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THE GLOBAL NETWORK OF CORPORATE CONTROL: POLITICAL IMPLICATIONS

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INTRODUCTION

The recent discovery by systems analysts at the Swiss Federal Institute of Technology in Zurich that the world of transnational companies is dominated by a small core of interconnected firms is both new and potentially very significant.¹ It appears that in 2007 a group of 295 transnational companies (TNCs) connected to each other by cross-shareholdings held sufficient shares in other TNCs to enable them to control 38 per cent of the total operating revenue of the 43,060 TNCs worldwide covered by the study. This finding that 0.7 per cent of TNCs controls nearly 40 per cent of TNC income depicts a concentration of control that is wholly unanticipated.

What does it mean? How did the researchers discover it? How reliable are these findings? In this paper I provide answers to these questions and begin the process of drawing out and evaluating the implications of this discovery for our understanding of politics.

A NEW DISCOVERY

This is our first ever picture of the network of control among TNCs worldwide because the relevant data was not available until Bureau Van Dijk constructed its ORBIS company database a few years ago. This gathers together and organises publicly available information from company annual reports, correspondence with companies, filings with the US Securities and Exchange Commission, stock exchange records, national-level providers of financial information from annual accounts filed with official registers, company websites, phone calls to companies, and press news.² By 2007, when the study was varied out, it covered over 30 million firms.³

The authors' first move was to pick out the 43,060 TNCs on the database, defined as firms which hold at least 10 per cent of the shares of a firm located in another country, and trace the patterns of their shareholdings in order to put together a map of all the ownership pathways originating from and pointing to TNCs.

This revealed that in 2007 a small interconnected group of mainly American and European (mostly British) TNCs owns a disproportionate share of TNCs in general: the ownership network of TNCs worldwide consists of a core and a periphery.

The authors use a slightly more complicated version of this structure to organise our understanding of the broad pattern of ownership relations among TNCs: a bow-tie structure.⁴

- The knot of the bow tie consists of 295 TNCs connected by a network of cross-shareholdings so dense that three quarters of the shares of these CORE firms are owned by other CORE firms. Together the operating revenue of this group of firms constitutes 19 per cent of the total operating revenue of all TNCs put together;
- The right-hand OUT section of the bow tie consists of firms that are owned at least in part by CORE firms but do not themselves have shares in CORE firms. The 6,488 TNCs here account for just under 60 per cent of total global TNC operating revenue;
- The left-hand IN section consists of 282 TNCs that own shares in CORE firms but in which CORE firms themselves do not own shares. These account for just 2 per cent of total global TNC operating revenue.
- The semi-detached tube and tendril (T&T) extensions to the bow tie (the bits that go around your neck) consist of 8,246 TNCs that can be said to be connected to the core by ownership pathways only if you ignore the direction of ownership: if you follow an ownership pathway between the core and these TNCs you find a point at which the firm indirectly owned by one or more CORE firms does not own shares in the next firm but instead is part-owned by this firm. For this reason the ownership pathways do not result in CORE firms owning any shares in T&T firms, or vice versa. T&T firms account for 14 per cent of global TNC operating revenue;
- The 27,569 TNCs that are not connected to the core at all account for just 6 per cent of total global TNC operating revenue.

So we have a core of just under 300 interconnected TNCs with ownership stakes in about 6,000 other TNCs. Together these CORE and OUT TNCs accounted for fully 80 per cent of the operating revenue generated by TNCs worldwide. This is a degree of concentration that is quite surprising, even shocking. We knew that some TNCs were more powerful than others, but these findings suggest that the world of TNCs is pretty much under the control of a relatively tiny directorate of elite firms.

But before we jump to this conclusion we need to pause a moment. To what extent do these ownership links represent real control? If you own a few shares in BP, does this give you any control over what BP does? Obviously not. But owning all the shares would unquestionably bring control. Where do you draw the line? What is the minimum percentage of voting shares that enables you to begin to exert real influence over the composition and actions of firm managements?

The authors tackle this question by applying three distinct models for inferring control from ownership. Their preferred threshold model makes the reasonable assumption that ownership of over 50 per cent of a TNC's shares generally brings 100 per cent control. In such cases other shareholders are deemed to have zero control. Where there are no majority shareholders, the percentage of control is deemed to be the same as the percentage of voting shares owned.⁵

This means that the pattern of the network of control defined by the threshold model is the same pattern as the network of ownership apart from the disappearance of links based on minority shareholdings where there is a majority shareholder: the control network is somewhat sparser than the ownership network.

The authors then apply the threshold model to the task of measuring the extent to which TNCs control each other, as follows:⁶

1. Proceed downstream from each TNC to identify all TNCs in which it has a direct or indirect shareholding and the percentage of voting shares represented by each ownership link;
2. Use the threshold model to derive a figure for the percentage of control represented by each link;
3. Calculate the percent control held by each TNC in each TNC over which it has some measure of control (downstream TNC) by multiplying the figures for per cent control of all the links connecting them.

But this only gives the percentages of control held by individual TNCs in other individual TNCs. How can these be added together to get an aggregate measure of how much control CORE firms can exert? You can't just average the figures for control because it is not just how many TNCs you control that matters but also how big they are.

