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How do shocks realign interest group lobbying in congress? Evidence from ecuador

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ABSTRACT

How does the coordination strategy of interest groups change during a crisis? Shocks reduce an economy's resource pool and increase the competition for what is available. Interest groups participate in the policy-making process by lobbying legislators. In times of crisis, we argue, interest groups lobbying Congress coordinate in cohesive industry-wide communities led by key actors. Rather than lobbying for narrow policy privileges, interest groups seek to support legislation that is most beneficial to their community. To study the cooperative behaviour of interest groups we build an original network dataset based on committee participation in the Ecuadorian Congress between 1996 and 2015. We present evidence of increasingly homophilic industry networks in times of crisis, with umbrella organisations taking the role of hubs. We find that 'lone wolf' strategies, prevalent during an economic expansion, are less prevalent during a crisis.

KEYWORDS Interest groups; social networks; lobbying; legislature; economic shock

Introduction

Several months before the 1998 financial crisis in Ecuador, the *Proyecto de Ley Comercio Exterior e Inversiones*, a bill that promoted trade and investment by changing tariffs, garnered the attention of the business industry. The Federation of Exporters, the Chamber of Fishing, and the Association of Flower Exporters lobbied in support of the bill and also pressured for lower tariffs and greater tax incentives (for their individual groups). They did so separately. After the financial crisis hit the country, legislators debated the *Proyecto de Ley para la Reforma de las Finanzas Públicas*, another bill targeting the tax code. Business associations lobbying the bill pushed for lower tax rates (across the board). However, this time they did so coordinating among each other.

Coordination among interest groups pursuing similar interests is well-documented (Varone et al. 2017). Interest groups seek either private or public policy benefits in a policy-creation environment where resources

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are limited. To advance their goals, interest groups rely on the networks they establish with each other as much as they do on interactions with policymakers. Networks allow interest groups to share resources, disseminate information, and signal support (Esterling, 2004; Holyoke, 2003; Kingdon, 1981; Mayhew, 1974; Mahoney, 2004). Interest groups coordinate to pursue shared policy objectives and are more likely to do so within their industry and issue area (Berry, 2005; Box-Steffensmeier & Christenson, 2014; Hula, 1999; Hojnacki, 1997; Whitford, 2003).

Scholarly work has focused on how and why interest group networks in congress form, but how they react to changes in the environment has received limited attention in the literature. In particular, we know that economic cycles affect the market power of economic actors and also have an impact on their capacity to lobby policymakers, to finance the political aspirations of political allies, or to weaken political foes (Grossman & Helpman, 2002, 2004). Thus, by reducing the number of resources available to the state, we expect crises to change the coordination strategies of interest groups in congress.

We argue that economic crises change the coordination strategies of interest groups in congress. Our logic is that when there is strong competition for limited resources, interest groups sort themselves into tightly knit communities that maximise group benefits at the expense of zero-sum individual gains. After crises, communities within broad interest group networks in congress become less atomised and more cohesive. Conversely, interest groups still compete over resources before an economic crisis, but greater resource availability generates incentives to lobby alone to maximise individual privileges. Moreover, after an economic crisis, interest groups also allow key actors within their community to take more central leadership roles to negotiate collective solutions with other actors from the rest of the network. Lastly, we show that increased coordination and actor centrality in interest group networks after crises is robust to changes in the nature of the laws enacted after the economic shock.

This research speaks to the strategies used by interest group as a reaction to changes in resource-availability, focusing on the Ecuadorian Congress. Ecuador is a helpful case to study this interaction. Similar to other legislatures, the organisational structure of the Ecuadorian Congress allows for interest groups to comment on bills. The role interest groups play in the policy-creation process in Ecuador, that of information-sharing and public pressure, is similar to the role interest groups play in the United States and Europe (see Mahoney and Baumgartner (2008)). Similar to other legislatures in Latin America, the Ecuadorian Congress functions in a low institutionalisation setting, particularly when it comes to regulating interest groups and lobbying. Unlike in industrialised democracies, lobbying in Latin America is seldom regulated and often informal. In this context,

showing how the strategic behaviour of interest groups changes in reaction to a crisis should provide evidence that our theory is not necessarily mediated by institutions and norms regulating lobbying.

We examine interest group network formation and change in the Ecuadorian Congress before and after two major crises: the financial crisis of 1998 and the oil shock of 2014. Both events intensified competition for scarce resources, forcing interest groups to alter their coordination strategy in Congress to maximise their policy benefits. We use novel data on interest group participation in legislative committees in the Ecuadorian Congress from 1996 to 2015. The long period allows us to compare network structures across time in a country that suffered multiple endogenous and exogenous economic crises. The present study is, to the authors' knowledge, the first one to analyse interest group network behaviour in the Latin American context. Our research builds on previous work that analyses interest group networks, and puts them within the confines of legislative institutions. We present a theory of interest group coordination and find that interest groups respond to shocks by creating industry-specific homophilic communities, while also highlighting the importance of key umbrella organisations.

Extant work on networks of interest groups

Extant work on interest group networks across legislatures has focused on (1) what motivates interest groups to enter into a coalition with other groups and (2) the nature of such coalitions. Hojnacki (1998) suggested that coalitions help improve the reputation of the interest groups that compose it, incentivising them to join. Without disregarding the potential costs of coalitions (Holyoke, 2009; Hula, 1999), the policy benefits from lobbying in conjunction with other groups often outweigh the payout from lobbying alone (Hojnacki, 1997). This is compounded by the natural tendency of interest groups to free ride, which makes coalitions especially attractive. Other authors have found that coalitions can also signal broad support to policymakers on an issue, strengthening the lobbying effort (Box-Steffensmeier & Christenson, 2014; Esterling, 2004; Mahoney, 2004; Nelson and Yackee, 2012). These patterns have been observed in the U.S. Congress (Grossmann & Dominguez, 2009), as well as in the European Union (Klüver, 2011) and in Latin America (Schneider, 2004).[1] Furthermore, interest group coalitions help share and diffuse information quickly and efficiently, which makes lobbying more effective (Gilsing, 2005; Gilsing et al., 2008; Teece, 1986). More generally, Hojnacki (1998) finds that the strategic formation of coalitions is conditional on the strength of the opposition, previous history of coalition membership, and the importance of each group to the success of the coalition.

There are also institutional and political factors that affect interest group behaviour. Mahoney (2008) finds that institutional arrangements in legislatures affect the participation of interest groups. Forums where bills are likely to succeed will activate interest groups, whereas in legislatures with low success rate, interest groups need to work less to maintain the status-quo. The power of the executive vis-à-vis the legislative will also affect the strategic focus of lobbying firm: from information exchange in executive-dominated systems to electoral arguments in legislative-dominated systems (Bouwen, 2002). Box-Steffensmeier et al. (2019) argue that information still is at the forefront of interest groups lobbying in legislatures, and that coalitions are formed precisely to coordinate the type of information delivered to politicians (e.g. the resources lobbied), and the strength of this information.[2]

Once formed, coalitions are more likely to organise around interest groups with similar characteristics. Industry homophily is the primary factor that determines group membership (Box-Steffensmeier & Christenson, 2015).[3] Groups with a large number of members, with a larger number of employees and with longer histories are more likely to be linked to groups with similar characteristics, but even these groups have strong tendencies to coalesce with others within their industry. Politically, Grossmann and Dominguez (2009) show that coalitions form according to the goals of the group and whether these are electoral or legislative.

The literature has also recognised that interest group coalitions are not static. Box-Steffensmeier and Christenson (2014) show that interest group networks in the U.S. have changed over time, becoming better connected even as the number of groups lobbying outside coalitions has also increased. Likewise, they argue that interest groups employ different strategies and form different subnetworks where the importance of central figures varies. This is in line with Hula (1995), who distinguishes between core members of a coalition and those in the periphery. The latter support the coalition yet invest little or no work advocating the coalition's position.

These accounts of the evolution of interest group networks in time cannot account for the effects of sudden changes in the political environment on the behaviour of interest groups and their coalitions. From the broader interest group literature, we know that economic cycles affect the capacity of market actors to lobby policymakers, to fund political candidates, and to weaken political adversaries (Grossman & Helpman, 2002, 2004). Research focusing on Latin America details the reaction of interest groups to crises. For Brazil, Kingstone (1999/2010) describes how economic crises can alter how interest groups perceive their stake in market reforms. Similarly, Murillo (2001) studies the different strategy adopted by labour unions in response to broad market reform. More generally, there is ample evidence pointing to the effect contextual factors, especially economic crises, have on the behaviour of interest groups.[4]

Thus we should expect that interest group behaviour is sensitive to changing economic conditions, and potentially more so in times of severe crisis. Our work addresses this gap by analysing how interest group networks change in the wake of an economic shock.

Interest group coordination within the legislature

The degree of coordination or competition between interest groups depends on whether it provides them with the greatest payoff for the least cost (Holyoke, 2009). Competing interests across (and within) groups need to be articulated in a common front. While broader coalitions can increase the likelihood of preference attainment (Nelson and Yackee 2012), these are costly arrangements that involve collective action problems such as free-riding and continuous coordination costs (Heany and Leifeld 2018; Hula, 1999; Olson 1965). Studies have widely assessed the effect of the demand-side characteristics (i.e. interest groups) on coalition formation and their effectiveness (Hojnacki, 1998; Hula, 1999). We use this insight to explain the changes in interest group networks when there is an exogenous change in the competition over state resources.

Economic crises alter the overall pool of resources, either by decreasing state resources or by decreasing the resources of economic actors (or both). Whatever combination of changes in resource availability, the result is an increase in the competition over policy. After a crisis, dwindling resources and greater competition over them generates incentives for interest groups to lobby together rather than separately. In contrast, resources are more abundant before an economic crisis. Interest groups compete over these resources but greater availability brings higher payoffs for those who lobby alone. In other words, the incentive to enter into a coalition to compete over resources is lower before a crisis than after it. Derived from this argument, we identify three specific effects of economic crises on interest group behaviour: (1) an increase in coordination among groups of the same industry (i.e. in-group coordination) and a decrease in coordination among groups of different industries (i.e. out-group coordination);[5] (2) the rise of key actors, as they aid coordination among community members and represent them in negotiations with other communities; (3) the participation of fewer, yet larger, coalitions. Overall, economic crises have a unifying effect on interest groups with similar characteristics (e.g. policy interests).

Interest groups lobbying for specific policy outcomes are competing over limited government resources.[6] Governments assign resources through policy in the form of subsidy outlays, tax and interest rates,[7] and other redistributive mechanisms. Interest groups seek to obtain political clout over these policy decisions to favour certain economic, social, or political

actors. Therefore, in the broadest sense, competition over state funds determines how interest groups lobby in Congress.

