Legal theory of finance: Evidence from global financial networks

Prince Kwasi Sarpong and Jugjith Deodutt

Cogent Economics & Finance (2019), 7: 1593071
Abstract: Katharina Pistor proposed the Legal Theory of Finance (LTF), based on the premise that finance is legally constructed. In this paper, we apply network science to provide empirical evidence from global financial networks (GFN) to support the argument of the LFT. Using data from the World Bank and IMF, we confirm that the GFN is indeed hierarchical. We also show that the depth of interconnectedness in the GFN is increasing. The United States is the most important node in the GFN but temporarily lost its position to the United Kingdom in 2008. This paper shows that the most important node in the GFN can temporarily shift during major global financial events. The United Kingdom has also lost its position in the GFN to Switzerland on several measures of centrality. We further confirm that there is no evidence of a flattening of the GFN. Although some emerging economies have improved significantly in terms of GDP and international reserves, these improvements have not reflected in their positions in the GFN. We propose that the approach to regulating the global financial system should focus on more stringent...
rules for the most central countries in the GFN. This could be more effective in ensuring stability in the global financial system.

**Subjects:** Network Theory; Political Economy; Banking

**Keywords:** legal theory of finance; elasticity of law; network science; eigenvector centrality; betweenness centrality; degree centrality

**JEL classification:** G15; G20; G29

1. Introduction

Majority of economic and finance theories presume, and often implicitly, a system of law and adjudication. This is due to the fact that institutions such as property, government regulations, and contracts usually involve systems for creating and enforcing laws, which in most cases, albeit not inevitably, involve some form of judicial system (Posner, 2014). Given that there are sometimes substantial economic consequences from judicial decisions, judicial decision-making is a critical subject of economic analysis (Stephenson, 2009). The argument that law shapes finance implies that the legal system, theoretically, can be differentiated from the economy, therefore, the independent causative influence of the law on finance can be empirically measured (Deakin, 2013). Research and debates on financial markets have however mostly ignored the legal aspects of financial markets despite the fact that financial instruments are simply legal contractual obligations which are drafted and enforced through one kind of legal institution or another.

In proposing the **Legal Theory of Finance** (LTF), Katharina Pistor (Pistor, 2013b) argues that finance and law are co-constituted and financial markets can be better understood through the lenses of the LTF. The LTF argues that finance is hierarchical and thus the stringent enforcement of legal obligations in financial markets depends on one's hierarchy in the financial network. In finance, the law is elastic. Furthermore, the narrow focus of legal minds on microeconomics, contribute to financial crises through the reinforcement of faith in the ability of markets to produce optimal outcomes with minimal regulatory oversight (McCluskey, Pasquale, & Taub, 2017). This misguided faith points to the need for a new economic analysis of law which is responsive to theories of financial instability and other macroeconomic conditions (McCluskey et al., 2017).

Pistor (2013b) proposed the Legal Theory of Finance (LTF) as a foundation for a political economy of finance (PEF) and argues that the legal construct of finance is of first-order significance in describing and forecasting the behavior of financial markets globally. PEF is a critical area in the field of finance because “Politics picks out the actual from a space of the possible marked out by economics.” (Kapadia, 2013, p. 437) (emphasis in original).