The authors' solution is to focus on economic value. This may not be the only possible measure, but it is certainly of interest. The specific measure chosen is their operating revenue: what these firms bring in for their owners. While other measures of economic value might have been chosen instead, such as market capitalisation or sales, operating revenue is undoubtedly an important indicator of economic value.

The calculations for operating revenue controlled by TNCs are based on the threshold model used earlier. If, for example, one TNC has 100 per cent control of another TNC, it is deemed to control 100 per cent of its operating revenue. If the TNC controls 40 per cent, and there is no majority shareholder, it is deemed to control 40 per cent of the downstream TNC's operating revenue. And so the methodology has two further steps:⁷

4. Calculate the operating revenue controlled by each TNC in each of the TNCs downstream from it by multiplying the figures for percentage control by the operating revenue of each downstream TNC;
5. Obtain a figure for the total operating revenue controlled by each TNC by adding the figures for operating revenue controlled in all downstream TNCs and expressing the result as a percentage of the total operating revenue of all TNCs in the study (note that the TNC's own operating revenue is not included).

This is not the whole story, as we shall see, but it does set out the underlying logic.

Applying this procedure reveals that the operating revenue controlled by CORE firms through their shareholdings was much greater than the amount generated by their own activities:⁸

- Although they accounted for just 19 per cent of the value of global TNC revenue, the 295 CORE TNCs controlled 38 per cent;
- The 6,500 OUT TNCs, which generated 60 per cent of global TNC operating revenue, controlled just 1 per cent – that is, the shares they owned in other TNCs were not sufficient to enable them to control much at all;
- The 282 IN TNCs, which generated only 2 per cent of global TNC operating revenue, controlled 30 per cent;
- The 8,000 semi-detached T&T firms controlled just 10 per cent;
- The 28,000 TNCs that were not connected to the core at all controlled just 0.2 per cent.

The picture which emerges is a very clear one: in 2007 the world of TNCs was dominated, via ownership relations, by a very small core of just under 300 firms. This corporate elite constituted just 0.7 per cent of the TNCs in the study.

As well as being powerful collectively, CORE firms were often powerful individually. Seven of the top ten TNCs, which jointly controlled nearly 20 per cent of total global TNC operating revenue, were CORE firms, and 23 of the top 30. The biggest, Barclays, controlled 4 per cent of total global TNC operating revenue all by itself.⁹

1. Barclays (CORE, UK)
2. The Capital Group Companies (IN, US)
3. Fidelity Investments (IN, US)
4. AXA (CORE, France)
5. State Street Corporation (CORE, US)
6. JP Morgan Chase (CORE, US)
7. Legal and General Group (CORE, UK)
8. Vanguard Group (IN, US)
9. UBS (CORE, Switzerland)
10. Merrill Lynch (CORE, US)

IN firms can also be big: it is they which took the three non-CORE places in the top ten. These are firms which are independent of the core in the sense that none of their shares are owned by CORE firms. In some cases this is because they are not the sorts of entities that issue shares at all. Some, for example, are state authorities. Others are individuals or families. So to some extent the revealed pattern of ownership and control is a consequence of the nature of the types of economic entities active today.

We also see that 80 per cent of the operating revenue of TNCs worldwide was controlled by just 737 of the 43,060 TNCs covered by the study. These topholders were mostly but not exclusively CORE and IN firms. Most of the biggest topholders were either American or British, and most of the rest were European. The top non-Western (Japanese) firm only gets in at 23.

It is noticeable that financial firms dominate. All of the top ten TNCs were banks or financial firms of some sort. This is hardly surprising, as financial firms are the ones with money to invest both on their own account and on behalf of others. TNCs that actually produce things have their money tied up in production facilities. So once again we can see that there is a certain inevitability about the pattern we see due to the nature of the participants: financial TNCs were always likely to form the basis of one or more cores, being likely to take shareholdings in each other as well as in other types of firms, while industrial TNCs were always likely to end up as OUT firms. Of the 78 banks among the topholders, for instance, 77 are CORE or IN firms, compared to just 10 of the 31 manufacturing firms listed.

So the significance of the study is not so much that there is a core-periphery structure as that there is just one core and that this core is so small and controls so much.

HOW RELIABLE ARE THESE FINDINGS?

The ORBIS database is the best source of information we have for this sort of analysis. It includes more TNCs than any other database and its ownership figures are verified by checking them across different sources.¹⁰ Although the administrative information on which it is based can be incomplete, of poor quality, or internally inconsistent,¹¹ shares are legally defined entities that shareholders want accurately recorded, so there are major actors with a strong incentive to ensure that the information is in fact accurately recorded. It is difficult to think of any sources of information that might provide a more accurate picture of shareholdings.

The main problem is missing cases: the number of companies for which Bureau van Dijk has ownership data is much smaller than the total number of firms in the ORBIS database, and ORBIS itself is not universal in its coverage. In 2011 there were 20 million companies in the ownership database compared with 75 million in ORBIS.¹² Although most if not all of the bigger TNCs may well be included in the ownership database, their size making them difficult to miss, it seems unlikely that the analysis includes all TNCs worldwide.