Existing studies have shown that coordination costs and collective action problems can hinder the choice and implementation of optimal strategies, thus decreasing the attainment of the preferred policy outcomes (Heaney & Leifeld, 2018; Mahoney & Baumgartner, 2008). However, broader coalitions also send clear signals regarding the strength of support (or opposition) to a policy proposal (Nelson and Yackee, 2012). Interest groups have to choose between both options: a lower likelihood of a preferred outcome, or a higher likelihood of a less preferable outcome. When the state has plenty of resources to distribute, making policy concessions is not appealing as individual lobbying is more likely to succeed. Conversely, an exogenous increase in the competition for resources (i.e. an economic crisis) creates incentives for interest groups to choose broader coalitions. The pressing need for resources encourages interest groups to choose the option that reduces uncertainty, even when this option will produce a less preferable outcome.

While there is an incentive to form broad coalitions during economic crises, these coalitions are more easily coordinated across industry lines (Box-Steffensmeier & Christenson, 2015). Not only are interests more likely to align when groups represent the same industry, but groups can also harmonise individual and group-wide goals more easily. Furthermore, since the competition for resources is now at the coalition level, there is a double incentive to (1) join a coalition and (2) increase interactions with members of your own coalition. As a consequence, inter-community interactions will also decrease.

Since interest groups are more likely to prioritise coordination during an economic crisis, umbrella organisations–group in charge of coordinating across industry interests–or similar key actors are likely to have a more prominent role. In their study of amicus curiae networks,[8] Box-Steffensmeier and Christenson (2015) identify key players in networks with various roles, from interest groups that serve as hubs to tightly linked networks (e.g. the National Wildlife Federation in the environment network) to players bringing together more disparate groups (e.g. the National Association of Criminal Defense Lawyers). Regardless of their nature, the coordination capacity and expertise of these groups make them prime candidates to take leading roles during crises.

Two economic crises in Ecuador illustrate this argument well. The 1999 financial crisis, a consequence of the deregulation of financial institutions and the El Niño climate phenomenon, led to banks filing for bankruptcy, a devaluation of the currency, and an inflation rate above 91 per cent. In January 2000, at the peak of the financial crisis, Ecuador went from a controlled floating system to dollarisation, effectively pegging the exchange rate to the United States dollar. The effects of this measure were dramatic:

export-oriented firms lost their competitive advantage in the regional and world markets as the costs of labour and export prices increased. Fragility in the domestic market punished national producers and left the financial sector particularly weakened.[9] An economic depression ensued, with GDP contracting from 28 billion dollars in 1998 to 18.3 in 2000.[10]

The 2013 crisis was a different experience. After half a decade of sustained growth led mostly by state investment and resources from the oil exports, the rapid drop in world oil prices in late 2013 and early 2014 resulted in a contraction of the state. Most productive sectors of the economy, many that directly or indirectly depended on state revenue, were affected. While the magnitude of the oil crisis was smaller in scale compared to that of the 1999 financial crisis, the size of the state as well as its role in the economy were also considerably larger in 2014. From the early 2000s, general government consumption expenditure had consistently grown at an average yearly rate of 6%. With oil revenue on the rise, in 2009 the government of Rafael Correa carried out an economic programme that relied heavily on state investment, particularly infrastructure. The state also provided low-interest loans to businesses that did not have access to the international credit market (Bowen, 2015; Conaghan, 2016). From 2006 to 2013, public spending rose from 21 to 41 per cent of GDP. However, with the drop in oil prices, government expenditure stagnated in 2015 and decreased in 2016. Sources of credit for local business dried up and state investment, which had fuelled much of the economy, halted. The dependence of the private sector on public spending meant that a contraction of the state would intensify competition over limited resources.

It is important to note that executive strength changed between 1996 and 2015. During the 1998 financial crisis, there was no party with a clear majority and the majority coalition was not stable. Furthermore, the executive was politically weak, marred by scandals related to their management of the crisis. During the 2014 oil crisis, a powerful executive had enjoyed seven years of electoral victories, strong state-led growth, and high popularity. Even though there are institutional and political differences across crises, the effects on the state were the similar. During both crises, state resources were drastically lowered. During the financial crisis, the government bailed-out banks, believing a bank run would be costlier than the untenable internal debt. Before the oil crisis, the development model carried out by president Rafael Correa relied heavily on state resources obtained from oil exports. High oil prices sustained the model until they drastically dropped in late 2013. Private interests from various industries that had benefited from the state, were now competing for depleted resources. Furthermore, to sustain the development model, just like in 1998, the government turned to tax increases, which further affected struggling industries and

prompted IGs to coordinate in lobbying against them. These differences are reflected in our empirical findings.

Beyond access to resources, the literature has identified various reasons as to why interest groups join coalitions. Among these are information sharing, prestige, the creation of lasting partnerships, signalling to other groups, and shaping legislation closer to their preferences (Box-Steffensmeier et al., 2019). The motivations behind each reason are not at odds with one another. For example, two interest groups looking to obtain a similar form of policy benefit might coalesce to show a united, cohesive and more influential front while also cementing a relationship for future coordination on lobbying. Rather than a single motivation, interest groups have multiple incentives to join a coalition, and those incentives will vary according to the situation. After crises, we argue that access to (scarce) resources is the main driver of changes in coordination strategy. First, crises affect the resources available within an economy and thus change the resources available to firms and associations represented by interest groups. Scarcer resources force interest groups to coordinate more to obtain benefits. Second, while it is possible that interest groups change strategy after a crisis for reasons other than to gain policy benefits, our evidence points toward resources as the main reason for post-crisis coordination by interest groups. Cosigned letters, for example, often clearly detail the resources or policy benefits requested by signees, and their requests for resources become more frequent and urgent after crises. Furthermore, our interviews with interest group representatives reveal that coordination among interest groups was policy-oriented. This comports with (Kingstone, 1999/2010; Murillo, 2001), who argue that groups will seek coalitions to pursue resources as a reaction to changes in the economic landscape.

Interest groups networks in the ecuadorian congress

To study changes in the coordination strategies of interest groups during economic crises, we build networks from interest group participation in committee debates from the Ecuadorian Congress. Each node in our network is an interest group and the edges are formed when two interest groups lobby the same bill together (at the committee level). To map the joint participation of interest groups in committee debates, we use original data from the Ecuadorian Congress between 1996 and 2000, and between 2011 and 2015, roughly two years before and after the 1998 and 2014 financial and oil crises, respectively.[11] Before 2008, reports from committee debates reported interest group participation and included official letters sent by interest groups explaining their position. The official letters are co-signed by multiple interest groups and, we argue, show active coordination. Previous work studying interest group networks use co-signers in amicus

curiae as a coordination measurement in networks (Box-Steffensmeier & Christenson, 2014, 2015; Koger & Victor, 2009; Whitford, 2003). We follow a similar logic. Coalitions among interest groups entail coordinated and purposive actions (Box-Steffensmeier & Christenson, 2014). According to Box-Steffensmeier and Christenson (2014), cosigning amicus briefs require substantial negotiation and coordination. While signing these briefs might be considered a 'low cost' activity, these decisions are not taken lightly, as they make the position of a group public. Similarly, interest groups cosigning letters sent to legislators are making a public endorsement for a common position (Box-Steffensmeier et al., 2019).

The costs of signing these letters, we believe, are higher than the ones stemming from cosigning an amicus brief. By cosigning a letter, interest groups are renouncing some personal gains by adhering to a negotiated position. Unlike Supreme Court rulings, the distribution of resources is not necessarily a public good, especially in the fine-print of legislation, where the recipient of resources (either monetary or of rights) can be very specific. This does not mean that interest groups cannot carry out multiple strategies concomitantly. In our data, we found few instances where an interest group cosigned a letter with other interest groups and also sent an individual letter with additional or different requests. Thus, we cannot completely rule out the possibility that these interest groups lobbied legislators through alternative means (e.g. an interest group representative approached a committee chair directly and in person). While cosigning a letter to a legislator is not binding and is 'low-cost' inasmuch it is a cheap method of sharing overlapping interests, it also requires a previous agreement on the wording, the positions adopted, and the demands. In a repeated game, such as legislating, falsely claiming a position or sending confusing signals can damage the reputation of interest groups vis-à-vis policymakers in the future. Thus, we consider these consigned letters as evidence of coordination that reveal the positions of interest groups and with whom they share this position.

Similar to other geographies, interest groups in Ecuador represent a myriad of different interests, locations, industries, and issues. Examples of interest groups are the Association of Flower Exporters, the Ecuadorian Bar, and the National Workers Union, among many others. We also differentiate between regional chapters of interest groups. For instance, the *Cámara de Comercio* has chapters in Quito and Guayaquil, and since both represent different interests in each of these cities, we include them in the data as separate entities. Note that we focus on the role of interest groups in lobbying policymakers once a bill has reached a committee. We acknowledge that interest groups participate in the policy creation process at various stages, from pressuring legislators into sponsoring specific bills to advocating changes in bills under debate. Yet we can only observe their behaviour once a

bill has reached a committee. In total, our dataset contains 641 unique interest groups and 1083 instances of interest group participation in committee meetings. For both crises, the activity of interest groups increases during the post-crisis periods (see Table 1). Similarly, the mean number of IGs lobbying congress members in conjunction grew in post-crisis networks.

Figure 1 shows the distribution of the number of interest groups participating in committee debates. The left panel of Figure 1 shows a wide variation in the number of yearly bills introduced to Congress and that the majority of them are not lobbied at all. However, most of the bills reaching committees are lobbied by at least one interest group. As the right panel shows, most bills are lobbied by very few interest groups, highlighting the narrow policy focus of both bills and interest groups (Box-Steffensmeier & Christenson, 2014; Kim and Kunisky, 2020). For example, the 'Proyecto de Ley Especial del Sector Cafetalero' ('Special bill for the Coffee producing sector') was only lobbied by the National Association of Coffee Exporters and the National Federation of Coffee Cooperatives. Considering that bills that reach (and subsequently leave) committees are also likely to be eventually voted into law, it is not surprising that, despite the specificity of their content, there usually is some interest group activity.[12]

To categorise different interest groups based on industry and issue, we follow (Box-Steffensmeier & Christenson, 2015) and apply a similar classification used by the Standard Industrial Classification (SIC),[13] mainly the six Industry Groups for Membership Associations: Business, Professional, Labour Unions, Civic, Religious, and Unclassified.[14] Within Business Associations there are *Cámaras de Comercio* (Chambers of Commerce), *Federación de Exportadores* (Export Federations), and *Cámaras de la Pequeña Industria* (Small Business Bureaus). These are defined as groups engaged in promoting the business interests of their members. Professional Associations include Legal (*Colegio de Abogados*), Medical (*Colegio de Médicos*), and Teacher Associations (e.g. *Unión Nacional de Educadores*), all organised for the advancement of the interests of their profession. Labour Organisations are organisations of workers for the improvement of wages and working conditions and include Labour Unions (*Unión de Trabajadores*), and Trade Unions (*Unión de Artesanos*). Civic Associations include Alumni

Table 1. Descriptive statistics of interest group participation.

