the structure of economic expertise in the US and Germany in the wake of the global financial crisis. In doing so, they focus on institutional affiliations and co-authorships of the members of the main economic policy advice bodies in both countries. In a similar vein, Helgadóttir (2016) examines the transmission of the economic concept of austerity in European Union discourses in the aftermath of the financial crisis. For this purpose, she applies a social network analysis of the career paths of young Italian economists from Bocconi University (Milan), who she labels the 'Bocconi Boys'.

3 Data and methodology

Data collection and descriptive statistics

Our investigation is based on a unique, manually compiled dataset of US economist petitions and presidential anti-/endorsements letters. This bipartite dataset was assembled in two steps. In a first step, we conducted a comprehensive internet inquiry in order to find potential petitions by using catch phrases such as 'economist letter', 'open letter', 'economist petition' or 'public petitions AND economists'. Furthermore, we also inspected the websites of main economic policy think tanks, which have already initiated or sponsored such petitions in the past.[3] In doing so, we applied several criteria to select those of economist petitions we are interested in:

1. Time period: The publication of a petition has to be between 2008 and 2017.

2. Signatories: A predominant part of the signatories have to be economists or scholars in finance. Here, we made no difference regarding the position or exact institutional affiliation represented by the signatory (e.g. university, business school, think tank, public service, etc.). Furthermore, we included all signatories of all nationalities.

3. Geography: A petition must be addressed to public bodies (or their leadership) in the United States on the federal level (e.g. the White House, federal departments, US Congress, Federal Reserve, etc.), or the general public of the United States. As a consequence, we excluded petitions directed to state or international bodies as well as non-US petitions.

4. Content: A petition has to address public policy issues such as fiscal policy, financial market regulation, health policy or environmental policy. Therefore, we excluded, for instance, letters directed to the AEA leadership or letters endorsing specific persons for official positions (e.g. Chair of the Federal Reserve).

5. Scope: A petition has to have at least seven signatories.

In a second step, the dataset was complemented by petitions and collections of presidential endorsements and anti-endorsements by economists. We collected and compiled these data based on presidential campaign letters, other anti-/endorsing petitions and websites as well as on the detailed collections offered by Wikipedia regarding individual presidential endorsements.[4] In line with

3 These think tanks include the American Action Forum (AAF), the American Enterprise Institute (AEI), the Cato Institute, the Center for American Progress (CAP), the Center for Economic and Policy Research (CEPR), the Center on Budget and Policy Priorities (CBPP), the Economic Policy Institute (EPI), the Hoover Institution and the National Taxpayer Union (NTU).

4 Although economists on the Wikipedia endorsing collection did support but strictly speaking not sign an endorsing petition, for reasons of simplification we hereafter also speak of them as

our selected time frame, we considered the presidential races of 2008, 2012 and 2016, but included only the anti-/endorsements for the respective candidate of the two main political parties (John McCain, Mitt Romney and Donald Trump for the Republican Party, Barack Obama and Hillary Clinton for the Democratic Party). From the Wikipedia endorsing collections we included (self-proclaimed) economists and scholars in finance.

Figure 1 exhibits a detailed overview of the petitions and presidential anti-/endorsement letters incorporated in our dataset. Based on our selection criteria we collected and included 68 public policy petitions, six letters of presidential endorsements (in favor of McCain, Obama I, Romney, Obama II, Trump and Clinton) and three letters of anti-endorsements (against Obama I, Trump and Clinton).[5] In total, our overall dataset comprises 14,979 cumulated signatures from 6,458 different people.[6] The 68 public policy petitions comprise 12,499 cumulated signatures, the number of signatories ranging from 7 to 1469. This corresponds to an average of 6.8 petitions published per year, with 184 signatories on average and a median of 135 signatories. In general, the collected economist petitions address a wide range of public policy issues, including some that, at first glance, seem not genuinely related to economics. A majority of these petitions addresses issues in fiscal policy (41). Other major topics are related to health policies (10), financial market regulation as well as trade policy (5 each). The 9 presidential anti-/endorsement letters comprise 2,487 signatures in total, ranging from 3 to 794 supporters.

As an additional descriptive statistic we also inspected the 'multi-node ratio' (MNR), which indicates the proportion of signatories of a petition who have supported more than one petition. Whereas 52 and thus a great majority of public policy petitions and presidential anti-/endorsement letters have a multi-node ratio above 80 per cent, another 9 of them have a multi-node ratio below 50 per cent, i.e. the majority of their supporters only signed this specific petition. What are reasons for the high share of one-time signatories within these 9 petitions? On the one hand, some of these letters are signed by a substantial share of non-economists (e.g. law professors, financial scholars, and business people) or economists from abroad. On the other hand, among the six economist petitions with more than 600 supporters only three show a MNR above 50 per cent. As we will analyze below in more detail, two of them are of a non-partisan nature and address pressing social issues ('Immigration Benefits Society, 2017', 'Support Auctioning Carbon Credits, 2008'), which is probably the reason why many economists who do not normally sign petitions support them. In addition, the polarizing personality of Donald Trump obviously also mobilized many otherwise politically silent economists to support the presidential anti-endorsement letter 'Do not Vote Trump, 2016'.

signatories. Furthermore, for reasons of simplification, we subsume the different types of sources under the term presidential anti-/endorsement letters.

5 For reasons of clarity and identification we labeled the petitions and letters according to their main message and additionally included the year of its publication.

6 For identification purposes, to control for name similarities and different spellings, we have cross-checked the specified affiliations for each signatory.

Table 1. Chronological overview of petitions and presidential anti-/endorsements.