There is also an issue of missing values, as Bureau van Dijk does not claim to have collected all the ownership links of all firms in the ownership database.¹³ The study therefore under-estimates the density of links in the ownership network. For this reason it may well under-estimate the number of TNCs that qualify as CORE on account of the density of their ownership links with CORE firms.

A further problem is that although the share data is supposed to indicate percentages of voting shares, the database documentation states that ‘when there are 2 categories of shares split into *Voting/Non voting shares*, the percentages that are recorded are those attached to the category *Voting shares*’.¹⁴ This means that where a source does not distinguish between voting and non-voting shares, the ORBIS figures may in some instances count non-voting shares as voting shares. To the extent that this occurs, it will affect calculations of control and could lead to inferring control where none exists, in cases where some of the shares held by the supposedly controlling firm are non-voting shares, and to missing relations of control that do exist, where the shareholdings of minority owners are inflated by non-voting shares to the extent that the actual majority shareholder looks like they don’t have a majority of voting shares.

The question is how widespread these errors are likely to be. In the absence of data from Bureau van Dijk concerning which sources do not make the voting/non-voting distinction, we have to make an estimate based on studies of firms at national level. The latest available figures, from the late 1990s, tell us that the problem is restricted to a subset of countries. Firms did not issue multiple class shares at all in Belgium or the Netherlands in Europe; in China, India, Japan, Indonesia, Israel, Malaysia, Philippines, Taiwan, Thailand, Saudi Arabia or Singapore in Asia; or in Argentina. Less than one per cent of Spanish firms issued multiple class shares, and just 3 per cent of firms in France and 8 per cent in the US. Multiple class shares were also rare in Australia, Chile, Hong Kong, Luxembourg, Mexico, New Zealand and Turkey. The proportion of firms issuing them was higher in Austria (23 per cent), Britain (24 per cent), Ireland (28 per cent), Germany (18 per cent) and Norway (13 per cent). But only in some countries was this practice widespread: Sweden (66 per cent of firms), Switzerland (51 per cent), Italy (41 per cent) and Finland (38 per cent). It was also frequent in Denmark, Canada, Brazil, Korea and South Africa.¹⁵ If we focus on the ten countries that host the most TNCs, judging by the list of 737

topholders, we see that multiple class shares were widespread in Italy, Sweden, Switzerland and Canada, fairly widespread in Britain and Germany, but rare or non-existent in the US, France, the Netherlands and Japan. While do not know whether this was true of TNCs in 2007, there is no reason to think that the underlying pattern of only some countries being affected is different.

Furthermore, even in the affected countries the problem is not as serious as the figures suggest because ORBIS excludes non-voting shares where its sources of information identify them. The significance of the problem is attenuated further by the fact that counting non-voting shares as voting shares will not always lead to erroneous attributions or denials of control. It follows that although the inclusion of non-voting shares in ORBIS figures for voting shares is a source of error for estimates of TNC ownership and control, this is only likely to be significant for a few countries. For this reason I conclude that the existence of this type of error does not invalidate the overall finding that the world of TNCs is dominated by a small interconnected core.

To sum up, the data is fairly solid but there isn't enough of it. But it is the best data we have. Previous studies of firm ownership and control have analysed much smaller sets of companies. The seminal study of Berle and Means, for example, analysed 200 American companies.¹⁶ La Porta, Lopez-de-Silanes and Shleifer's study of the 27 richest economies examined 691 firms.¹⁷ Faccio and Lang analysed 5,232 corporations in 13 West European countries.¹⁸ Gadhoun, Lang and Young looked at 3,607 American corporations.¹⁹ And the missing cases/values problem cannot be circumvented by analysing a random sample of TNCs instead because any such sample would need to be drawn from the underlying population of TNCs, for which the best approximation is the set of TNCs included in ORBIS.

The main problem with the methodology is that the models for inferring control from ownership all lead the authors to over-estimate the density of the network of control. This is because all three ascribe some measure of control to shareholdings that are so small that there is no way that they can enable their owners to exert any control in practice. Can ownership of, say, 0.2 per cent of a company's shares enable one to exert control over that company? Obviously not. The study therefore over-estimates the extent to which CORE firms control other firms, including each other. For this reason a more realistic picture may well reveal that the core is smaller and weaker than depicted in the study. It might even reveal that there is no single central core at all.

One obvious remedy for this bias would be to amend the authors' threshold model to ascribe zero control to all shareholdings below a certain level. This need not be 50 per cent because a stake as low as 20 per cent, or even 10 per cent, can be enough to bring effective control of a company when no other shareholders have significant holdings.²⁰

The other problems are technical and affect the figures for percentage control rather than the pattern of the control network.

First, the authors point out that their method overestimates the operating revenue controlled by firms that are either part of cycles (including cross-shareholding structures) or upstream of cycles.²¹

Cross-shareholdings exist when two companies have shares in each other. The problem is best illustrated by an example. If A owns 50 per cent of the shares in B, and B and C own majority shareholdings in each other, the algorithm that traces control links will go from A to B to C to B to C to B to C and so on, thus over-estimating the operating revenue controlled directly by B and indirectly by A.