	Financial Crisis		Oil Crisis	
	Before Crisis 1996–1998	After Crisis 1998–2000	Before Crisis 2011–2013	After Crisis 2013–2015
Unique number of interest groups	134	243	136	266
Average number of IG per coalition	1.74	2.18	1.48	1.78
	(1.74)	(4.68)	(1.31)	(1.68)

Note: Standard deviation of the average number interest groups per coalition in parenthesis.

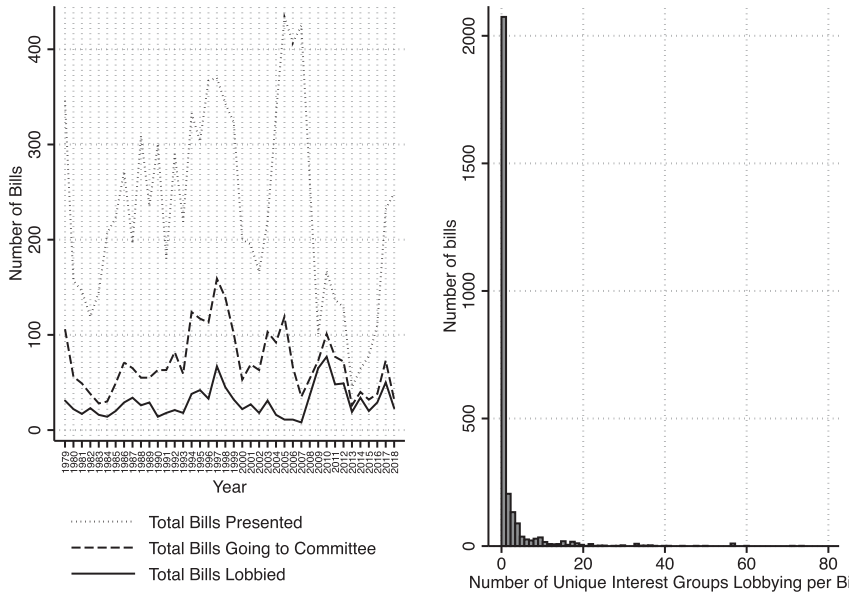

Figure 1. Participation of interest groups in committee meetings, from 1979 to 2019. (a) bills with at least one participant in committee debates; (b) distribution of the number of interest groups participating in committee debates.

Associations, Youth Associations, and Social Clubs, and, for the case of Ecuador, Ethnic Associations. Given the considerable activity of members representing Universities, we add a category that groups Universities. Finally, the Unclassified Associations include Retiree Associations (*Asociación de Jubilados*), Cultural Institutions (*Instituto Nacional de Patrimonio Cultural*), and Human Rights Associations (*Asociació Ecuatoriana de Derechos Humanos*).

Figure 2 presents the interest group network structures before and after the dollarisation and oil crises in Ecuador.[15] The figure displays interest group networks before (left panels) and after (right panels) the 1998 and 2014 crises. Color codings reflect industry communities, while the size is proportional to the number of edges to which a node is connected (i.e. degree). Finally, square nodes represent 'umbrella organizations,' an association or federation of interest groups. One readily observable characteristic of a network is its high- and low-degree nodes, describing their influence over the network. Among the high-degree nodes, also referred to as *hubs*, we find Chambers of Commerce and Construction from various cities. Particularly telling, however, is that umbrella organisations only become important nodes in the network *after* a crisis. For the post-oil crisis, for example, the Comité Empresarial Ecuatoriano, an umbrella organisation representing the major Chambers of Commerce, Production Associations, and Bank

Figure 2. Pre- and post-crisis interest group networks. Square nodes represent umbrella organisations. The size of each node is proportional to its degree centrality. Purple nodes represent Business, light green nodes represent Professional Membership, dark green nodes represent Labour Unions, and yellow nodes represent Universities.

Associations, went from a marginal player to one of the top three central nodes of the network. From this snapshot, it becomes clear that many interest group hubs are, as expected, umbrella organisations that serve as coordinators for smaller groups and associations. We also find that they activate during times of crisis.

Since our networks are not static, and interest groups are gaining and losing access, emerging and disappearing, welcoming and shedding members, participants in the networks (i.e. nodes) also change. One identifying characteristic of interest groups exiting the network is their level of specialisation or their clout within the market. For example, many labour unions representing workers in specific institutions (e.g. Employee

Association of Customs) or corporations (e.g. Employee Association of 'Tanasa'), were absent from the post-crisis lobbying scene. The same can be said about Business Associations from relatively smaller sectors, such as fishing (e.g. Chamber of Fishery, Association of Tuna Fishers). Within the network, many of these groups are unconnected nodes at the periphery, 'lone wolves' that do not coordinate with other interest groups.[16]

The opposite is true for groups entering the network. In addition to umbrella organisations entering the network (e.g. National Association of Businesspersons, National Federation of Chambers of Commerce), members of these umbrella organisations also become more active. The cluster of Business interest groups on the left side of the post-financial crisis network is made up of local Chambers charters coordinating with and through umbrella organisations.

Legislative behaviour and interest group coordination

The activity of interest groups will be conditioned, in part, by the changes in legislative activity. In Table 2 we present descriptive statistics on the legislative activity before and after the dollarisation and oil crises. Legislative activity declined rather substantively after the two crises in terms of both the total number of bills reaching committee as well as the number of bills that interest groups lobbied. The number of bills that reached committees decreased from 314 in the 1996–98 period to 153 between 1998 and 2000, a 49 per cent decline. Only 28 bills were lobbied after the crisis, compared to 56 before, or 50 per cent less. The numbers are similar for the oil crisis,

Table 2. Legislative activity before and after Ecuador's two recent crises.

	Financial Crisis	
	Before Crisis 1996–1998	After Crisis 1998–2000
Number of Bills	290	153
Number of Lobbied Bills	56	28
% of Lobbied Bills	19.3%	18.3%
Number of Economic-Related Bills	197	59
Number of Lobbied Economic-Related Bills	42	14
% of Lobbied Economic-Related Bills	21.3%	23.7%
	Oil Crisis	
	Before Crisis 2011–2013	After Crisis 2013–2015
Number of Bills	132	110
Number of Lobbied Bills	31	47
% of Lobbied Bills	21.9%	42.7%
Number of Economic-Related Bills	49	45
Number of Lobbied Economic-Related Bills	9	20
% of Lobbied Economic-Related Bills	18.4%	44.9%

Note: Only counting bills that reached committees. We cannot observe lobbying of bills that did not reach committees.

with declines of 21 and 24 per cent for both outcomes. The lower bill totals are partly the result of the types of bills being debated, as legislators introduce more general bills that seek to help the economy overall and that concern various sectors after crises. For example, in February of 2000, the 'Ley para la transformación económica del Ecuador' created the new monetary regime, new institutions aimed to regulate the financial sector, rules, and regulations for public spending, a new tributary regime, and a new labour code, among others. Similarly, after the oil crisis in 2014, the executive sponsored the 'Proyecto de Ley Oránica de Incentivos a la Producción y Prevención del Fraude Fiscal,' which modified the effective tax rate for small and medium-sized firms, while also eliminating some tax deductions to different productive sectors.

The rate at which bills are lobbied is roughly maintained in the 1998 crisis. The percentage of bills that affect interest groups, to the point they are willing to invest in lobbying, is not considerably altered pre- and post-crisis. What increases is the activity of interest groups. In the two-year period before the financial crisis of 1998, 134 interest groups lobbied bills, while 243 interest groups did so in the two years after the crisis (see Table 1). Note that the percentage of lobbied bills post-oil crisis increases from 22% to 43%, but interest group activity during that time also increased from 136 to 266 groups. This increase in the number of groups is similar in the financial crisis, as reported in Table 1. What this would suggest is that during the post-oil crisis, interest group activity was more disperse than in the financial crisis as a similar number of groups lobbied a greater number of bills. Thus, while there was an increase in the share of bills interest groups were willing to lobby (i.e. a change in the supply of bills), this change cannot bias the results in favour of our argument since it is harder to find denser communities if groups are spreading across a larger number of bills.[17]

We also argue that, despite these changes to the 'supply' of policy, interest groups still coordinated more actively when resources were limited. Take, for example, the *Proyecto de Ley de Aduanas*, a bill regulating customs activities that reached committee in early 1998, before the financial crisis. The Chambers of Commerce and Chambers of Production from Quito and Guayaquil lobbied for an autonomous regulatory Council. They agreed on the needs of a Council, the role of the Council, and the possible members of the Council. However, each interest group lobbied separately, agreeing on the global yet quibbling about certain details.[18] While there is overlap in their position, there is also no evidence of coordination. The same set of actors lobbied, post-crisis, the *Proyecto de Ley Antimonopolio y de la Libre Competencia*, an antitrust bill the proposed, among other elements, the creation of a regulatory Council. They presented a joint statement and argued, among other positions, that 'a free market regime cannot function without a regulatory authority to apply it.'

Similar behaviour is observed in other bills. As mentioned earlier, the pre-crisis *Proyecto de Ley Comercio Exterior e Inversiones*, a bill that promoted trade and investment by changing tariffs, garnered the attention of the business industry. The Federation of Exporters, the Chamber of Fishing, and the Association of Flower Exporters lobbied in support of the bill while also pushing for lower tariffs and greater tax incentives (for their individual groups), yet did so separately. The post-crisis *Proyecto de Ley para la Reforma de las Finanzas Públicas* modified the tax code, thus affecting public finance. Business associations lobbying the bill pushed for lower tax rates (across the board) and did so coordinating among each other. Increased coordination is likely a consequence of intense lobbying by interest groups from competing industries in favour of, for example raises to public services. The competition over resources pushed these business-sector interest groups to coordinate and secure more general, industry-wide gains over personal ones.