Label	Category	Signatures	Policy field	Multi-node ratio
Oppose GOP Tax Plan, 2017	Petition	211	FP	70,14%
Support Sales Factor Apportionment Regime, 2017	Petition	7	FP	42,86%
Support GOP Tax Reform II, 2017	Petition	137	FP	86,86%
Support GOP Tax Reform I, 2017	Petition	9	FP	100,00%
Remove ISDS from NAFTA, 2017	Petition	230	TP	83,91%
Support Sanders' Medicare-for-All Plan, 2017	Petition	27	HP	81,48%
Support Estate Tax Repeal, 2017/2011/2001	Petition	723	FP	73,86%
Oppose Steel Tariffs, 2017	Petition	15	TP	100,00%
Oppose GOP Health Bill, 2017	Petition	45	HP	93,33%
Reassess Fed's Inflation Target, 2017	Petition	22	MP	77,27%
Oppose Eliminating OLA, 2017	Petition	122	FMP	22,13%
Support Minimum Wage ($15), 2017	Petition	106	FP	92,45%
Immigration Benefits Society, 2017	Petition	1469	MiP	43,43%
Endorsement Trump, 2016	Endorsement	12	-	66,67%
Endorsement Clinton, 2016	Endorsement	42	-	92,86%
Do not Vote Trump, 2016	Anti-Endorsement	794	-	36,40%
Oppose Clinton's Economic Agenda, 2016	Anti-Endorsement	306	-	88,56%
Oppose ISDS in Trade Treaties, 2016	Petition	223	TP	86,10%
Oppose Balanced Budget Amendment, 2016	Petition	8	FP	100,00%
Support Sanders' Wallstreet Reforms, 2016	Petition	170	FMP	74,12%
Support Employee Rights Act, 2016	Petition	108	FP	97,22%
Support Cadillac Tax, 2015	Petition	101	HP, FP	66,34%
Support Minimum Wage ($15), 2015	Petition	207	FP	75,36%
Support International Trade Agreements, 2015	Petition	14	TP	100,00%
Support Overtime Pay Threshold Higher than $50.000, 2015	Petition	12	FP	100,00%
Oppose Minimum Wage Increase, 2014	Petition	505	FP	80,40%
Support Minimum Wage ($10.10), 2014	Petition	602	FP	77,41%
Support FTT, 2013	Petition	160	FMP, FP	88,75%
Support Individual Mandate, 2013	Petition	28	HP	96,43%
Support Immigration Reform, 2013	Petition	109	MiP	99,08%
Preserve Charitable Deduction, 2013	Petition	224	FP	72,32%
Support Spending Cuts, 2013	Petition	180	FP	97,22%
Support Global Carbon Pricing, 2013	Petition	32	EP	84,38%
Endorsement Obama, 2012	Endorsement	3	-	100,00%
Endorsement Romney, 2012	Endorsement	673	-	85,88%
Oppose Higher Taxes, 2012	Petition	185	FP	97,84%
Oppose Austerity, 2012	Petition	374	FP	73,26%
Oppose Social Security COLA Reduction, 2012	Petition	300	FP	80,33%
Oppose Dems Tax Plan, 2012	Petition	88	FP	100,00%
Support Minimum Wage ($9.80), 2012	Petition	10	FP	100,00%
Concerns about Antitrust Policies, 2012	Petition	101	CP	96,04%
Support Global Carbon Pricing, 2012	Petition	26	EP	100,00%
Oppose Section 1501 (ACA), 2012	Petition	214	HP	94,86%
Support Section 1501 (ACA), 2012	Petition	39	HP	97,44%
Protect Public Lands, 2011	Petition	104	EP	32,69%

Support GOP Job Strategy, 2011	Petition	132	FP	91,67%
Oppose Balanced Budget Amendment, 2011	Petition	8	FP	100,00%
Support Raising Federal Debt Limit, 2011	Petition	252	FP	84,52%
Support Spending Cuts II, 2011	Petition	162	FP	94,44%
Support Spending Cuts I, 2011	Petition	150	FP	98,67%
Support Capital Controls, 2011	Petition	257	TP	45,14%
Oppose Public Investment Cuts, 2011	Petition	320	FP	84,38%
Support Obamacare, 2011	Petition	279	HP	72,76%
Oppose Obamacare, 2011	Petition	201	HP, FP	100,00%
Continue EUC Programm, 2010	Petition	33	FP	96,97%
Oppose QE, 2010	Petition	23	MP	47,83%
Support Higher Equity Requirements, 2010	Petition	20	FMP	60,00%
Support Extending Bush's Tax Cuts, 2010	Petition	313	FP	88,50%
Oppose Austerity, 2010	Petition	304	FP	81,91%
Rein in Public Spending, 2010	Petition	107	FP	99,07%
Oppose Obamacare, 2010	Petition	130	HP	96,92%
Rein in Public Spending Growth, 2009	Petition	222	FP	94,59%
Support FTT, 2009	Petition	205	FMP, FP	91,22%
Support Health Reform, 2009	Petition	23	HP	82,61%
Assure Fed Independence, 2009	Petition	183	MP	56,28%
Support Procurement Auctions, 2009	Petition	71	CP	45,07%
Support FairTax, 2009	Petition	80	FP	56,25%
Support Auctioning Carbon Credits, 2009	Petition	601	EP, CP	46,76%
Support Employee Free Choice Act, 2009	Petition	40	FP	90,00%
Oppose Recovery Act, 2009	Petition	243	FP	92,59%
Support Recovery Act, 2009	Petition	200	FP	86,00%
Endorsement Obama, 2008	Endorsement	11	-	90,91%
Support Stimulus Package, 2008	Petition	387	FP	83,20%
Oppose Obama's Tax Plan, 2008	Anti-Endorsement	320	-	91,25%
Support Government Intervention, 2008	Petition	76	FP	57,89%
Concerns About Government Intervention, 2008	Petition	230	FP	53,48%
Support McCain's Economic Plan, 2008	Endorsement	326	-	92,33%

Source: Own collection. Policy fields include: competition policy (CP), environmental policy (EP), fiscal policy (FP), financial market policy (FMP), health policy (HP), migration policy MiP), monetary policy (MP), trade policy (TP).

Methodological approach

Our methodological approach to examine the social structure of economists signing economist petitions and endorsing presidential candidates rests on social network theory. In social science there is a long tradition to employ social network analysis for capturing a great variety of relations (e.g. friendship, communication, control, etc.) between different actors (e.g. individuals, institutions, countries, etc.) (Freeman 2004; Granovetter 1985).