Cycling structures are similar but involve more companies. The authors found several types:

- $A \rightarrow B \rightarrow C \rightarrow A$
- $A \leftrightarrow B \rightarrow C \rightarrow A$
- $A \leftrightarrow B \leftrightarrow C \rightarrow A$
- $A \leftrightarrow B \leftrightarrow C \leftrightarrow A^{22}$

In such cases the algorithm that calculates how much operating revenue a TNC controls will proceed around the circuit(s) indefinitely and thereby inflate the figures for the revenue controlled by these firms and thus by firms upstream of them.

The authors' solution is to remove all the ownership links that point back towards the shareholding TNC before performing the calculation.²³ In the cross-shareholding example this means removing the link from C to B, so that the calculation counts $A \rightarrow B$ and $B \rightarrow C$ but not $C \rightarrow B$. In the cycling examples it means removing all backward facing links as well as the forward facing link from C to A. It seems clear that this does eliminate the problem.

The second problem is that the method of calculation results in TNCs that own shares in core firms but in which core firms do not have shares – IN firms - being credited with controlling all the operating revenue of all the firms in which, directly and indirectly, they have shares regardless of the percentages of voting shares involved.²⁴ However it is unclear why this should happen. It is also unclear how the authors deal with this problem.

Enterprises of this nature are seldom perfect. Data is rarely complete and methodological problems often require workarounds and compromises. This study is no exception. Yet the data is generally solid and the methodology mainly sound. The only significant problem is the over-estimation of the number of control links among TNCs, as this may have led to the identification of a pattern of control that is different from what would have been generated by a more realistic methodology.

Having said this, the core-periphery pattern that emerges from the analysis is so clearcut that it seems unlikely that reality is much different: the core may be bigger or smaller, and control more or less operating revenue, but it seems unlikely that the basic core-periphery structure that we see is merely an artefact of imperfect data or research methods. Pending replication of the study using a better methodology, and in the absence of any competing findings, it is therefore reasonable to accept these results as the most accurate picture that we have to date of the structure of ownership and control among TNCs.

POLITICAL IMPLICATIONS

The finding that such a large proportion of TNCs is controlled by such a small and cohesive group of firms is completely new. Some may have suspected it but until now there has been little evidence. Previous studies have focused on the national level, and have often specifically excluded TNCs.²⁵

What does it mean? Does it indicate that there is a united cabal of CORE TNCs that deliberately coordinate their actions with those of the TNCs they control? This seems unlikely. The authors

have established that CORE TNCs have the power to influence many other TNCs but they have not shown – and do not claim - that they actually exercise this power.

On the other hand, the idea that CORE TNCs have control of other TNCs but never use it is also absurd. So we must expect that CORE TNCs do have some degree of influence on the TNCs they control, and possibly on each other as well.

If so, how would this work?

One way would be by causing a homogenisation of views and actions among CORE and OUT TNCs. If a CORE firm controls an OUT firm or another CORE firm, it can oust the managements of these firms if they step too far out of line. They may also be able to intervene directly in management decisions. This means that over time the views and actions of controlled firms will tend to become more similar to those of the firms that control them.

It follows that we should expect the policy preferences of CORE and OUT firms to become more similar over time. Government policies relating to business are a constant focus of attention for TNCs as they try to get the best deal they can from governments. It would be surprising if any homogenising effect left attitudes to government policies untouched. We should therefore expect the policy preferences of OUT firms to become more CORE-like, and the preferences of CORE firms to converge.

The longer the core has been in existence, the more pronounced one would expect this effect to be. And it is possible that the core has existed for a long time. Although we have no evidence on this, and no doubt firms enter and leave the core on a regular basis, it is noticeable that the core is dominated by firms based in the current and former centres of world power: the US and Europe. This association with political power may be no accident, in which case a TNC core associated with Europe and the US may have existed for decades if not longer.

To the extent that the policy preferences of CORE TNCs and their controlled TNCs converge, we would expect them to become more likely to react similarly to what national governments do. One consequence of this could be a tendency to shift investment in the same direction at the same time in response to policy developments. This would mean bigger investment flows in response to the actions of governments and therefore bigger rewards for governments that do what TNCs want and more severe sanctions for those that don't.

DO CORE TNCS IN FACT HAVE SIMILAR POLICY PREFERENCES?

So there is good reason to believe that the relations of control among CORE and OUT firms result in distinctive core policy lines. But do they in reality? One way in which we can check this is by looking at TNC membership of major business organisations.

If the world of TNCs is dominated by CORE TNCs, we should expect core policy views to be the orthodoxy within mainstream business organisations such as the Business Roundtable in the US, the European Roundtable of Industrialists, and the International Institute of Finance. It follows that we should expect a higher proportion of CORE and OUT TNCs than independent TNCs – IN and T&T firms - to be members of such organisations.