These examples not only describe coordination among interest groups. They also show that resource scarcity was an important concern for interest groups after a crisis. In a letter cosigned by several production Chambers from the El Oro province in response to the *Proyecto de Ley para la Reforma de las Finanzas Públicas*, they argue against a tax on mangrove swamp land (where shrimp, the main export of the zone, is grown) that was used to finance the Navy. In the same letter, the cosigners mention (and condemn) a report signed by an Army General, supporting the tax based on the need for those resources to finance Navy operations. In another letter, the Chamber of Radio Broadcasting criticises the decision to only exempt written press from paying the VAT. Similarly, various universities cosigned a letter arguing in favour of maintaining their allocation of funds from a special provision in the income tax. Hospital associations and the association of local municipalities requested the same.

The claims by interest groups were similar in other post-crisis bills. One telling example is the *Proyecto de Ley Reformatoria de la Ley de Regimen del Sector Eléctrico*, a bill introduced before and later re-introduced after the financial crisis, and where the same Labour Union lobbied the bill in both occasions. The Electric Workers Labor Union lobbied to avoid private ownership of the the public electric company, and post-crisis argued to that partial ownership should be granted to the workers, who should be able to buy stock at favourable terms. Thus, before the crisis, the Union lobbied alone. After the crisis, they cosigned the letter with an umbrella labour organisation. In both instances, labour unions were arguing against the privatisation of the electric company. In the post-crisis period, labour unions made more evident the competition against other (private) interests, especially when requesting stock participation in the company and haggling over the percentage.[19]

Interviews conducted with group representatives confirm the influence of resource scarcity in the post-crisis strategy used by interest group. For Patricio Alarcón, president of the Chamber of Commerce of Quito, the main goal of the Chamber was to change fiscal regulations, one of the main mechanism for Ecuadorian state to obtain resources.[20] They mentioned how the activation of the *Cámara de Empresarios*, an umbrella organisation representing various industrial chambers, was in part a reaction to tax and fees increases the government resorted to after the 2014 crisis. Their change in strategy, from less coordinated participation to a coordinated position through the *Cámara de Empresarios*, was to challenge the state in its quest for resources. While chambers in Ecuador have always favoured low taxes, the 2014 crisis lowered available resources and forced chambers to coordinate with other similar groups in their lobbying efforts. It made them adopt new coordination strategies that maximised their resources.[21]

While we acknowledge that interest group activity changes, in part, due to changes in legislation, we argue that the decision to coordinate participation also changes, and it is lead primarily by the changes in resources available, and the need for interest groups to procure them.

Finally, we look at the changes in the activity of interest groups. Overall, we observe greater interest group activity after the crises despite fewer bills being lobbied (see Table 3). There was a 102.5% and 141.6% increase in lobbying activity after the financial and oil crisis, respectively. There is also

Table 3. Interest group activity before and after crises.

	Financial Crisis		
Interest Group Category	Before Crisis 1996–1998	After Crisis 1998–2000	Change (%)
Business Associations	58	141	143.1%
Civil/Ethnic Associations	8	22	175.0%
Government	4	8	100.0%
Labour Unions	18	77	327.8%
Professional Membership Organisations	17	23	35.3%
Universities	22	26	18.2%
Other (Total)	30	21	−30.0%
Total Interest Groups	157	318	102.5%
		Oil Crisis	
Interest Group Category	Before Crisis 2011–2013	After Crisis 2013–2015	Change (%)
Business Associations	59	144	144.1%
Civil/Ethnic Associations	17	43	152.9%
Government	9	20	122.2.0%
Labour Unions	8	66	725.0%
Professional Membership Organisations	17	45	164.7%
Universities	34	71	108.2%
Other (Total)	40	41	0.0%
Total Interest Groups	178	430	141.6%

Note: The count is the total numbers of times interest groups lobbied a bill. If an interest group lobbied more than one bill, the interest group is counted more than once.

variation across sectors. During the financial and oil crises, interest groups representing Business Associations and Labour Unions became more active. Contrary, social interest groups, many representing the indigenous movement, took their discontent with the legal reforms to the streets and abandoned a substantial part of their lobbying activity in 2015. Changes in lobbying activity within academic circles illustrate how the 2013 crisis hit the state and those that depended on it especially hard. The academic sector became much more active after the crisis, lobbying 108.2 percent more bills than the previous period. But differences between public and private universities were particularly telling. Private universities increased their activity by 89 per cent and public universities increased by 121 per cent.

The rise of key actors

The presence of hubs in our interest group networks is not surprising. Previous studies have identified these types of interest groups (Box-Steffensmeier & Christenson, 2014, 2015; Heaney & Strickland, 2017). However, we are particularly interested in how key actors change their position in the network after a crisis. To do this, we focus solely on those interest groups that participate in both the pre- and post-crisis networks. From our theory, we expect the rise of key actors, as they aid coordination among community members and represent them in negotiations with other communities

Groups that remain are, as previously suggested, central to the network structure. In most cases, the remaining groups increase their importance in the network quite considerably. See, for example, the changes in the degree ranking before and after the dollarisation and oil crisis for interest groups that remained in the network, as presented in Table 4.[22] In both cases, the highest-ranking interest groups reached those positions only after the crisis, with a much starker change after the financial crisis.

More telling, however, is the *nature* of the interest groups whose centrality increases the most, umbrella organisations and factor-wide interest groups such as chambers of commerce or Professional Unions. For instance, after 1998, of the five interest groups with the largest increase in ranking, two are commerce councils (e.g. *Cámara de Comercio de Quito* and *Cámara de Comercio de Guayaquil*) and one is an umbrella organisation for a Professional Membership Association (e.g. Federación Nacional de Asociaciones de Servidores Públicos). Two other umbrella organisations become more central to the network as well: the Federation of Chambers of Commerce and the Confederation of Indígena Nationalities. The trend is similar during the oil crisis. The *Comité Empresarial Ecuatoriano*, an umbrella organisation created in 2004 by the most prominent business associations in the country, including the *Asociación de Bancos* and the *Cámara de*

Table 4. Network degree centrality by interest group, before and after a crisis.

Financial Crisis				
Interest Group	Ranking 1996–1998	Ranking 1998–2000	Change in Ranking	Type of Actor
Cámara de Comercio de Quito	14	1	13	Business Associations
Cámara de Comercio de Guayaquil	15	2	13	Business Associations
Cámara de la Construcción	1	3	−2	Business Associations
Federación Ecuatoriana de Empresas de Seguros	16	4	12	Business Associations
Federación Nacional de Cámaras de Comercio del Ecuador	9	5	4	Business Associations
Federación Nacional de Economistas del Ecuador	26	6	20	Professional Membership Assoc.
Federación Nacional de Asociaciones de Servidores Públicos	25	7	18	Professional Membership Assoc.
Asociación de Bancos Privados	5	8	−3	Business Associations
Confederación de Nacionalidades Indígenas del Ecuador	17	9	8	Civil/Ethnic Associations
Cámara de la Producción de Guayauquil	19	10	−9	Business Associations
Oil Crisis				
Interest Group	Ranking 2011–2013	Ranking 2013–2015	Change in Ranking	Type of Actor
Comité Empresarial Ecuatoriano	9	1	−8	Business Associations
Asociación de Bancos Privados	1	2	−1	Business Associations
Confederación Nacional de Organizaciones Campesinas, Indígenas y Negras	1	3	−2	Labour Union/Ethnic Associations
Coordinadora Nacional Campesina Eloy Alfaro	18	4	14	Labour Union/Ethnic Associations
Consejo de Pueblos y Organizaciones Indígenas Evangélicas del Ecuador	33	5	−28	Civil/Ethnic Associations
Bolsa de Valores de Quito	8	5	3	Business Associations
Consejo de Cámaras y Asociaciones de la Producción de Pichincha	2	7	−5	Business Associations
Universidad San Francisco de Quito	3	8	−5	University
Escuela Politécnica	22	9	−11	University
Cámara de Comercio de Quito	17	10	−7	Business Associations

Note: Interest groups in bold are considered umbrella organisations.

Comercio de Quito, became the most central interest group in the post-oil crisis network, something that was not the case in the pre-crisis network.

Note that when umbrella organisations lobby, they approach legislators on behalf of the interest groups they represent and are often joined by members of different constituent interest groups. Umbrella organisations do not lobby independently or substitute for other interest groups. Rather, they take on a leadership role for other IGs as they try to maximise their payoff from lobbying at a time of crisis. Umbrella organisations leverage the fact that there is power in numbers and provide other benefits of lobbying to constituent members, such as the option of publicising their activity to other paying members. Therefore, there is little incentive for interests groups

not to participate in this collective enterprise when resources are scarce. Indeed, during an economic crisis, interest groups will create more connections (with member of their same industries) which will increase density. Increases in density are independent of the number of interest groups. That is, the density measure is estimated relative to the total number of possible edges. The more nodes, the more possible edges, so the more realised edges required to increase the score. Since key actors are not replacing interest groups, but rather getting a more prominent role, the number of groups in each community does not decrease. However, the centrality of 'umbrella organization' rises.

In-group coordination

Another effect we predict economic crises have on interest group participation is an increase in in-group coordination (and a decrease in out-group coordination). In Figure 2 we can already observe that post-crisis networks are denser and that interest groups sort themselves across industry lines more readily both after the dollarisation and oil shocks. Also noteworthy is the amount of unconnected peripheral nodes in the pre-financial crisis network (top left panel). This finding reflects the 'lone wolves' phenomenon in political networks identified by Box-Steffensmeier and Christenson (2014). As our theory predicts, the number of lone wolves decreased after both downturns, although the drop is much more pronounced after 1998. Interest groups are indeed more likely to work alone to pursue their goals during times of economic expansion, but they abandon this strategy when a crisis strikes. Also evident from the post-crisis network graphs in Figure 2 is that interest groups sorted themselves along industry lines into tightly knit communities. Large nodes (i.e. high degree nodes) in post-crisis networks are more abundant and create tighter clusters around them. This occurs both within communities as well as across communities, suggesting that interest groups are creating better-sorted networks in times of crisis while also engaging with other communities.

While visualisations help communicate the intuition behind changes in networks over time, network statistics provide more definitive evidence for the effects of economic shocks on interest group behaviour in congress. Nodes within each industry have three options: they can lobby a bill together with an interest group from the same industry (in-group), with an interest group from a different industry (out-group), or lobby alone. After crises, we argue, interest groups will prioritize the first option. To estimate this change we rely on the levels of homophily of each industry group. Networks are described as having greater homophily when links are more likely to form between nodes with similar characteristics. In our case, the characteristic of

interest is the industry group each node belongs to. We use Krackhardt's E/I Index to estimate the level of homophily pre- and post-crisis. The E/I Index is an intuitive index that measures the relation between internal links (i.e. links between similar nodes) to external links (i.e. links between dissimilar nodes).[23] Values closer to +1 indicate more heterophily, while values closer to -1 indicate more homophily. Furthermore, we disaggregate Krackhardt's E/I Index and see the changes in intra- and inter-community ties across different industry groups.