Although researchers acknowledge the importance of the global financial system, established perspectives in international political economy (IPE) seldom provide definitive models of the global financial system. In the terminology of network theory, the prevailing assumption is that the global financial network is flat, particularly, arguments on networks are usually part of a theoretical package that involves the establishment of a “flat ontology” claiming that power is not hierarchical or top-down and advocate the “flattening out” of society (Joseph, 2010). The implicit assumption that the global financial system is flat, is followed by the belief—usually promulgated more explicitly—that globally, the distribution of power is also flattening (Oatley, Winecoff, Pennock, & Danzman, 2013). Oatley et al. (2013) provide empirical evidence to suggest that financial inter-dependence is better depicted as a hierarchical network instead of a flat network. The global financial system is a strongly hierarchical system with the United States at the center of the network while almost all other countries are located at the periphery (Oatley et al., 2013; Poon, 2003). A country’s location in this hierarchical system has important implications for its legal treatment during periods of crisis and beyond (Pistor, 2013b; Winecoff, 2015) therefore, the ideal of equality of all before the law is in conflict with the inherent hierarchy of finance (Pistor, 2013a).
In this study, we apply methodologies in network science to provide empirical evidence to support Pistor’s (2013b) assertion on the hierarchical nature of finance. The global financial network is hierarchical in nature. The hierarchical architecture of the GFN is responsible for the elasticity of law in finance. There is an increasing interconnectedness among countries in the GFN. Using cross-border banking and portfolio data from the Bank for International Settlements (BIS) we find that the United Kingdom lost its position as the most important node in the global banking network to Switzerland although it still has the largest cross-border banking deposits in the world. Data from the Coordinated Portfolio Investment Survey (CPIS) of the International Monetary Fund (IMF), shows that the United States is the most important node in the global financial network. In 2008 however, the United Kingdom temporarily replaced the United States as the most important node. CPIS covers total cross-border portfolio assets and includes holdings of equity securities, and long- and short-term debt securities. The study further shows that although some emerging economies particularly China, India and Brazil have achieved significant economic improvements over time, with China currently the second largest economy in the world (India 7th, Brazil 9th) according to the IMF (IMF, 2017), these emerging economies have not been able to make it among the top 10 nodes in the GFN.

2. Law and finance

According to Pistor (2013a), the relevance of law to finance is now well recognized, in part due to the literature on law and finance by La Porta, et al., (1998, 2008). Legal theories give emphasis to two interrelated mediums (political and adaptability) through which law shapes finance. First, the political medium argues that legal traditions differ in terms of the primacy they attribute to private property rights contrasted with the rights of the state. Protecting private contracting rights is fundamental to financial development (La Porta et al., 1998). According to this argument, English common law, on one hand, developed into protecting owners of private property against the crown. This emboldened owners of private property to confidently transact, which in turn led to positive results on financial development (North & Weingast, 1989). On the other hand, the political medium holds that the German and French civil codes in the nineteenth century were developed to solidify state power by setting the prince above the law (Hayek, 1960). Over time, the dominance of the state over the judiciary created legal traditions that paid more attention to the power of the state with less attention paid to the rights of individual investors (Mahoney, 2001). In general, the political medium suggests that the civil law tradition encourages the development of institutions that promote state power with negative consequences on financial development. The political medium emphasizes the extent to which the state influences the judiciary and highlights the difference between civil law and common law countries (Beck, Demirgüç-Kunt, & Levine, 2003).

Second, the adaptability medium posits that there are differences in how legal traditions evolve as circumstances change (Hayek, 1960) and legal traditions that efficiently adapt to reduce the gap between the contractual needs of the economy and the capabilities of the legal system will promote financial development more effectively than systems that are rigid (Merryman, 1985).

Although not unanimous, an instrumental element of literature on comparative law argues that, as judges deal with changing and unforeseen conditions on a case-by-case basis, common law evolves efficiently (Posner, 2014). A number of scholars argue that because common law gives significant discretion to judges, inefficient laws are contested in the courts and with repeated litigations, inefficient rules are replaced with efficient rules (Bailey & Rubin, 1994; Priest, 1977; Rubin, 1977, 1982). These authors submit that legal systems that do not permit jurisprudence (the laws created by judges) in the dispute-resolution process, and instead, depend on changes in statutory law, do not evolve efficiently and this has a negative impact on finance.

Law is more fundamental to modern finance than recognized in the extant literature. Law allocates power to regulators both private and public; offers authority to private and public financial instruments; and validates financial instruments generated from private contracts if
they are consistent with the law. Arguably, law’s significance to finance has increased with the transition from relational finance to entity and ultimately, market-based finance: Financial instrument fungibility in anonymous markets is dependent on credible contractual commitments that can be enforced in a court of law without prior investigation into the creditworthiness of the originator, borrower or intermediary. Therefore, “law is not just an add-on to but is “in” finance” (Pistor, 2013a, p. 311).