This proposition was put to the test in a modest way by looking at the membership in business organisations of the set of topholding TNCs that together control 80 per cent of global TNC income.²⁶ To do this, two categories of TNCs were compared: core TNCs in a broad sense, consisting of CORE and OUT TNCs, and independent TNCs, defined as IN and T&T TNCs. Of the 737 topholders, 176 are core in this broad sense (147 CORE plus 29 OUT) while 561 are independent (342 IN plus 219 T&T). This means that core TNCs constitute 24 per cent of topholders while independent TNCs constitute 76 per cent. If we remove state authorities, individuals and families from the dataset, on the grounds that we would not expect these to be members of business organisations at all, the proportion of core firms rises to 28 per cent while the proportion of independent firms falls to 72 per cent.

It follows that if the proportion of core topholders who are members of a mainstream business organisation is the same as the proportion of independent topholders who are members - the null hypothesis - then on average we should expect about three independent topholders to be members for each core topholder.

The policy line hypothesis is therefore that the proportion of core topholders who are members of relevant business organisations is significantly higher than a third of the number of independent topholders who are members of the same organisations. Ideally this would be tested using indicators of statistical significance, but these are not appropriate because the relevant data does not meet the conditions necessary for these indicators to be applicable. For this reason a simpler criterion is used: if the number of core topholders who are members exceeds the number of independent topholder members, the hypothesis is considered to be confirmed in the sense of not having been disconfirmed.

Relevant business organisations can be divided into two main types. First, CEO clubs: the Business Roundtable (BRT) and Financial Services Roundtable (FSRT) in the US, and the European Roundtable (ERT) and the European Financial Services Roundtable (EFSRT) in Europe. These are mainstream organisations in the sense that within their areas there are no rival CEO roundtables. Second, other establishment business organisations: the International Institute of Finance (IIF), the Bilderberg Conferences, the World Economic Forum (WEF) and the Trilateral Commission. Other business organisations that might seem to be relevant, such as the International Chamber of Commerce and the World Business Council for Sustainable Development, are disregarded because it is not clear that they are mainstream. Employers' federations such as BusinessEurope are omitted because TNC membership of these is indirect via industry and national federations.

So are there more core than independent topholders among the members of these organisations? Table 1 (see over) shows that the answer is yes, in all cases.

Table 1. Core and independent topholder members of business organisations

Business organisation	Number of core/independent members	Core members as a percentage of core plus independent members
Business Roundtable 2012	11/2	85
European Roundtable 2008	9/1	90
Financial Services Roundtable 2009	26/7	79
European Financial Services Roundtable 2012	16/0	100
IIF members 2011*	45/6	88
IIF Board 2011	14/2	88
World Economic Forum Industry Partners 2012	41/16	80
WEF Strategic Partners 2012	24/4	86
Bilderberg Steering Committee 2012	4/1	80
Trilateral Commission 2012	50/3	94

* International Institute of Finance. Core firms constitute 28 per cent of the 737 topholder TNCs on which the calculations are based. Figures are for 2008 or 2009 where possible to match the time period with that covered by the study. The 3 results for samples big enough for significance tests were all significant at the 0.001 level.²⁷

Sources: Vitali, S., Glattfelder, J.B., and Battiston, S. (undated), '737 Topholders List' [online]. Available from: <http://ethz.focproject.net/viewer/tnc> [accessed 3 March 2012]; Business Roundtable (2012), 'About us: members' [online]. Available from: <http://businessroundtable.org/about-us/members/> [accessed 14 March 2012]; European Round Table of Industrialists (2012), 'All members since 1983' [online]. Available from: <http://ertdrupal.lin3.nucleus.be/system/files/uploads/2010%20October%20-%20ERT%20Highlights.pdf> [accessed 14 March 2012]; Financial Services Roundtable (2012), 'Member companies' [online], *2009 annual report*. Available from: <http://www.fsround.org/publications/pdfs/AnnualReport2009FINAL.pdf> [accessed 14 March 2012]; European Financial Services Round Table (2011), 'Our members'. Available from: <http://www.efr.be/members.aspx> [accessed 17 March 2012]; Institute of International Finance (2012a), 'Membership (as of March 2011)', *2010 annual report* [online]. Available from: <http://www.iif.com/membership/> [accessed 14 March 2012]; Institute of International Finance (2012b), 'Board of directors (as of January 2011)', *2010 annual report* [online]. Available from: <http://www.iif.com/about/bod/> [accessed 14 March 2012]; World Economic Forum (2012a), 'Industry Partner Groups' [online]. Available from: <http://www.weforum.org/industry-partner-groups> [accessed 28 March 2012]; World Economic Forum (2012b), 'Strategic Partners' [online]. Available from: <http://www.weforum.org/strategic-partners> [accessed 28 March 2012]; Bilderberg (2012), 'Governance' [online]. Available from: <http://www.bilderbergmeetings.org/governance.html> [accessed 14 March 2012]; Trilateral Commission (2012), 'Trilateral Commission membership list 2012' [online]. Available from: http://www.trilateral.org/download/file/TC_list_7-12_%283%29%281%29.pdf [accessed 30 July 2012].