In this paper we construct the social structure of politically engaged economists as a two-mode network (Latapy et al. 2008), where petitions and signatories represent different classes of nodes and the signatures represent the edges of the

network. Hence, we only focus on the links between our two sets of nodes and do not take into account personal relations between the signatories, such as co-authorships or common affiliations. Furthermore, we assume that support for different petitions by a single signatory can be seen as an indicator for ideological proximity of the respective petitions and thus define petitions as our primary node set. This means, corresponding to the theoretical considerations outlined in section one, we interpret economist petitions as an indicator for otherwise unobserved political and ideological leanings, which allow for tracing partisan clusters in economics. Therefore, we mainly base our analysis on petitions and not on individuals. We use the software Pajek, which was developed for the analysis and visualization of graphs and large networks (Mrvar/Batagelj 2016; Nooy et al. 2018).

As this social network analysis allows to identify such partisan clusters it naturally relates to the question of professional consensus in economics. Moreover, we can make use of various social network measures such as density, centrality and clustering indicators to gain a better understanding of the ideological cohesion of clusters. Therefore, we particularly focus on the following four measures: (i) overall degree centrality, (ii) closeness centrality, (iii) clustering coefficients of petitions and (iv) network density.

The interpretation of degree centrality is straightforward. In our case it simply represents the number of signatures per petition (and signatory) and is merely used for descriptive statistics of the network of economist petitions, i.e. to stress specific characteristics of petitions or economists. Furthermore, we use degree centrality of economists as an indicator for their political engagement and, thus, label economists with a degree centrality of 5 or more as ‘public economists’. In social network theory closeness centrality is either interpreted as independence or as efficiency (Brandes et al. 2016; Koschützki et al. 2005; Opsahl et al. 2010). In our example, high values of closeness centrality are associated with rather consensus oriented, non-partisan petitions. In contrast, a low value of closeness centrality reflects a stronger ideologically partisan status. Clustering coefficients for a node indicate the level of interconnectedness of its neighbors (triangles) and thus can be interpreted as a measure for the level of cliquishness of a node (Opsahl 2013; Saramäki et al. 2007). The clustering coefficient ranges between zero and one, where zero represents a star and one a perfect clique. We use the clustering coefficients for economist petitions to track ideological clusters and thus interpret a lower clustering coefficient as an indicator for a rather non-partisan position of a petition. Eventually, network density is a measure of interconnectedness of (a distinct number of) nodes in a network or cluster; it is defined as the proportion of effective to all possible links between nodes. Hence, we make use of density indicators for the analysis for ideological cohesion within ideological clusters.

Overall, our approach to conceptualize the social structure of politically engaged economists rests on the interpretation that joint supporters signify ideological proximity of the respective petitions. By combining the four network measures with a graphical interpretation of the social structure of politically engaged

economists, we are able to identify ideological clusters and assess their density and centrality to measure their ideological cohesion.

4 Results of the social network analysis

In the following section we present the network graphs and measures for our overall network (N_{all}) and five variations of it. In this way, we seek to examine the robustness and stability of our overall network as well as to deeper investigate its main properties. In doing so, we also apply a clustering approach based on the network measures as well as a graphical analysis. Finally, we focus on the elite segment of our network.

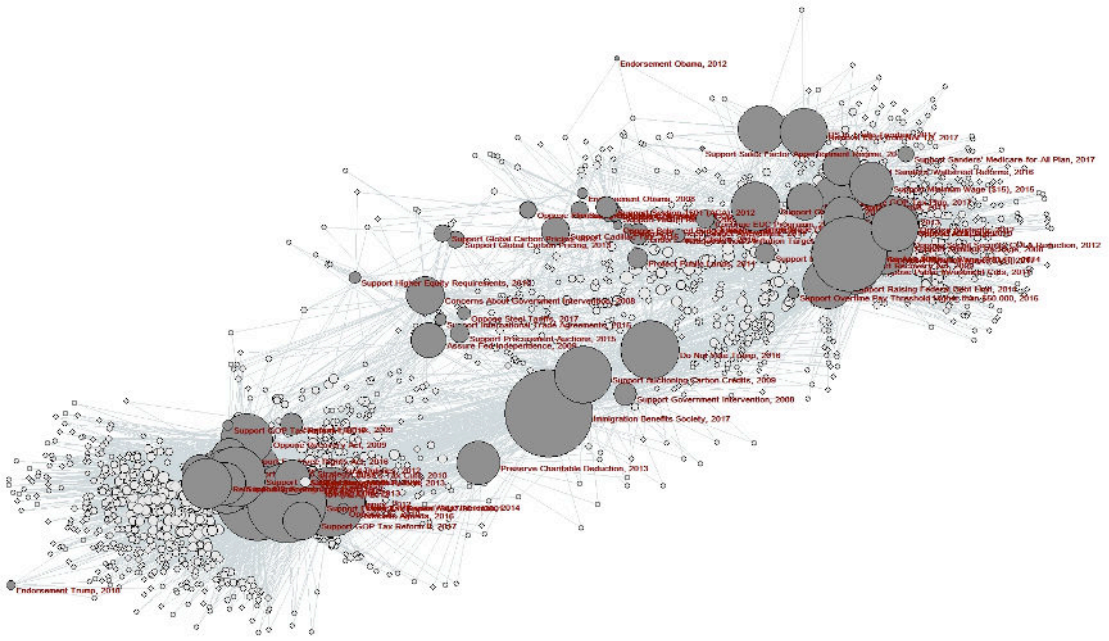
The overall network N_{all} comprises all 77 economist petitions and presidential anti-/endorsement letters of our dataset[7] and consists of 6,535 nodes with 14,979 edges. The economist petitions with the highest degree centralities are the petition 'Immigration Benefits Society, 2017' with 1,469 signatories, the anti-endorsement letter 'Do not Vote Trump, 2016' with 794 supporters, the presidential endorsement petition in support of Romney in 2012 with 673 supporters and the petitions 'Support of Minimum Wage ($10.10), 2014' and 'Support Auctioning Carbon Credits, 2009' with 602 respective 601 signatories. The density of N_{all} is 0.0301, the network clustering coefficient is 0.7262, the average degree is 4.58 and the median as well as the mode of the degree centrality are 1, i.e. that the majority of the economists in N_{all} signed only one petition.