In a 2014 essay, Ted Hamilton, a Harvard Law student reflected that the most repeated word in his first-year curriculum was not liberty, or justice, or order, but efficiency, which he argues, reduces law to the goal of economic gain maximization without evaluating that gain. Law students are taught that efficiency means wealth maximization and learn to treat legal questions as objective problems of counting divorced from complex moral, social and political analysis (Hamilton, 2014). Fisman, Jakiela, Kariv, and Markovits (2015) provide empirical findings to confirm that the emphasis on efficiency can affect students’ views. This interpretation of economics in law, however, is partial on two fronts. First, it is not complete. To a large extent, it ignores new economic issues and theories. Secondly, it is usually biased. It privileges the standpoints of the most powerful players in the economy by presenting legal rules in favor of these players’ interests as incontrovertible economic truth (McCluskey et al., 2017).

In a legally constructed system, the ability to influence the making of rules and the framing of markets is a source of political and economic power in itself as it establishes comparative advantages in good times and in downturns, the prevailing rules are suspended or relaxed to prevent the system from collapsing. A critical examination of the legal architecture of financial markets consequently brings to light the Janus face of law in finance whereby the credence law grants to financial contracts is crucial, but the inflexibility that accompanies credible commitments can hasten the collapse of financial markets during periods of crises (Pistor, 2013a). This outcome can be averted through refinancing or renegotiating financial commitments thus consequently shelving ex ante regulations or contracts. The evidence from the different financial markets proves that in times of crisis, resourceful public and private actors rewrite the rules of the game. For example, central banks directly intervene in forex markets to protect their currencies and private actors who make huge gains from unregulated markets during bull periods seek out lender of last resort services from central banks to survive their comeuppance during extreme bear markets (Pistor, 2013a).

3. Legal theory of finance
The LTF posits that financial markets are constructed legally and ensconced in a hybrid location between market and state, private and public. At the same time, financial markets display certain characteristics that often place them in direct tension with obligations stipulated in law or contracts. This is especially so during times of financial crisis when stringent enforcement of legal obligations would lead to the self-destruction of the financial system. This law-finance paradox is usually resolved through the suspension of the thorough execution of the law where the survival of the system is in jeopardy. This occurs at the apex of the financial hierarchy (Pistor, 2013b).

LTF is an inductive theory. The four fundamental arguments of the LFT are: 1) financial instruments are legally constituted; 2) law contributes to the instability in financial markets; 3) there is a pecking order of the modes of payment, implying an inherent hierarchical nature of finance; and 4) there is an inverse relationship between the obligatory nature of contractual and legal commitments on one hand and the hierarchical nature of finance on the other, where law tends to be more elastic at the apex and binding on the periphery of the financial system (Pistor, 2013b).

First, finance is legally constituted because financial systems are a complex, interdependent network of contractual obligations connecting market participants to each other. Therefore, what is owed by one has to be financed by assets or claims of a third party. Second, fundamental uncertainty coupled with liquidity constraints make financial markets inherently unstable. As
a result of these conditions, binding, pre-determined, non-negotiable legal obligations can accelerate the occurrence of a financial crisis and in the worst case, the crash of the financial system (Pistor, 2013b). Third, public and private entities create, issue and trade financial instruments. In normal times, most financial instruments appear as close substitutes to official or state money in the sense that they can easily be bought and sold for one another or for cash. However, when too many investors seek to change their portfolio of assets at the same time, some assets will no longer find takers as investors flee to safety: They buy cash or close cash substitutes, such as reputable corporate or government bonds. This implies that finance is not flat, but hierarchical (Mehrling, 2013). Finally, when a legal system is committed to the rule of law, it applies the law regardless of status or identity. However, a closer analysis of contractual relations, regulations and laws in finance reveals that the ideal of equality before the law is nonexistent. Instead, law is elastic. The elasticity of law means the probability that ex ante legal obligations will be relaxed or shelved in the future. The higher such probability, the more elastic the law is (Pistor, 2013b).

Generally, law is relatively elastic at the apex of the system and inelastic on the periphery. It is therefore at the periphery where default is very likely to culminate in involuntary exit. On the contrary, at the apex where the survival of the system is at stake, the law is more elastic by design and/or because the ultimate backstop of the system uses its discretionary power to do what is necessary to prevent the system from crashing (Pistor, 2013b). The hierarchical nature of financial systems is due to mutualization at scale where balance sheets that have access to larger economic catchment areas impose liquidity discipline or elasticity on smaller balance sheets, and set the terms on which these smaller balance sheets operate (Kapadia, 2013). Drezner (2008) and Simmons (2001) have argued that financial power emanates from market size and identified the US and Europe as the most powerful states in the GFN. Market size and structural prominence may not be completely separable, either as attributes of interest or as a basis of power (Winecoff, 2015).