The results for the levels of homophily are detailed in Tables 5 and 6, providing evidence for greater coordination within industrial groups. The Krackhardt's E/I Index in the post-crisis dollarisation decreased by .629 (from −0.219 to −0.848) and remained roughly the same in the oil network. This means that homophily *increased* for the post-crisis dollarisation network. However, the disaggregated results also suggest that the changes in homophily are conditional on how severely affected the industry is by the crisis. The 1998 crisis was financial, so we would expect business groups to be its primary victim. Indeed, the behaviour of Business Associations after the

Table 5. Krackhardt's E/I Index in Interest Group Networks Before and After the Financial Crisis (1996–2000).

	Financial Crisis	
	Before Crisis 1994–1998	After Crisis 1998–2002
Business Associations		
E/I	−0.515	−0.99
Internal	75.8%	99.6%
External	24.2%	0.4%
Civil/Ethnic Associations		
E/I	0.667	0.61
Internal	16.7%	19.7%
External	83.3%	80.3%
Labour Unions		
E/I	0.667	−0.60
Internal	16.7%	79.8%
External	83.3%	20.2%
Professional Membership Organizations		
E/I	NA	0.524
Internal	NA	23.8%
External	NA	76.2%
Universities		
E/I	−0.125	−1.000
Internal	0.56	0.0%
External	0.44	100.0%
Others		
E/I	−0.493	−0.059
Internal	74.7%	52.9%
External	25.3%	47.1%
Overall E/I	−0.219	−0.848

Note: When counting edges, we automatically drop all nodes that are unconnected. For our pre-financial crisis network this is particularly important. For this reason, there are no estimates for Professional Membership Organization estimates, as they only participated in committee debates alone.

Table 6. Krackhardt's E/I Index in Interest Group Networks Before and After the Oil Crisis (2011–2015).

	Oil Crisis	
	Before Crisis 2011–2013	After Crisis 2013–2015
Business Associations		
E/I	−0.667	−0.58
Internal	83.3%	79.0%
External	16.7%	21.0%
Civil/Ethnic Associations		
E/I	0.375	0.17
Internal	31.3%	41.5%
External	68.8%	58.5%
Labour Unions		
E/I	−1.00	0.25
Internal	100.0%	37.8%
External	0.0%	62.2%
Professional Membership Organizations		
E/I	NA	.714
Internal	NA	14.3%)
External	NA	85.7%
University		
E/I	0.556	−0.254
Internal	22.2%	62.7%
External	77.78%	37.3%
Others		
E/I	−0.286	−0.125
Internal	64.3%	59.4%
External	35.7%	40.6%
Overall E/I	−0.086	−0.052

Note: When counting edges, we automatically drop all nodes that are unconnected. For our pre-oil crisis network this is particularly important.

crisis is much different from the behaviour of professional organizations. The already tight business community became even more homogeneous after the crisis. This is particularly noteworthy if we consider that the number of business associations increased as well, but did so mostly in a coordinated way. Labour unions changed their behaviour in a similar way. In the pre-crisis network, labour unions lobbied bills coordinating mostly with non-labour unions. After the crisis, the relationship flipped, and labour unions participated in committee debates coordinating in their vast majority with other labour unions. Conversely, civil and ethnic associations and professional membership organizations, which were indirectly affected by the crisis, displayed a similar, less coordinated behaviour within their own groups. First, their connections to other communities increased substantially.[24] While all of these communities increased the *number* of internal edges, external edges still outnumber internal edges.

Results for the oil crisis are reported in Table 6. The sectors most affected by the 2013 downturn were universities and businesses. Business groups had developed industries that relied on contracts with an expanding state. Recall

that after 2000 the state in Ecuador expanded as oil revenues grew, leaving some sectors more vulnerable than others to a shortfall in government income. Similarly, with the growth of government spending the state became a major financier of higher education. As the table shows, the behaviour of universities and business associations followed a similar pattern to that after 1998. Business and Universities increased their activity and did so coordinating among interest groups from their own industry. This is not the case of Civil/Ethnic Associations or Labour Unions. The former, as previously suggested, was focused on pressuring government through contentious politics, while the latter became less relevant as a coordinated group, at least to negotiate resources in times of crisis. Labour Unions were more interested in playing a supporting role to Civil/Ethnic Associations– 32% of Labour Unions' connections were to Civil/Ethnic Associations–when lobbying in Congress.

Overall, Tables 5 and 6 provide strong but nuanced evidence for the predicted changes in coordination strategies before and after an economic crisis. Groups that are severely affected by crises prioritize their intra-community activity, while groups that are indirectly affected by a crisis tend to focus on generating stronger inter-community ties or, like the professional organization in Ecuador, as supporting interest groups to other communities.

Finally, to check that access to resources is the main driving motivation behind changes in interest group strategies, we limit our sample only to bills reaching economic- or labour-related committees. Not only do all the results hold, but in many cases they show a stronger effect than results from the pooled sample. The results are also more consistent using this alternative specification. For example, after the oil crisis, the E/I index of the Business Associations decreased from -0.52 to -0.82, suggesting that business interest groups were more likely to form coalitions with other business associations, rather than with other types of interest groups. We expand on the results from this robustness check in Appendix 3.

The unifying effect of crises

Since key actors are increasing their participation at the same time that communities are strengthening in-group links, we expect a dual effect of crises on the characteristics of interest groups across the network. On the one hand, we expect certain interest groups to unevenly rise in centrality. On the other, we expect that network, in particular industry-specific sub-networks, to be more closely connected.

We previously described key actors as interest groups with high degree centrality. As more interest groups with diverse preferences enter into a coalition, those actors within the community that are better suited to articulate common interests gain prominence. Some interest groups, such as the

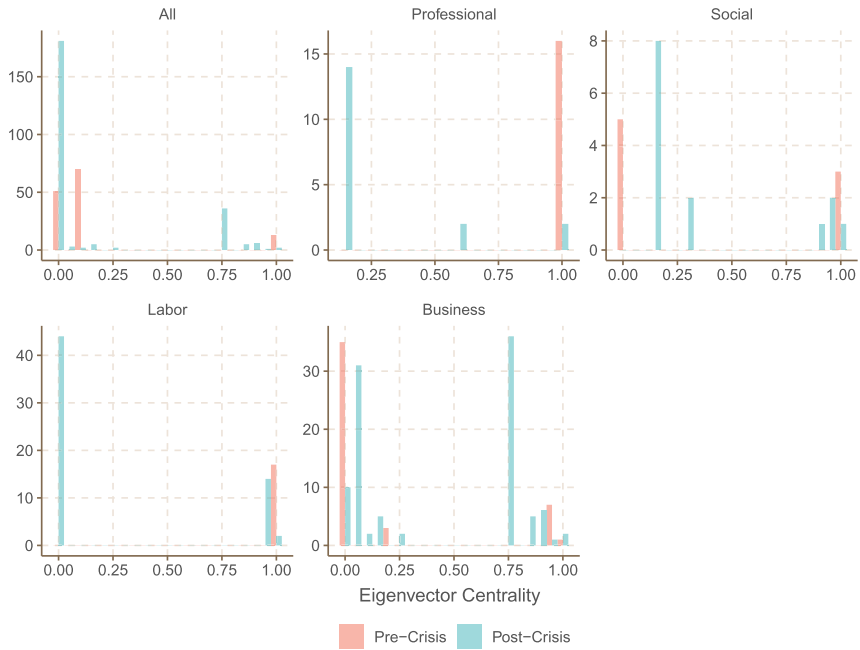

Figure 3. Eigenvector centrality histograms for interest group sub-networks, 1996–2000.

Chambers of Commerce, represent the interests of a wider variety of groups within a given community and their centrality is likely to increase faster than specialised interest groups. Figures 3 and 4 plot the distribution of eigenvector centrality scores for each interest group in the pre- and post-crisis networks. Eigenvector centrality is a measure of the influence of a node in a network relative to the connectedness of its neighbours. The first commonality across pre- and post-crisis (sub-)networks is their bimodal distribution.[25] That is, a few interest groups are more influential than the rest. However, post-crisis sub-networks have longer tails, showing that as the influence in the network increases, the number of groups decreases gradually. This would suggest that key actors surround themselves by other influential partners, rather than working on their own.

To more systematically evaluate the changes in the skewness of the distribution of degree centrality, we use degree centralisation (see Tables 7 and 8). Degree centralisation is a normalised measure of the variation of the degree scores of each interest group.[26] Similar to a Gini coefficient, higher values of degree centralisation would suggest a more unequal distribution of degree scores among interest groups. In general, degree centralisation increases in both post-crisis networks, but the increase is particularly stark for the financial crisis. Degree centralisation in the financial crisis network

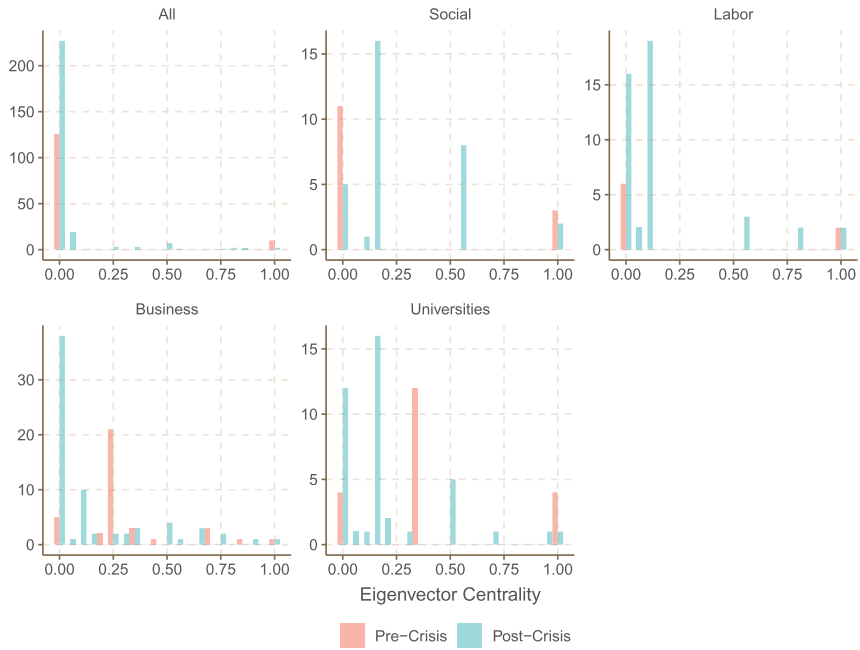

Figure 4. Eigenvector centrality histograms for interest group sub-networks, 2011–2015.

doubled from 0.096 to 0.186, suggesting that the distribution of degree across interest groups became more skewed. The changes in degree centralisation are particularly noteworthy for business associations, increasing from 0.18 to 0.33. For the oil crisis network we see that, overall, degree centralisation increased, but only moderately from 0.051 to 0.069. Nonetheless, other

Table 7. Network characteristics for interest group networks before and after the financial crisis (1996–2000).