As we are interested in the population of 'politically engaged economists', we decided to use the support of at least two petitions as a threshold value for political engagement in our further analysis. Therefore, in our first variation, we exclude all economists, who signed only one petition, hence obtaining network N_{ex1} with 2,642 nodes and 11,086 edges. The density of N_{ex1} is 0.0561, the network clustering coefficient is 0.7261, the average degree 8.39, the mode of the degree centrality 2 and the median 3.

Figure 1 resembles the social network structure of N_{ex1}. The right upper area of the network is composed of rather liberal petitions, whereas the left lower area contains rather conservative petitions. Located in the centre are several economist petitions without a clear ideological leaning, among them three of the five petitions with the highest degree centrality ('Immigration Benefits Society, 2017', 'Do not Vote Trump, 2016' and 'Support Auctioning Carbon Credits, 2009').

Figure 1. Social structure of petitions and petition-signing economists in N_{ex1}.

7 Subsequently, for reasons of simplification and unless otherwise stated we speak of petitions meaning both public policy petitions and presidential anti-/endorsement letters.



The ideological division of economists is quite obvious in Figure 1 despite of the three dominant non-partisan petitions in the centre. Based on a graphical and measurement-based clustering procedure we obtain three distinct clusters: a non-partisan, a conservative and a liberal cluster. The non-partisan cluster comprises 13 petitions, the conservative cluster 27 petitions and the liberal cluster, finally, 37 petitions.

summarizes the properties of each cluster.

Table 2. Ideological clusters in N_{ex1}.

Network	Ideological clusters	Petitions	Signatures	Overall degree	Network density
N_{ex1}	non-partisan	13	1745	1107	0.1227
	conservative	27	5028	1117	0.1708
	liberal	37	4164	1189	0.0977

In a further step, we looked at the measures for closeness centrality and the clustering coefficients of the petitions. As indicated above, social network scholars interpret closeness centrality as independence of actors or as efficiency. The clustering coefficient, in turn, indicates the level of cliquishness of a petition. In our example, a high value for closeness centrality and particularly a low clustering coefficient indicates a rather consensus oriented, non-partisan status of an economist petition. In contrast, a low value for closeness centrality and a high clustering coefficient reflects a stronger partisan status.

Table 3. Network measures of economist petitions in N_{ex1}.

Partisan status	Petition	Closeness centrality [rank]	Clustering coefficient [rank]

non-partisan	Immigration Benefits Society, 2017	0,4016 [1]	0,5095 [1]
	Preserve Charitable Deduction, 2013	0,3497 [5]	0,5279 [2]
	Concerns About Government Intervention, 2008	0,3458 [8]	0,5355 [3]
	Support Auctioning Carbon Credits, 2009	0,3614 [2]	0,537 [4]
	Oppose Steel Tariffs, 2017	0,3202 [23]	0,5677 [5]
	Do Not Vote Trump, 2016	0,3585 [3]	0,6034 [8]
	Support Estate Tax Repeal, 2017/2011/2001	0,3543 [4]	0,6638 [14]
	Endorsement Obama, 2012	0,2316 [77]	1 [76]
	Endorsement Trump, 2016	0,2368 [76]	1 [76]
	Support Sanders' Medicare-for-All Plan, 2017	0,252 [75]	0,9601 [74]
	Support GOP Tax Reform I, 2017	0,2623 [74]	0,9333 [71]
	Oppose QE, 2010	0,2663 [73]	0,918 [67]
partisan	Support Employee Rights Act, 2016	0,2815 [59]	0,954 [73]

Table 3 provides an overview of the petitions with the highest as well as the lowest closeness centralities and clustering coefficients within N_{ex1}. For both indicators we included the five petitions with the highest and the lowest values (see the ranks in Table 3). The petition 'Immigration Benefits Society, 2017' has the highest values for closeness and degree centrality and the lowest clustering coefficient of all petitions. Following the interpretation of these indicators as offered above we can conclude that this petition and to a lesser extent also the petitions 'Preserve Charitable Deduction, 2013' and 'Support Auctioning Carbon Credits, 2009' are examples of rather non-partisan and consensual petitions by economists. The petitions with the lowest closeness centrality values and the highest clustering coefficients (both 1, i.e. perfect cliques) in turn are the presidential endorsements for Donald Trump in 2016 and for Barak Obama in 2012. Furthermore, the rather surprising high closeness centrality value and low clustering coefficient of the presidential anti-endorsement letter 'Do not Vote Trump, 2016' indicates that the election campaign of Donald Trump was an exceptional case, in which traditional partisan alignments of economists blurred due to the polarizing personality of Donald Trump. Moreover, as its low MNR value indicates (see Table 1), this anti-endorsing petition also got huge support from economists, who otherwise do not sign economist petitions.[8]

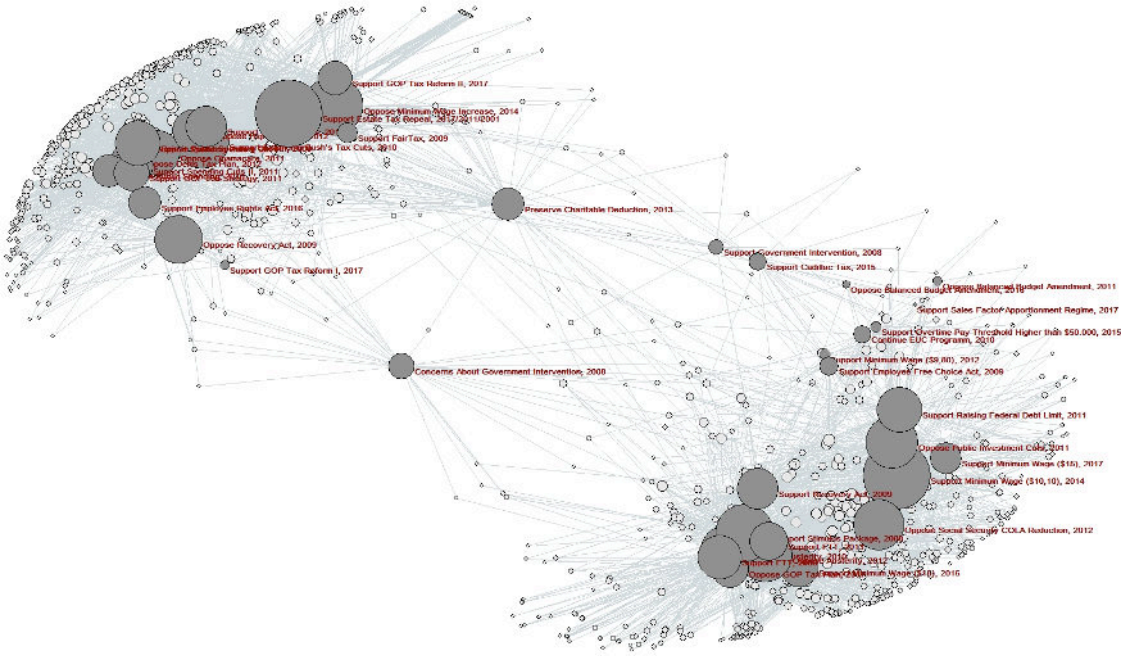
Several other petitions with a comparably high degree of consensus-orientation are predominantly concerned with monetary and financial market policy (e.g. 'Assure Fed Independence, 2009') , with the issue of free trade ('Oppose Steel Tariffs, 2017', 'Support International Trade Agreements, 2015') or touch the field of