Could these figures be the result of a country effect? Perhaps we are really looking at an essentially European network of coordinated firms that, as part of their coordination, naturally turn to business organisations. But we have already dismissed this possibility: core TNCs are overrepresented in business organisations in both the US (Business Roundtable and Financial Services Roundtable) and Europe (European Roundtable, European Financial Services Roundtable).

Another possibility is that core TNCs are over-represented in business organisations due to their size. A further possibility is that it is banks and other financial TNCs that dominate business organisations, so that core TNCs are over-represented because they are disproportionately financial firms. These two hypotheses were tested simultaneously by controlling for both sector and size. First, NACE codes were used to restrict the set of topholders analysed to financial TNCs. Second, core and independent financial topholders were matched according to the proportion of worldwide TNC operating revenue they control: each independent TNC was allocated a similarly sized core TNC until the eligible core TNCs (the ones that were a similar size to independent TNCs) ran out. The remaining unallocated independent TNCs were then removed from the dataset. The result was a set of 30 matched US financial topholders (15 core, 15 independent) and 44 matched European financial topholders (22 core, 22 independent).

It is clear from Table 2 that core TNCs are still over-represented even when size and sector are controlled.

Table 2. Core and independent matched financial topholder members of business organisations

Business organisation	Number of core/independent members	Core members as a percentage of core plus independent members
Financial Services Roundtable 2009	5/2	71
European Financial Services Roundtable 2012	2/0	100
International Institute of Finance Board 2012	5/0	100
International Institute of Finance members 2012	16/5	76

Core firms constitute 50 per cent of each of the samples.

Sources: Vitali, S., Glattfelder, J.B., and Battiston, S. (undated), '737 Topholders List' [online]. Available from: <http://ethz.focproject.net/viewer/tnc> [accessed 3 March 2012]; Financial Services Roundtable (2012), 'Member companies' [online], *2009 annual report*. Available from: <http://www.fsround.org/publications/pdfs/AnnualReport2009FINAL.pdf> [accessed 14 March 2012]; European Financial Services Round Table (2011), 'Our members'. Available from: <http://www.efr.be/members.aspx> [accessed 17 March 2012]; Institute of International Finance (2012a), 'Membership (as of March 2011)', *2010 annual report* [online]. Available from: <http://www.iif.com/membership/> [accessed 14 March 2012]; Institute of International Finance (2012b), 'Board of directors (as of January 2011)', *2010 annual report* [online]. Available from: <http://www.iif.com/about/bod/> [accessed 14 March 2012].

Whichever way we look at it, the proportion of core topholders who are members of business organisations is far greater than their proportion of topholders as a whole. Although it is

important not to exaggerate the significance of this finding, as the number of TNCs included in the analysis is relatively small, it is exactly what we would expect if the core has developed distinctive policy lines and these have become the orthodoxy within these business organisations.

ARE CORE TNC BOARDS LINKED AS WELL?

The second and final test relates back to the core-independent distinction itself. If this distinction is a meaningful one, we should expect core TNC boards of directors to have more extensive links with other core TNCs than with independent TNCs. This is because (1) CORE firms would be expected to nominate directors with core views to their own boards and to the boards of the firms they control, and (2) such people are more likely to have pre-existing links with core than independent TNCs.

This does not mean that we would expect no links to independent firms at all. The boundary between core and independent TNCs is not rigid or policed but instead changes all the time as shares are bought and sold. This means that ownership ties do not change in lockstep with the appointment or retirement of directors. At any one time one would expect boards of core TNCs to include directors with links to firms that were core when the directors were appointed but are now independent, for example. There is also the fact that the authors' model of control overstates the number of control links among TNCs and therefore very likely over-estimates the number of CORE firms. Mismatches also occur because, as we shall see, the data on board membership is more recent than the data used to establish ownership links, so that it is probable that some TNCs that were core at the time of the ownership study had become independent by the time the board data was collected, while some hitherto independent TNCs had joined the core.

If the core-independent distinction is a meaningful one, therefore, we should expect board interlocks between core TNCs to predominate but not to the complete exclusion of ties between core and independent firms.

But is this the case? Although it has not yet been possible to test this proposition on all 737 topholders, let alone all 43,060 TNCs in the ORBIS database, it was possible to carry out a small-scale test. Banks were chosen as the objects of analysis (NACE 6512) because they are economically important, well-represented among topholders, and topical. Restricting attention to banks also enables sectoral effects to be controlled.

If director selection by core topholder TNCs is unrelated to whether candidates are affiliated to core or independent topholders, we would expect CORE topholder bank boards to have core/independent links in roughly the same proportion as the distribution of core and independent TNCs in the list of 737 topholders, namely three links to independent firms for every one link to a core firm. This is the null hypothesis.

But testing this is not straightforward. Simply counting links and calculating the overall ratio of core to independent links would give companies with numerous links a disproportionate effect on the result. Controlling for the number of links per company, by calculating the ratio of core to independent links for each firm and then taking the mean of these ratios, runs up against the problem of zeros in the denominator of the ratio for banks that lack any links to independent topholders.