Period	Type	Number of Edges	Density	Degree (Mean)	Degree Centralisation
Pre-Crisis (1996–1998)	Complete Network	215	0.024	3.209	0.096
	Business Associations	50	0.051	2.273	0.180
	Labour Unions	1	0.007	0.118	0.055
	Professional Membership	NA	NA	NA	NA
	Civil/Ethnic Associations	6	0.167	1.500	0.071
	Universities	18	0.118	2.118	0.180
Post-Crisis (1998–2000)	Complete Network	1707	0.058	14.049	0.186
	Business Associations	1348	0.278	27.510	0.325
	Labour Unions	185	0.108	6.379	0.151
	Professional Membership	5	0.037	0.625	0.158
	Civil/Ethnic Associations	12	0.114	1.714	0.176
	Universities	4	0.013	0.333	0.073

Table 8. Network Characteristics for Interest Group Networks Before and After the Oil Crisis (2011–2015).

Period	Type	Number of Edges	Density	Degree (Mean)	Degree Centralisation
Pre-Crisis (2011–2013)	Complete Network	140	0.015	2.059	0.051
	Business Associations	25	0.032	1.352	0.157
	Labour Unions	2	0.056	0.500	0.071
	Professional Membership	NA	NA	NA	NA
	Civil/Ethnic Associations	5	0.047	0.714	0.099
	Universities	8	0.038	0.800	0.116
Post-Crisis (2013–2015)	Complete Network	481	0.101	3.603	0.069
	Business Associations	98	0.038	2.761	0.161
	Labour Unions	44	0.045	2.000	0.163
	Professional Membership	2	0.004	0.121	0.028
	Civil/Ethnic Associations	34	0.064	2.125	0.254
	Universities	37	0.043	1.805	0.180

than a modest increase for Business Associations, all sub-networks saw dramatic increases in degree centralisation.

However, we also expect communities to be more closely connected after a crisis, which has the logical implication that interest groups should have more connections to other interest groups in the same industry. In network terminology, this translates into greater network density. Density measures the proportion of edges in a network relative to the total number of possible edges. Likewise, we expect interest groups to be better connected within their communities. Degree centrality captures how important nodes are in a network, on average. Specifically, it captures how many interest groups are connected to each interest group in the network. High degree interest groups are well connected in that they lobby many bills with other groups. Denser networks have stronger connections across nodes, increasing mean degree centrality. Since crises force interest groups to interact more frequently with each other, we expect degree centrality to increase on average in the network.

Density scores before and after the two crises are reported in Tables 7 and 8. After both crises, interest group networks became denser –the share of realised edges to potential edges increased. Network density increased from 0.024 before the financial crisis to 0.058 after the crisis. Business Associations formed the densest community following a five-fold increase after 1998, going from 0.051 before the crisis to 0.278 after. This means that business interest groups not only became more active but did so by connecting with more interest groups. The same is true for labour unions, even though to a lesser extent. This is, in part, a consequence of a lesser emphasis on the lone wolf strategy, and a preference for a more coordinated approach to lobbying. Similarly, after the oil shock of 2013, network density increased from 0.015 to 0.101. All of the sub-networks increased their density score, even though many of these changes were fairly modest.

The mean degree centrality increases overall in the post-financial crisis network, from 3.2 to 14.0, and the sharpest increase occurs within the business community, from 2.27 to 27.5. These results imply that after the financial crisis, interest groups had, on average, connections with 27 other interest groups, more than 20 groups when compared to the pre-crisis network. While the dollarisation network matches our theoretical expectations, the post-crisis network for the 2013 oil shock only does so partially. The average degree centrality increases modestly overall, from 2.1 to 3.6, with one of the most affected sectors from a contraction in state funds, universities, increasing its mean degree two-fold. While the changes post-oil crisis changes in the interest group network are still within out theoretical expectation, it is important to note that the strategy for most interest groups relied on limited coordination, lobbying in smaller groups, at least when compared to the financial crisis networks.

Finally, we expect coalitions to grow in size and, simultaneously, to decrease in number. Rather than defining coalitions on our own, we let the data estimate it for us. To do this, we use a Leading-Eigenvector community-detection algorithm to estimate the number of communities in our network.[27] We present the results in Table 9. First, in both post-crisis networks, the number of communities increase, from 11 to 13 partitions in the financial crisis and from 15 to 28 in the oil crisis. While counter to our theoretical expectations, it is not really surprising given the rise in interest group activity. Second, and in line with our theory, each community has a greater number of interest groups on average. After both crises, the average number of interest groups per community doubled. This suggests that interest groups are more likely to pursue a lone wolf strategy in times of economic expansion and abandon it after a shock.

In Figure 5 we present a heat map showing how the communities detected by the model before and after the financial crisis align with the industrial group categories. In the post-crisis network, nodes are concentrated in a few communities (1, 2, and 3), while nodes are more evenly spread across several communities in the pre-crisis network. Furthermore, in the post-crisis network, most business associations and labour unions have coalesced around the same communities. This gives further credence to the idea that after a crisis smaller communities in networks tend to merge with larger communities within their sectors in order to obtain more resources for themselves.

One important element to note is that Leading-Eigenvector modularity decreases in both post-crises networks. Initially, we would expect network modularity to increase after a crisis, as interest groups are more likely to coordinate with other members of their own community. However, as shown in Tables 5 and 6, not all industry categories change their coordination strategy in the same way. While business associations and labour

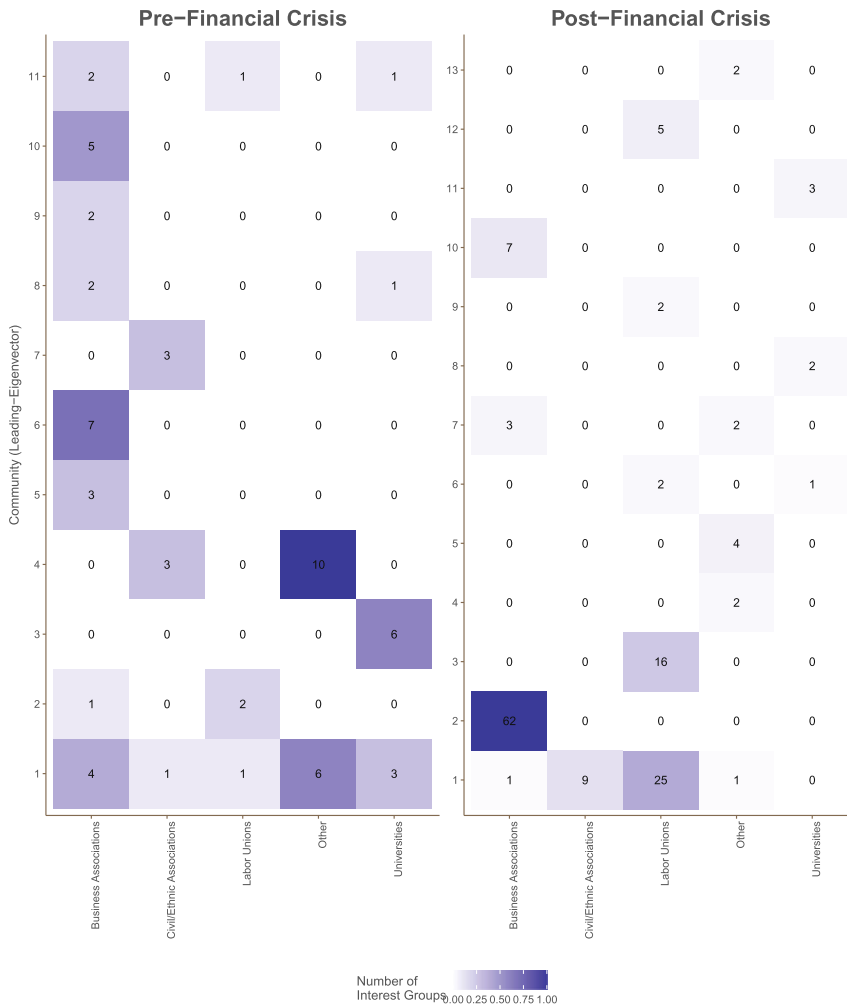

Figure 5. Pre- and Post-Financial Crisis Community Heat map.

unions follow a similar coordination pattern, industries not directly affected by crises (e.g. universities) will play more of a supporting role to these larger within-industry coalitions.

Additionally, our tests capture the lobbying strategies of interest groups that are interested in obtaining resources from the state as well as interest groups lobbying for unrelated matters (e.g. representatives of the lawyers guild lobbying for chances in the accreditation rules). When limiting the sample to economic-related bills, i.e. bills in which interest groups explicitly request monetary resources or lower taxes or fees, the modularity of the post-oil crisis network increases as predicted by our theory (see Table 9). Yet

Table 9. Interest group modularity before and after crises.