8 In a similar vein, the exceptionality of the Trump election is further supported by a rather high closeness centrality as well as low clustering coefficient (the 13th highest/lowest among all 77 economist petitions) for the presidential endorsement collection of Hillary Clinton.

competition policy ('Support Procurement Auctions, 2009'). The finding that a handful of petitions on these issues seem to be non-partisan[9] is in line with the above mentioned literature on professional consensus among US economists (see e.g. Fuller & Geide-Stevenson, 2014; Gordon & Dahl, 2013). Conversely, issues such as tax policy, labor market policy and public spending mostly seem to be rather controversially discussed among politically engaged economist.

Therefore, in a second variation, we analyzed the network structure of these fiscal policy petitions, 41 in total. This resulted in the network $N_{fiscpol}$, with 3,489 nodes and 7,922 edges. The overall network density is 0.0560, the network clustering coefficient is 0.7797, the average degree 4.54, the mode of the degree centrality 1 and the median 1. The first graphical interpretation as well as central network measures of the petitions show a rather strong ideological divide (see Table 4 and Figure 2 with only 4 petitions situated between the two partisan clusters.

Figure 2. Ideological divide of economists signing fiscal policy petitions ($N_{fiscpol}$).



What is interesting here is that among the non-partisan petitions there are the two diametrically opposing petitions 'Concerns About Government Intervention, 2008' and 'Support Government Intervention, 2008', which represent the first two responses in petition-form to the onset of the financial and economic crisis. In

9 In consensus-oriented petitions sometimes their non-partisan character gets explicitly highlighted: 'The undersigned former Chairs of the President's Council of Economic Advisers represent a broad swath of political and economic views. Among us are Republicans and Democrats alike, and we have disagreements on a number of policy issues. But on some policies there is near universal agreement. One such issue is the harm of imposing tariffs on steel imports.' (Oppose Steel Tariffs, 2017), 'The undersigned economists represent a broad swath of political and economic views. Among us are Republicans and Democrats alike. Some of us favor free markets while others have championed for a larger role for government in the economy. But on some issues there is near universal agreement. One such issue concerns the broad economic benefit that immigrants to this country bring.' (Immigration Strengthens American Economy 2017).

contrast to Hedengren et al. (2010), our social network analysis allows us to reveal the in-between status of these two petitions, which can maybe be interpreted as an expression of uncertainty among economists at that time, and which, as a consequence, blurred the lines between ideological camps for a short period.

Table 4. Ideological clusters in $N_{fiscpol}$.

Network	Ideological clusters	Petitions	Signatures	Overall degree	Network density
$N_{fiscpol}$	non-partisan	4	631	620	0.0256
	conservative	17	3746	1445	0.1460
	liberal	20	3545	1627	0.1165

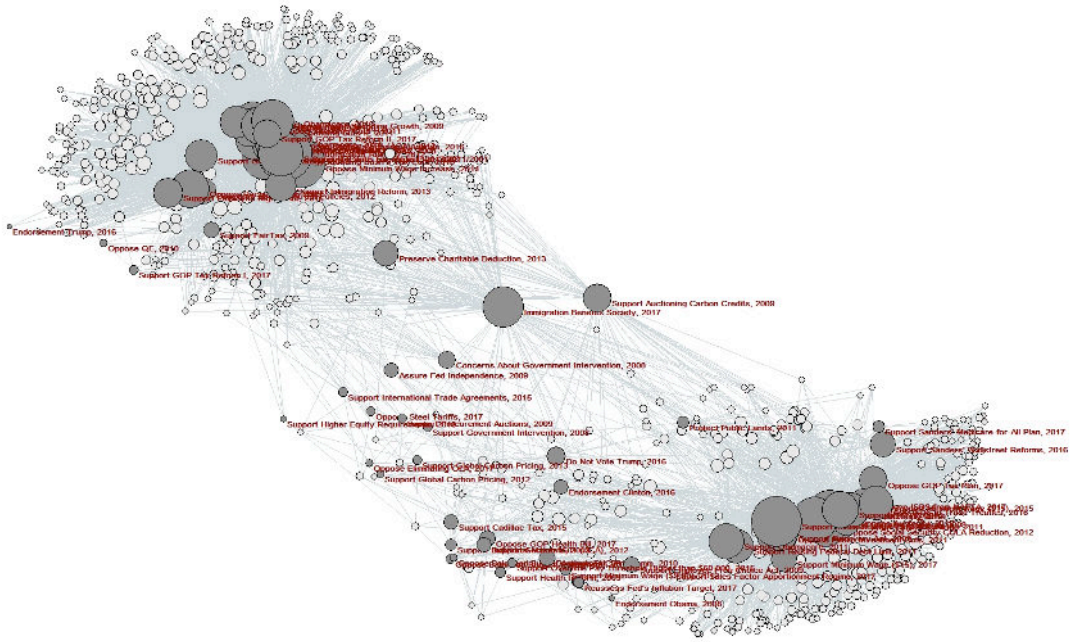
Concerning the power balance between the two partisan clusters the network structure of $N_{fiscpol}$ provides two main findings (Table 4). First, the liberal cluster on the top left has a slightly higher overall degree than the conservative cluster on the bottom right, i.e. more economists signed liberal than conservative petitions. Second, the density indicators of the two ideological clusters show that the conservative cluster is much denser connected than the liberal cluster, which indicates a greater ideological cohesion of the conservative cluster.