For this reason the test relates to the relative number of CORE bank boards in which core links outnumber independent links rather than vice versa. If independent links are three times as common as core links – the null hypothesis – we would expect independent links to outnumber

core links in a majority of CORE topholder bank boards. Although most of the independent links could be piled up in just a few bank boards, leaving a majority of boards dominated by core links, this is not very likely.

Finding that core links outnumber independent links in a majority of such boards would cast at least some doubt on the null hypothesis. Finding that such boards are three times as numerous as boards with mostly independent links would cast significant doubt on the null hypothesis. Finding that such boards are ten times as numerous would constitute very strong evidence that the null hypothesis should be rejected.

The test consisted of checking the company affiliations of all directors of all CORE topholder banks against the list of 737 topholders using information from Bankscope, a subset of the ORBIS database.²⁸ Where an exact company name match was found, the core/independent status of this company was noted. Affiliations to particular companies were only noted once for each bank board regardless of how many directors shared these affiliations. Cases where boards had the same number of links to core and independent companies were omitted in order to keep the underlying test logic as clear as possible.

Table 3 shows that a big majority of CORE bank boards – 24 compared with 5 – had more links with core than independent topholders.

Table 3. CORE topholder bank board affiliations with other topholder TNCs

Type of affiliation	Number of links
Exclusively core	12
More core than independent	12
More independent than core	1
Exclusively independent	4
Number of banks for which result calculated	29
No directors affiliated with other topholders	13
Information not available	5
Topholder now controlled by another firm	5
Equal numbers of core and independent links	4
Total number of banks	56

Source: Vitali, Stefania, James B. Glattfelder, and Stefano Battiston (2011), 'The network of global corporate control', *PLOSOne*, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0025995> (open access journal); Bankscope, May 2012; list of 737 topholders from database used by Vitali, Glattfelder and Battiston (2011), <http://ethz.focproject.net/viewer/tnc>

Topholders are classified as *core* if they are coded as either CORE or IN in the ownership study, and as *independent* if they are coded as either IN or T&T. Where a bank was listed more than once for the same date, the first entry was selected. Information on directors is from 'boards of directors' lists where available. Failing that, the 'supervisory board' list was used. Otherwise the 'all boards and committees' list was consulted. Board composition in 2011 is used because information for 2007 is not consistently available for all banks. Where names of topholders were similar but not exactly the same as the names of companies with which directors had links, company websites were checked to determine whether it was the same company, or at least a company in the same group.

Although again it is important not to place too much reliance on these results, due to the small number of TNCs analysed, this is exactly what we would expect if the core-independent distinction matters.

A GLOBAL CORPORATE ESTABLISHMENT?

So what do we make of all this? Here are a few preliminary observations.

We have a sophisticated empirical study which indicates that in 2007 TNCs globally were dominated by just under 300 mostly financial TNCs. Admittedly these results are biased by problems with data and method, but the revealed pattern of ownership and control is so clearcut that it seems very unlikely that it is merely an artefact of the data or methods used. It is important, of course, to note that firms can also influence each other by means such as market power, provision or withholding of loans, and dependence relations created by their relative positions in commodity chains.

This pattern of ownership and control can be readily explained:

- Some firms have money to invest in shares, in particular banks and other financial entities, while others issue shares in order to obtain money to invest in production. It is therefore not surprising that there is a distinction between CORE and IN firms, on the one hand, and OUT firms on the other;
- The enormous shareholdings of many CORE and IN firms can be explained by the financialisation of business that has taken place over the past two decades or so;
- The existence of a single core of interconnected firms can be explained by globalisation, that is, by the idea that separate national cores (where they exist) are progressively amalgamating – from which it follows that the core would be expected to grow as globalisation proceeds further.

One implication of the observed pattern is convergence in the policy views of core TNCs. A quick analysis of the membership of major business organisations suggests that core dominance of TNCs in general has led to the development of distinctive core policy views that have become the orthodoxy in mainstream business organisations. And a look at whether the boards of core TNCs are linked more to each other than to other TNCs suggests that while the boundary between the core and rest may be ill-defined, it is meaningful.

Although it is a bit early to place much reliance on these findings, they do provide considerable empirical support for the idea that Vitali, Glattfelder and Battiston have discovered something real and something that matters: a global corporate establishment that is not formally organised but does have shared policy views, spokespeople (the business organisations dominated by core TNCs) and, given their shared policy views, quite possibly a tendency to take concerted action in relation to governments and other public authorities.

There are three main ways forward from here. The first is to replicate the study using current data to see if we get a result that is consistent with that of Vitali, Glattfelder and Battiston. This would also enable us to employ a more realistic model of control. The second is to explore further what these findings are actually telling us by relating them to leading theories of political economy and by subjecting them to further empirical tests. The third is to use theories of political causation to explore further what these findings imply for our understanding of politics, the economy and society more generally, before subjecting these too to empirical testing.

¹ Vitali, Stefania, James B. Glattfelder, and Stefano Battiston (2011), 'The network of global corporate control', *PLoS One*, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0025995> (open access journal). I would like to thank James Glattfelder for his advice on interpreting the findings of this article.