	Financial Crisis	
	Before Crisis 1996–1998	After Crisis 1998–2000
Modularity (Leading-Eigenvector)	0.71	0.38
Communities Detected (Leading-Eigenvector)	11	13
Mean Members per Community	5.82	11.90
Modularity (Economic-related Bills Only)	0.57	0.38
	Oil Crisis	
	Before Crisis 2011–2013	After Crisis 2013–2015
Modularity (Leading-Eigenvector)	0.80	0.77
Communities Detected (Leading-Eigenvector)	15	28
Mean Members per Community	4.53	6.21
Modularity (Economic-related Bills Only)	0.49	0.75

Note: Modularity and communities detected in networks without unconnected nodes.

modularity post-financial crisis network still decreases, which is counter to our theory. Further exploration of the adjacency matrix produced by the Leading-Eigenvector algorithm suggests that, in addition to greater coordination within industries, there was even greater coordination within regions. For example, while most the chambers of commerce and production created links among them (in part through umbrella organizations) eventually forming a community (per the algorithm), the community was sparse since the chambers from the coastal city of Guayaquil had greater ties among themselves, while the chambers from the capital Quito had greater links among themselves, and the same with the chambers from El Oro, a banana-producing region. Pre-financial crisis, the links between chambers from different regions did not exist. Thus, when they lobbied together, they did so *only* among themselves. The Leading-Eigenvector algorithm processes these as standalone dense communities, yielding a higher modularity score. However, the coordination was limited and only among a small group of interest groups.[28]

Conclusions

Using novel data from the Ecuadorian Congress between 1996 and 2015, we explore the behaviour of interest group networks before after two major crisis events, the financial shock of 1998 and the downturn of 2013 following a global crash in oil prices. We postulate that interest group networks will see more in-group coordination as a result of a need for greater collaboration among interest groups with similar interests. We also hypothesise that this process is led by few, highly influential interest groups, for example 'umbrella organizations.' Overall, economic crises have a unifying effect on interest groups with similar characteristics (e.g. policy interests).

We find strong evidence for the semi-modular effect in the overall network but with one caveat, namely, that community behaviour tends to diverge. Industries that are directly affected by the crisis will exhibit aggressive coordination, increasing activity, and intra-community ties. Conversely, sectors that are indirect victims of the crisis will seek to form stronger ties with the community as a whole as they bargain over a smaller pool of available resources. We also find that lone wolf strategies become less prevalent after a crisis, as fewer groups decide to pursue individual lobbying strategies.

Two more findings merit discussion here. One is that we find strong support for the hypothesis that networks become denser after crises, as nodes establish more connections with each other. However, nodes do not necessarily become more central. Rather, key actors within each community are entrusted by the general membership to lobby bills on behalf of the sector in order to obtain the largest possible share of resources for the community. Thus, overall centrality may decrease where this delegating effect is most pronounced.

This article makes important contributions to recent debates and opens the door to further research. First, it is the first piece in the authors' knowledge to apply detailed network analysis to interest group behaviour in the context of Latin America. While the Ecuadorian case is informative to other countries, it is important to take into account that the unregulated nature of lobbying in Latin America may differ in important ways from the one found in the United States and Europe. Further research must take into account the institutional differences across countries and how these differences will affect the incentives and the strategies available to interest groups when deciding whether to form a coalition. Constantelos (2007) notes, for example, the importance of taking into account the different levels at which lobbying takes place (e.g. the national level in Europe vs. at the European Parliament). Furthermore, different electoral systems (e.g. open-list vs. closed-list systems) and the strength of political coalitions can affect how effective different strategies might be, and how interest groups adapt to these scenarios. Second, we test some established propositions in a novel way, such as lone-wolf behaviour, while also providing new theoretical insights into interest group behaviour in congress. Future research will shine a light on the effect *different* crises, affecting different sectors, have on the patterns of coordination described above. Similarly, we uncover a 'delegation effect' in how interest group communities behave after crises, which we hope will entice further research as well.

Notes

1. Analizing several European countries, Hanegraaff and Pritoni (2019) show that interest groups might also join coalitions as a mechanism of organisational survival.

2. According to Box-Steffensmeier et al. (2019), strength is not always related to numbers, even though it can be, especially at the early stages of the policy-creation process.
3. While not directly studying group membership, Klüver (2013) shows that in the European context lobbying coalitions are formed by members of similar industries. Likewise, Kingstone (1999/2010) and Murillo (2001) present a similar pattern for business and labour interest in Latin America, respectively. In the empirical section, we show that this is also the case for the Ecuadorian case.
4. See Keller (2018), Woll (2012), and Quaglia (2010) for the effect of the 2008 financial crisis on European interest group strategies; Eilstrup-Sangiovanni (2019) for the effect resource changes have on transnational advocacy group strategies; and Mahoney (2007) for the effect contextual factors have on interest group success and strategies in the U.S. and Europe.
5. Interest groups will have individual identities linked to the members they represent. In addition to these identities, there are shared identities among interest groups. For example, two interest groups representing exporters will share the identity (and, thus, interests and preferences) of the broader exporter community. Members of a community with a shared identities are the 'in-group'; interest groups identifying with 'other' communities would be part of the 'out-group'.
6. Legislators have limited time and resources. Hall and Deardorff (2006) argue that lobbying works as a form of 'legislative subsidy', where interest groups provide information and labour to resource-constrained legislators. While we do not address this argument directly, our conclusions are not at odds with this view. However, we focus on the competition for resources.
7. Lowering taxes is also a mechanism to assign resources to firms. Furthermore, tax codes are often complex and nuanced, allowing for taxes, as well as subsidies, to be highly specific (Kim, 2017).
8. There are important differences/similarities between interest groups cosigning amicus briefs and, for example, interest groups cosigning letters sent directly to committee chairs debating a bill (one of the strategies used in this research to identify coordination). One similarity, for example, is the purposive and coordinated action entailed in cosigning both documents. We expand on the underlying decision of interest groups signing letters in the empirical section.
9. The financial crisis was endogenous, while the decision to dollarise the economy was not endogenous. The decision to dollarise the economy amid a financial crisis answer, not in small part, to the political clout of import-oriented firms who would benefit from a change in currency. However, the push to dollarise the economy was supported by a large part of the export-oriented sector, as they welcomed the currency stability that would come with the adoption of the dollar.
10. World Bank Databank: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=EC. Accessed May 2020.
11. In Ecuador, the law stipulates that interest groups can formally lobby for or against a bill only once the bill has reached a committee. Each committee in the Ecuadorian Congress is then required to produce a report with two key components. One is a detailed explanation of all changes made to the bill initiative during committee debates. The other is a list of all interest groups that participated in meetings where the bill was discussed. We extract interest

group names from each report to build a data set of interest group participation. These reports are held at the *Archivo-Biblioteca* of the Ecuadorian Congress. We thank the staff at the *Archivo-Biblioteca* of the Ecuadorian Congress for providing the raw versions of these reports.

12. Similar to other legislatures, in the Ecuadorian Congress less than 60% of bills reach committee (or are debated in committee). The allocation of bills to committees is a political rather than a technical process. Furthermore, despite the legal obligation for all bills to be assigned to a committee, committee chairs have the discretionary power to 'cajonear' – put in a drawer – a bill and not debate it at all.
13. We use the term 'industry' as employed by the Standard Industrial Classification (SIC), who include, for example, membership organisations such as political and religious groups. Furthermore, given the Ecuadorian context, the particular case studied in this paper, we add 'ethnic associations' to the categories. Thus, 'industry' does not necessarily mean a business-oriented organisation or lobbying group.
14. The SIC for Industry Groups for Membership Associations also includes political organisations such as Political Action Committees (PAC). In Ecuador, however, these types of organisations are prohibited by law.
15. We used the Fruchterman and Reingold algorithm to plot the networks as it places connected nodes closer to each other.
16. Box-Steffensmeier and Christenson (2014) coined the term 'lone wolves' to refer to interest groups who pursue this individual lobbying strategy.
17. More disperse interest group activity makes the evidence we present in favour of our theoretical argument stronger. If anything, having more groups lobbying more bills makes it more difficult to find higher density levels in the network.
18. The Guayaquil-based Chambers suggested headquarters of the Council be in Guayaquil, while the Quito-based Chambers argued for a restructuring of the customs authority, which included its move to the capital, Quito.
19. This was in part a consequence on the economic conditions that forced the state to push fiscal and market reforms. The second time around, after the crisis, the bill reached committee with more political support and urgency, with IGs lobbying together to obtain maximum payoffs in a context of low state resources.
20. Interview with Patricio Alarcón, Quito, October 10, 2019.
21. This is not to say that the competition of resources was the only reason interest groups change their strategy. Roberto Aspiazu, the president of the *Cámara de Empresarios*, suggested that their strategy was also dependent on the power of the executive and the relation between the executive and the legislature. However, these effects are unlikely to be captured by other data. For one, there was no change in executive or legislative cohort between 2011 and 2015, the period where the the oil crisis occurred (and the *Cámara de Empresarios* appears as a node in our network). This also remains constant before and after the financial crisis of 1998.
22. The degree centrality was estimated from the sub-network of interest groups that were present before and after each crisis. As robustness checks, we estimate the degree centrality of each group from the entire network and rank each group accordingly (see Appendix 1). The results remain unchanged.

23. The E/I Index is estimated by $\frac{EL-IL}{EL+IL}$, where EL is the number external links and IL is the number internal links.
24. Professional membership organizations only participated individually before the crisis.
25. A similar characteristic is observed by Box-Steffensmeier and Christenson (2015) in U.S. interest groups networks.
26. Freeman's (1979) general formula for centralisation is $C_D = \sum_{i=1} \frac{[C_D(N^*)-C_D(i)]}{(N-1)(N-2)}$, where $C - D(N^*)$ is the max centrality of network D.
27. Community detection methods (e.g. leading-eigenvector, walktrap) often rely on some heuristic to the maximisation of modularity within a network. Modularity captures the extent to which communities in a network have denser or more sparse intra- and extra-community ties (Newman, 2006; Newman & Girvan, 2004). There are no substantive differences, whether statistical or theoretical, in the results of different community detection methods. However, for our network, the partitions obtained from the leading-eigenvector community detection algorithm yields the highest modularity values.
28. We conduct further robustness checks in Appendix 2. We evaluate interest groups entering and exiting the network, as well as a comparison of the behaviour of only surviving interest groups. The results hold for different specifications.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendices

Appendix 1

In the main text, we are interested in the rise of key actors in the post-crisis networks. To evaluate their change in behaviour, we focus solely on those interest groups that participate in both the pre- and post-crisis networks. From that we create a degree centrality ranking and describe the pre- and post-crisis changes. As a robustness check, we estimate the degree centrality of each interest group, but do so using the complete network. Since there are different number of interest groups in the pre- and post-crisis networks, rather than ranking groups by degree centrality, we estimate their percentile position across the degree centrality distribution. We present the results in Table A1.

As suggested in the main text, groups that remain are central to the network structure. Many of the remaining groups have degree centrality scores within the top 90

Table A1. Network Degree Centrality by Interest Group, Before and After a Crisis.