On the one hand, this result corresponds with recent empirical results on the policy views of US economists (Klein et al. 2012; Klein/Stern 2007), stressing the dominance of liberal political preferences among economists. On the other hand, the ratio of signatories of liberal to conservative petitions in our network is much lower as one would believe when inspecting surveys focusing on the political orientation of economists.

While our results do not yet offer a clear explanation for this difference, they suggest two possible scenarios: either the initiators of petitions in the conservative cluster are more successful in mobilizing large economist petitions or the group of conservative economists themselves more proactively engages in public debates via the support of petitions.

Therefore, to explore in more detail the frequency of economists' support of petitions, we reduced in a third variation the overall network N_{all} to a group of 'public economists' proactively engaging in public policy debates. Therefore, we defined a threshold of a degree centrality of 5, i.e. the support of at least 5 petitions for being labeled as public economist. The respective network $N_{pubecon}$ consists of 857 nodes with 6,549 edges and, hence, 781 economists supported at least 5 petitions in our sample. The overall network density of $N_{pubecon}$ is 0.1103, the network clustering coefficient is 0.7326, the average degree 15.28, the mode of the degree centrality 5 and the median 8.

Figure 3. Social structure of 'public economists' ($N_{pubecon}$).



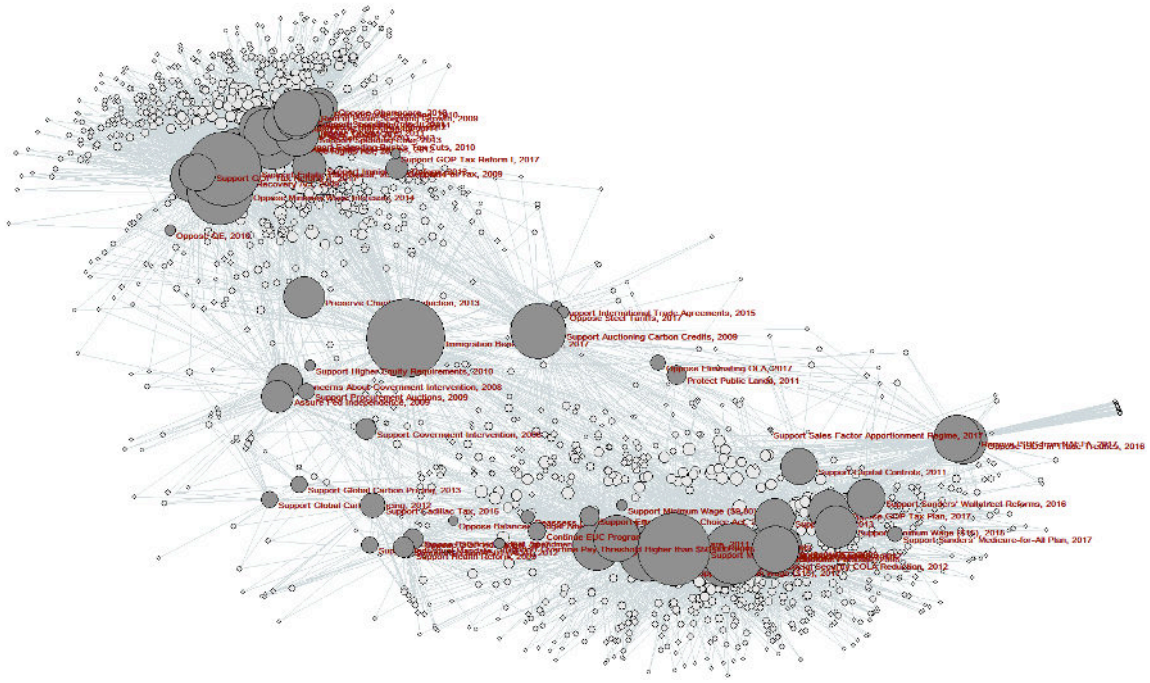
As Figure 3 and Table 5 indicate the ideological divide becomes more pronounced when a higher threshold for the number of petitions signed is introduced. Furthermore, in contrast to the previous networks, the amount of signatures in the conservative cluster now exceeds the amount of signatures in the liberal cluster by about 48 per cent, indicating that conservative economists are more strongly present in the group of public economists, who frequently sign petitions. The group of non-partisan petitions in the centre of Figure 3 remains stable compared to N_{all}, N_{ex1} and $N_{fiscpol}$. In fact, the two petitions 'Do not Vote Trump, 2016' and 'Oppose Eliminating OLA, 2017' are located at the margin between the liberal and the non-partisan cluster.

Table 5. Ideological clusters in $N_{pubecon}$.

Network	Ideological clusters	Petitions	Signatures	Overall degree	Network density
$N_{pubecon}$	non-partisan	12	333	226	0.1186
	conservative	28	3642	476	0.2903
	liberal	37	2463	380	0.1941

In a forth variation of N_{all}, we excluded the presidential anti-/endorsement letters because of their obvious partisan intention to ask whether the ideological divide among economists persists also in such a context. The respective network N_{ex_end} consists of 2,254 nodes with 8,962 edges. The overall network density of N_{ex_end} is 0.0602, the network clustering coefficient is 0.7249, the average degree centrality is 7.95, the mode of the degree centrality 2 and the median 3.

Figure 4. Ideological divide without presidential anti-/endorsements (N_{ex_end}).