² Bureau Van Dijk, *Bankscope*, User guide – BvD Ownership Database – Information Collection, accessed via Cardiff University subscription.

³ Bureau Van Dijk (2007), *ORBIS*, <http://www.bvdinfo.com/Products/Company-Information/International/Orbis>

⁴ Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, p.100.

⁵ Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, p.50.

⁶ Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, pp.21, 52.

⁷ Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, pp.21, 93, 106, 113.

⁸ Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, pp.100, 133.

⁹ Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, pp. 113-115.

¹⁰ Ribeiro, S., S. Menghinello and K.D. Backer (2010), 'The OECD ORBIS Database: Responding to the need for firm-level micro-data in the OECD', *OECD Statistics Working Papers*, 2010/1, OECD Publishing, http://www.oecd-ilibrary.org/economics/the-oecd-orbis-database_5kmhds8mzj8w-en, p.13.

¹¹ Pinto Ribeiro, S., S. Menghinello and K.D. Backer (2010), 'The OECD ORBIS Database: Responding to the need for firm-level micro-data in the OECD', *OECD Statistics Working Papers*, 2010/1, OECD Publishing, http://www.oecd-ilibrary.org/economics/the-oecd-orbis-database_5kmhds8mzj8w-en, p.12

¹² Bureau Van Dijk, *Bankscope*, User guide – BvD Ownership Database – Introduction, accessed via Cardiff University subscription.

¹³ Bureau Van Dijk, *Bankscope*, User guide – BvD Ownership Database – Type of link / Active or Archived, accessed via Cardiff University subscription.

¹⁴ Bureau Van Dijk (2008), *BvDEP ownership database* [online]. Available from:

<http://biblioteca.cchs.csic.es/docs/formacion/GuiaAccionariado.pdf> [accessed 8 July 2012], pp.1,6.

¹⁵ Percentage figures from Faccio, M., and Lang, L.H.P. (2002), 'The Ultimate Ownership of Western European Corporations', *Journal of financial economics* 65, p., 386; and Gadhoun, Y., Lang, L.H.P., and Young, L. (2005), 'Who Controls US?', *European financial management* 11 (3), p.348; otherwise Nenova, T. (2003), 'The Value of Corporate Voting Rights and Control: A Cross-Country Analysis', *Journal of financial economics* 68, pp.327-328.

¹⁶ Berle, Adolf A., and Gardiner C. Means (1932/1967), *The Modern Corporation and Private Property*, revised edition, New York: Harvard, Brace and World, Inc., p.84.

¹⁷ La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer (1999), 'Corporate ownership around the world', *Journal of Finance* 54(2), pp. 472, 475.

¹⁸ Faccio, Mara, and Larry H.P. Lang (2002), 'The ultimate ownership of Western European corporations', *Journal of Financial Economics* 65, p.365.

¹⁹ Gadhoun, Yoser, Larry H.P. Lang, and Leslie Young (2005), 'Who controls US?', *European Financial Management* 11(3), p.343.

²⁰ See, for example, La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer (1999), 'Corporate ownership around the world', *Journal of Finance* 54(2), p.476; Faccio, Mara, and Larry H.P. Lang (2002), 'The ultimate ownership of Western European corporations', *Journal of Financial Economics* 65, p.369; Gadhoun, Yoser, Larry H.P. Lang, and Leslie Young (2005), 'Who controls US?', *European Financial Management* 11(3), p.339.

²¹ Vitali, Stefania, James B. Glattfelder, and Stefano Battiston (2011), ‘The network of global corporate control’, *PLOSOne*, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0025995> (open access journal), p.3.

²² Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, p.98.

²³ Vitali, Stefania, James B. Glattfelder, and Stefano Battiston (2011), ‘The network of global corporate control’, *PLOSOne*, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0025995> (open access journal), p.19; Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, p.40.

²⁴ Vitali, Stefania, James B. Glattfelder, and Stefano Battiston (2011), ‘The network of global corporate control’, *PLOSOne*, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0025995> (open access journal), p.18; Glattfelder, James (2010), *Ownership Networks and Corporate Control: Mapping Economic Power in a Globalized World*, doctoral dissertation, <http://e-collection.library.ethz.ch/eserv/eth:2007/eth-2007-02.pdf>, p.41.

²⁵ La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer (1999), ‘Corporate ownership around the world’, *Journal of Finance* 54(2), p.475; Faccio, Mara, and Larry H.P. Lang (2002), ‘The ultimate ownership of Western European corporations’, *Journal of Financial Economics* 65, p.371; Gadhoun, Yoser, Larry H.P. Lang, and Leslie Young (2005), ‘Who controls US?’, *European Financial Management* 11(3), p.343.

²⁶ List of 737 topholders from database used by Vitali, Glattfelder and Battiston (2011), <http://ethz.focproject.net/viewer/tnc>

²⁷ Wessa, P. 2012. “Testing Population Proportion – Critical Value”. Free Statistics Software, Office for Research Development and Education, version 1.1.23-r7. Available from: <http://www.wessa.net/> [accessed 19 October 2012].

²⁸ Bureau van Dijk (2012), *Bankscope*, database, accessed via Cardiff University subscription.