Financial Crisis				
Interest Group	Percentile 1996–1998	Percentile 1998–2000	Change in Percentile	Type of Actor
Cámara de Comercio de Quito	.58	.98	+.40	Business Associations
Cámara de Comercio de Guayaquil	.58	.97	+.39	Business Associations
Cámara de la Construcción	.99	.87	−.12	Business Associations
Federación Ecuatoriana de Empresas de Seguros	.55	.87	+.32	Business Associations
Federación Nacional de Cámaras de Comercio del Ecuador	0.81	.87	+.06	Business Associations
Cámara de Comercio de Pastaza*	.67	.87	+.20	Business Associations
Federación Nacional de Economistas del Ecuador	.26	.73	+.47	Professional Membership Assoc.
Federación Nacional de Asociaciones de Servidores Públicos	.27	.73	+.46	Professional Membership Assoc.
Asociación de Bancos Privados	.86	.68	−.18	Business Associations
Confederación de Nacionalidades Indígenas del Ecuador	.57	.61	+.04	Civil/Ethnic Associations
Cámara de la Producción de Guayauquil	.26	.51	+.25	Business Associations
Oil Crisis				
Interest Group	Percentile 2011–2013	Percentile 2013–2015	Change *in Ranking*	Type of Actor
Confederación Nacional de Organizaciones Campesinas, Indígenas y Negras	.68	.99	+.31	Labour Union/Ethnic Associations
Coordinadora Nacional Campesina Eloy Alfaro	.68	.99	+.31	Labour Union/Ethnic Associations

(*Continued*)

Table A1. Continued.

	Financial Crisis			
Bolsa de Valores de Quito	.79	.96	+.17	Business Associations
Comité Empresarial Ecuatoriano	.90	.93	+.03	Business Associations
Consejo de Cámaras y Asociaciones de la Producción de Pichincha	.90	.93	+.03	Business Associations
Asociación de Bancos Privados	.92	.89	−.03	Business Associations
Consejo de Pueblos y Organizaciones Indígenas Evangélicas del Ecuador	.92	.88	−.04	Civil/Ethnic Associations
Cámara de Comercio de Guayaquil*	.55	.86	+.31	Business Associations
Universidad San Francisco de Quito	.97	.84	−.13	University
Pontificia Universidad Católica del Ecuador	.97	.84	−.13	University

Note: Interest groups in bold are considered umbrella organizations.Note 2: Interest groups with an * were not in the original ranking from the main text.

percentile within their networks. Furthermore, most centrality scores increase after each crisis. As suggested in the main text, there is, in particular, a raise in the centrality score of umbrella organizations (see Table A1, highlighted names). Note that the conclusions from the main text do not change whether we use the percentile (and compare the surviving interest groups with the complete network) or the ranking of degree centrality.

Appendix 2

To expand the discussion on the modularity results counter to our theory, we evaluate the number of unconnected nodes 'exiting' the network and the number of new interest groups 'entering' the network (un)connected. We find that 91% of lone wolves from the pre-financial crisis and 82% of lone wolves from the pre-oil crisis exited the network. In both crises, however, close to 68% of new interest groups entered the network in a coalition. Furthermore, the new groups that entered in a coalition did so with surviving pre-crisis interest groups. In other words, the

Table A2. Krackhardt's E/I Index in Interest Group Networks Before and After the Financial Crisis (1996–2000), Surviving Interest Groups Only.

	Financial Crisis	
	Before Crisis 1994–1998	After Crisis 1998–2002
Business Associations		
E/I	−0.57	−1.00
Labour Unions		
E/I	1.00	−1.00
Universities		
E/I	0.20	NA
Overall E/I	−0.1538	−0.91

Note: When counting edges, we automatically drop all nodes that are unconnected. For this reason, there are only estimates for Business Associations and Labour Unions, as the rest of interest groups only participated in committee debates alone.

increased interest group activity expanded the number of interest groups while shaping the behaviour of existing ones. The new groups that entered the network, who in part replaced former lone wolves, were more likely to be in a coalition. These coalitions included 'surviving members', who in turn increased their relative network centrality.

More importantly, the aggregate results do not fully reflect the changes in modularity since the effect of the crisis was not homogeneous across industries. For example, business interest groups and labour unions were particularly affected by the 1998 economic crisis and their lobbying activity post-crisis increased, as expected. This explains why, when we break up the results by industry, we see the expected raise of internal edges, and drop of external edges, for the business associations and labour group communities (see Table XX in the main text).

To complement this answer, we subset the network to include groups that only appear before *and* after the crisis. This is a robustness check intended to show that our argument is unaffected by changing network membership over time. The changes in the network structure are as expected. First, coordination within communities (especially between members of the business industry) increases while connections across industries decrease. For example, the Krackhardt's E/I Index for the the financial crisis network decreases (i.e. the within community edges increase and the across-community edges decrease) from −.53 pre-crisis to −1.0 post-crisis (see Tables A2 and A3. Second, the centrality measures of umbrella organizations increase. Interest groups like the *Comité Empresarial Ecuatoriano* raised their centrality scores, as well as their ranking, in the post-crisis networks.

Appendix 3

In the main text we argue that access to resources is the main driving motivation to changes in the strategies of interest groups. The networks are constructed using all the bills that reached committees in the Ecuadorian Congress pre- and post-crisis. However, the bills reaching committees during that period did not exclusively address economic-related topics. Our results could be actually reflecting the changes in coordination strategies from groups lobbying other types of bills and for other reasons. To check that access to resources is the main driving motivation behind changing interest groups strategies, we limit our sample only to bills reaching economic- or labour-related committees. Not only do all the results hold, but in

Table A3. Krackhardt's E/I Index in Interest Group Networks Before and After the Oil Crisis (2011–2015), Surviving Interest Groups Only.

	Oil Crisis	
	Before Crisis 2011–2013	After Crisis 2013–2015
Business Associations		
E/I	−0.81	−0.85
Labour Unions		
E/I	−1.00	0.33
University		
E/I	−1.00	−1.00
Overall E/I	−0.89	−0.45

Note: When counting edges, we automatically drop all nodes that are unconnected. For this reason, there are only estimates for Business Associations, Labour Unions, and Universities, as the rest of interest groups only participated in committee debates alone.

Table A4. Network characteristics for interest group networks before and after the financial crisis (1996–2000), economic- and labour- related bills only.

Period	Type	Number of Edges	Density	Degree (Mean)	Degree Centralization
Pre-Crisis (1996–1998)	Complete Network	118.000	0.02	2.41	0.14
	Business Associations	38	0.05	1.9	0.21
	Labour Unions	1	0.02	0.18	0.08
Post-Crisis (1998–2000)	Complete Network	1684	0.08	16.35	0.198
	Business Associations	1338	0.33	29.7	0.31
	Labour Unions	187	0.14	7.19	0.15

many cases they show a stronger effect than results from the pooled sample. The results are also more consistent using this alternative specification. In Tables A4 and A5 we show the changes in the networks' characteristics.

From the main text, we expect that after a crisis communities become more connected, which has the logical implication that interest groups should have more connections to other interest groups in the same industry. In network terminology, this translates into greater network density. Density measures the proportion of edges in a network relative to the total number of possible edges. Likewise, we expect interest groups to be better connected within their communities. Degree centrality captures how important nodes are in a network, on average. Specifically, it captures how many interest groups are connected to each interest group in the network. High degree interest groups are well connected in that they lobby many bills with other groups. Denser networks have stronger connections across nodes, increasing mean degree centrality. Since crises force interest groups to interact more frequently with each other, we expect degree centrality to increase on average in the network.

When looking only at bills legislating economic-related issues, interest group networks became denser – the share of realised edges to potential edges increased. Network density increased from 0.02 before the financial crisis to 0.08 after the crisis. Business Associations formed the densest community following a five-fold increase after 1998, going from 0.046 before the crisis to 0.327 after. This means that business interest groups not only became more active but did so by connecting with more interest groups. Similar increases can be seen across all networks and subnetworks, even though many of these changes were fairly modest.[29]

The mean degree centrality increases overall in the post-financial crisis network, from 2.41 to 16.35, and the sharpest increase occurs within the business community, from 1.9 to 29.7. These results imply that after the financial crisis, interest groups had, on average, connections with 30 other interest groups, more than 28 groups higher when compared to the pre-crisis network. The same can be seen, to a lesser

Table A5. Network characteristics for interest group networks before and after the oil crisis (2011–2015), Economic- and Labour- Related Bills Only.

Period	Type	Number of Edges	Density	Degree (Mean)	Degree Centralization
Pre-Crisis (2011–2013)	Complete Network	38	0.04	1.65	0.14
	Business Associations	25	0.06	1.72	0.18
	Labour Unions	2	0.10	0.50	0.18
Post-Crisis (2013–2015)	Complete Network	203.000	0.02	2.80	0.17
	Business Associations	88	0.08	3.26	0.19
	Labour Unions	21	0.04	1.24	0.114

Table A6. Krackhardt's E/I Index in Interest Group Networks Before and After the Financial Crisis (1996–2000), Economic- and Labour- Related Bills Only.

	Financial Crisis	
	Before Crisis 1994–1998	After Crisis 1998–2002
Business Associations		
E/I	−0.38	−0.99
Civil/Ethnic Associations		
E/I	0.0	0.61
Labour Unions		
E/I	0.50	−0.56
Professional Membership Organizations		
E/I	NA	0.524
Universities		
E/I	−0.24	−1.000
Others		
E/I	0.08	−0.059
Overall E/I	−0.203	−0.846

Note: When counting edges, we automatically drop all nodes that are unconnected. For our pre-financial crisis network this is particularly important. For this reason, there are no estimates for Professional Membership Organization estimates, as they only participated in committee debates alone.

degree, in the oil-crisis networks. Furthermore, these results show a bigger change when compared to the ones seen in the pooled network.

A similar change is observed when analysing the edges within and across industries in the pre- and post-crises networks. Not only do the results hold (i.e. interests groups are more likely to form edges with other interest groups from the same industry), but they conform better to our theoretical expectations (see Tables A6 and A7. For example, after the oil crisis the E/I index of the Business Associations decreased from −0.52 to −0.82, suggesting that business interest groups were more likely to form coalitions with other business associations, rather than with other types of interest groups. We do not see the same change in the pooled networks.

Table A7. Krackhardt's E/I Index in Interest Group Networks Before and After the Oil Crisis (2011–2015), Economic- and Labour- Related Bills Only.

	Oil Crisis	
	Before Crisis 2011–2013	After Crisis 2013–2015
Business Associations		
E/I	−0.515	−0.814
Civil/Ethnic Associations		
E/I	NA	0.67
Labour Unions		
E/I	−1.00	0.14
Professional Membership Organizations		
E/I	NA	.714
University		
E/I	1.0	0.714
Others		
E/I	1.0	0.733
Overall E/I	−0.37	−0.172

Note: When counting edges, we automatically drop all nodes that are unconnected. For our pre-oil crisis network this is particularly important.