Although we excluded presidential anti-/endorsements, the network structure of the N_{ex_end} is quite similar to the network structure of N_{ex1} and $N_{pubecon}$, where the presidential anti-/endorsements are included, as far as our main network measures are concerned (see Table 6). As Figure 4 shows there are again two ideological clusters at the bottom right and the top left, and a centre of non-partisan petitions, organized again around the two dominant economic petitions 'Immigration Benefits Society, 2017' and 'Support Auctioning Carbon Credit, 2009', although the number of non-partisan petitions increases slightly relative to the number of petitions associated with the two partisan clusters. In addition, the amount of signatures in the liberal cluster now considerably exceeds the number of signatures in the conservative cluster due to a proportionally stronger proactive support and/ or a lower dislike of conservative presidential candidates by economists. Nevertheless, the result of an ideological divide among politically engaged economists is not driven by presidential anti-/endorsements, but rather by a more general bi-modal distribution of ideological preferences among economists.

Table 6. Ideological clusters in N_{ex_end}.

Network	Ideological clusters	Petitions	Signatures	Overall degree	Network density
N_{ex_end}	non-partisan	13	3083	2646	0.0901
	conservative	22	4099	1497	0.1322
	liberal	33	5294	2322	0.0701

In our final variation of N_{all}, we try to capture the particularity of distinct economist petitions as reactions to an extraordinary political event. Thus we make use of our variable for multi-node ratio (MNR) of petitions, i.e. the proportion of signatories, who only signed this respective petition. This results in our fifth variation $N_{MNR>50\%}$

consisting of 4,335 nodes with 11,538 edges. The overall network density of N_{ex_end} is 0.0398, the network clustering coefficient is 0.7441, the average degree centrality is 5.32, the mode of the degree centrality 1 and the median 1.

Figure 5. Ideological clustering in $N_{MNR>50\%}$.

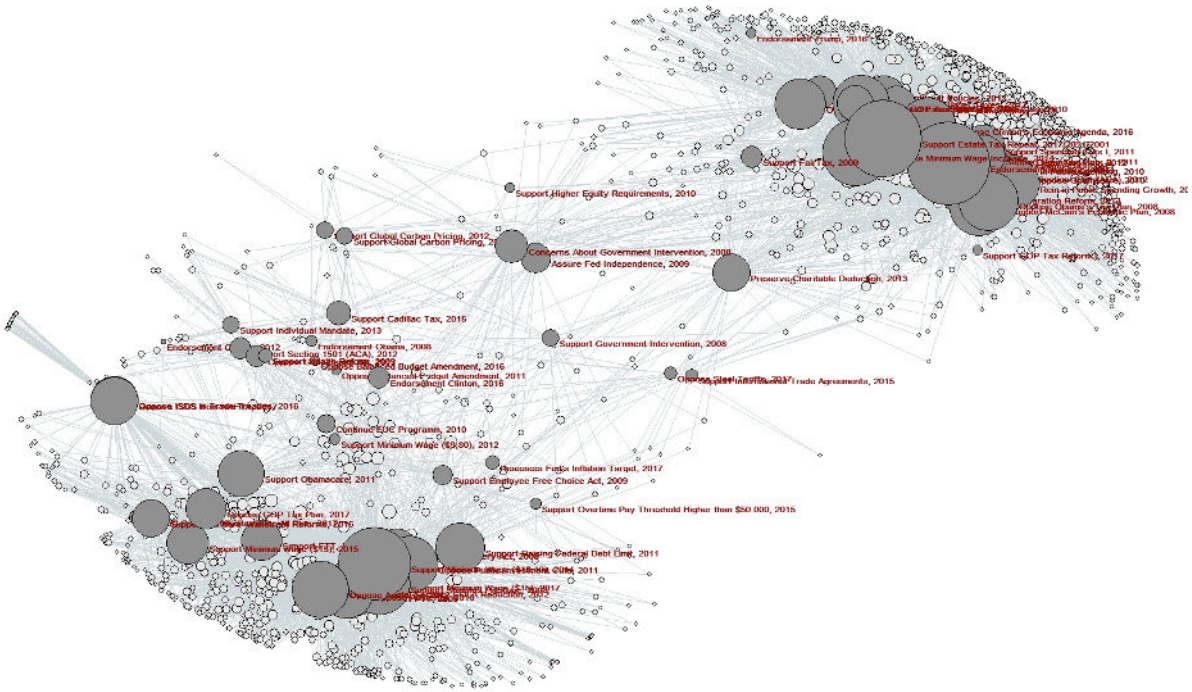


Figure 5 indicates that the ideological divide is now stronger compared to other variations of N_{all}, because the two petitions with the highest closeness centrality and lowest clustering coefficients – 'Immigration Benefits Society, 2017' and 'Support Auctioning Carbon Credits, 2009' – both have a MNR below 50 per cent. Concerning the balances between the two ideological clusters (Table 7) we again find a higher number of signatures and signatories in the conservative cluster and the density of the conservative cluster is about 30 per cent higher than the liberal cluster.

Table 7. Ideological clusters in $N_{MNR>50\%}$.

Network	Ideological clusters	Petitions	Signatures	Overall degree	Network density
$N_{MNR>50\%}$	non-partisan	9	820	726	0.1271
	conservative	26	5736	1768	0.1267
	liberal	33	4164	1296	0.0974

To summarize our results, throughout the different variations the network structure of economist petitions and petition-signing, politically engaged economists remains stable and robust with a pronounced polarization between a conservative and a liberal camp of economists and a much smaller consensual or non-partisan cluster in between, the latter comprising the least amount of

petitions and signatures. In fact, only three economist petitions out of 77 ('Do not Vote Trump, 2016' and 'Oppose Eliminating OLA, 2017' as well as 'Preserve Charitable Deduction, 2013') are located at the margin between the liberal and the non-partisan or the conservative and the non-partisan cluster, respectively. For all other petitions in turn, our combined methodological approach of network measures (centrality indicators and clustering coefficients) and a graphical interpretation of the network results, yielded clear results in terms of ideological clustering.

Considering the balance between the two partisan clusters, more petitions are part of the liberal than the conservative cluster and in most variations the number of liberal signatories (overall degree) exceeds the number of conservative signatories (see Table 8 for a summary overview). This result corresponds with recent empirical results on the policy views of US economists (Klein et al., 2012; Klein & Stern, 2007), stressing the dominance of liberal political preferences among economists. However, the ratio of signatories of liberal to conservative petitions in our network is much lower as suggested by surveys focusing explicitly on the political orientation of among of economists, who report a corresponding partisan ratio of Democrats to Republicans of about 2:1 or even 3:1.

Moreover, the amount of signatures within the conservative cluster exceeds the number of signatures within the liberal cluster, with the exception of N_{ex_end}. Besides the fact that economists on a larger scale publicly supported conservative presidential candidates, this is also due to the fact that the conservative cluster contains a substantially higher proportion of public economists, i.e. economists who frequently sign economist petitions, than the liberal cluster. Thus conservative economists seem to be more politically engaged that their liberal colleagues, at least in terms of supporting economist petitions. Furthermore, we found that in all variations of N_{all} the density of the conservative cluster is higher than the liberal cluster, ranging from a ratio of 1.3:1 to about 2:1, which points at a higher ideological cohesion among conservative economists.

Table 8. Overview of ideological clusters in all networks.

Network	Ideological clusters	Petitions	Signatures	Overall degree	Network density
N_{all}	non-partisan	13	3755	3102	0.0935
	conservative	27	5729	1784	0.1214
	liberal	37	5469	2450	0.0613
N_{ex1}	non-partisan	13	1745	1107	0.1227
	conservative	27	5028	1117	0.1708
	liberal	37	4164	1189	0.0977
$N_{pubecon}$	non-partisan	12	333	226	0.1186
	conservative	28	3642	476	0.2903
	liberal	37	2463	380	0.1941
$N_{fiscpol}$	non-partisan	4	631	620	0.0256
	conservative	17	3746	1445	0.1460
	liberal	20	3545	1627	0.1165
N_{ex_end}	non-partisan	13	3083	2646	0.0901
	conservative	22	4099	1497	0.1322
	liberal	33	5294	2322	0.0701
$N_{MNR>50\%}$	non-partisan	9	820	726	0.1271
	conservative	26	5736	1768	0.1267
	liberal	33	4164	1296	0.0974

In a final step we now modify the secondary node set of N_{all} and focus only on economists with high academic prestige. Many empirical contributions to the general debate on the role of politics and ideology within the economics profession focus on an elite segment of the profession (Gordon & Dahl, 2013; van Gunten et al., 2016) as they are supposed to have a formative impact on the profession as well as on a broader public. In a similar vein, Farrell and Quiggin (2017) stress the crucial role of 'star economists' in the process of contagion across the international community in the aftermath of the global financial crisis and the subsequent crisis policies.

In order to address this elite bias in economics, we extracted a subsample of high-prestigious 'elite economists' and used the Nobel Prize, the John Bates Clark Medal as well as the presidency of the American Economic Association as proxies for high academic prestige.[10] In doing so, we ended up with a sample of 62 petition-signing elite economists, 55 of them being US citizens.

Overall, we find that 78 per cent of all living US elite economists are part of our sample. They supported at least one petition or presidential candidate, the mean of signatures being 5.3. These numbers indicate that elite economists are highly

10 The political and public impact associated with the Nobel Prize of economics is presented in detail by Offer/Söderberg 2016 as well as Lebaron 2006.

active in public policy debates in the United States. But also vice versa, organizers of petitions proactively seek to take advantage of the academic prestige of signing economists by explicitly addressing it in the petition title, statement or press release[11], or by emphasizing the status of elite economists in the list of signatories. This is a plausible strategy to increase public visibility of petitions and thus its potential political impact. Against this backdrop,

provides the network structure of N_{elite}, which comprises all 62 economists with high academic prestige still alive in the period from 2008 to 2017.

Figure 6. Ideological divide of economists with high academic prestige (N_{elite}).



N_{elite} differs in its social network structure of politically engaged economists from the overall distribution of economists in several variations of N_{all}. Out of the sample of 62 elite economists 11 economists supported mainly conservative petitions, 33 economists supported mainly liberal petitions and 17 economists supported mainly non-partisan petitions. It is only Robert E. Lucas, who supported petitions or presidential candidates of both ideological clusters, the one rather liberal petition being the exceptional case of the 'Do not Vote Trump, 2016' letter. Hence, the liberals-to-conservatives ratio is much higher for economists with high academic reputation than compared to the overall population of petition-signing economists. Furthermore, elite economists tend to disproportionally support non-partisan petitions. This latter finding points to a slightly higher degree of consensus within the elite segment of economists as claimed in the consensus debate in economics (Gordon & Dahl, 2013).

11 To give some examples: 'Open Letter to the American People from Recipients of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel' and 'We are Nobel Laureates in Economics …' (Endorsement Clinton, 2016), 'Nobel laureates and leading economists oppose constitutional balanced budget amendment' (Oppose Balanced Budget Amendment 2016), 'Those signing the statement include Nobel Prize winners in Economics …, former Presidents of the American Economic Association …' (Support McCain's Economic Plan 2008, press release).

5 Conclusion

The main empirical finding of our paper is that there is a very strong ideological divide among politically engaged economists in the United States, which mirrors the cleavage within the US political system. This divide is particularly stark in the field of fiscal policy, while it is to a lesser extent also present in other fields of public policy. A greater tendency towards consensus in turn can be found in the fields of monetary policy and trade policy, which is maybe also a reason for the much lower number of economist petitions in these fields.

Overall, the empirical results allow us to draw three main conclusions: First, we found a bi-modal distribution of ideological preferences among economists. This pattern reflects homogeneity within the ideological clusters and polarization between the two clusters. Second, the ideological orientation of politically engaged economists is rather balanced and thus, by and large, mirrors the overall US electorate, whereas the subsample of elite economists has a stronger tendency towards liberal positions. The rather homogenous structure of the two ideological clusters organized along political parties and the subordinate role of non-partisan petitions, third, seems to support the hypothesis that political preferences also imprint on economic expert discourses as Rose Friedman's assessment quoted at the beginning of this paper suggests.

Our contribution hence is twofold: On the one hand we provide an extended empirical basis for the debate on consensus in economics and the role of politics and ideology in economics. On the other hand we illustrate how social network analysis can serve as a viable tool to trace the ideological leaning of (prospective) economist petitions and petition-signing economists based on the social structure of petition networks.

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