Swap contracts between major central banks, for example, that are designed to protect the global payment system covers only seven pages of text although they deal with billions of dollars, pounds, francs, euros, yens. Although the swap transactions are similar, the form can alter depending on who the contracting parties are and their position in the GFN. The GFN is replete with similar treatment of contracting parties depending on their positions in the hierarchical financial system (Pistor, 2013b). Elasticity of law is also evident in the approach with which central banks bail out certain institutions. By bailing out the financial system, central banks mutualize or socialize private debt—a political act of redistribution—which goes directly contrary to the legal and contractual foundations of the financial system they plan to rescue (Pistor, 2013a). Anush Kapadia argues that given the ascent of integrated financial markets, the popular definition Max Weber gives to the state as a community that asserts monopoly over the means of coercion must be restated as a “human community that successfully claims the apex of a hierarchical credit system because it is legitimate within a given territory” (Kapadia, 2013, p. 439) (emphasis in original).

4. Some evidence on the elasticity of law in finance

4.1. Global financial crisis

As major financial companies were bailed out by the United States government or the Federal Reserve Bank, homeowners, on the other hand, faced foreclosures and bankruptcies in accordance with the law and received no liquidity support from the government or the Fed. Homeowners in the United States can, therefore, be construed to be on the periphery of the financial system in the United States. The peripheral position of homeowners in the United States, however, compares favorably to their counterparts in Spain or Hungary. For example, in Spain and many countries, mortgage-backed securities are full recourse loans unlike that of the United States meaning in the event of a heavy decline in the value of the homes, homeowners were still liable for the full amount they contracted for (Ghent & Kudlyak, 2011). In Hungary, 75% of home loans were issued
in foreign currencies—Swiss franc or euro—so homeowners’ debts increase as these currencies appreciated relative to the local currency, by about 40% during the crisis (Rona-Tas & Guseva, 2013). This confirms that the global real estate market is hierarchical with homeowners at the periphery bearing not only the full credit risk but also the currency risk with the difference between periphery and apex more pronounced due to the limited means to redistribute loss in the transitional realm (Pistor, 2013b).

4.2. ECB monetary policy guidelines
The elasticity of law was also evident in the market for asset-backed securities which qualify as eligible collateral in the amended ECB Monetary Policy Guidelines. This new policy covered even triple-B as opposed to triple-A securities in the previous document (Bonavita, 2016). However, the critical credit facility—access to the discount window—maintained by the central banks was only granted to commercial banks. The ECB monetary policy had migrated from discount window lending to open market operations but the list of ECB-eligible collateral was nevertheless applicable (Tarkka, 2009). This elastic collateral guidelines that lowered the collateral eligibility requirements of the ECB benefited only those market participants who had access to the ensuing liquidity. Banks populated the apex of the financial system and happened to be the only beneficiaries of the inherent elasticity of law as well as the recipients of the privately created money that was generated (Haar, 2016).

The introduction of a new “countercyclical” regulatory dimension for banks was one of the most innovative qualities of Basel III (Amorello 2016). This component was operationalized in 2013 in the European prudential framework contained in the CRR/CRD IV package. Although European legislators have welcomed the uniform implementation of these rules because it creates a level playing field for banks and investment firms, Amorello (2016) argues that there are serious competitive disadvantages for small banks. This is because the big banks are encouraged to take advantage of the arbitrage opportunities hidden in the CRR/CRD IV countercyclical provisions but the same opportunities are not made available to smaller banks.

4.3. Vulture funds and peripheral states
In the context of sovereign debt, “vulture funds” are hedge funds that invest in sovereign debts which they consider weak or have a high probability of default. The investment strategies of these hedge funds are called “vulture” because of their predatory tactics. These funds are not creditors, but private funds that acquire at a discount, the distressed debt on the secondary market with the hope of profiting by suing the debtor for more than the acquisition price of the debt (Sourbron & Vereeck, 2017). To ensure favorable rulings from the courts, vulture funds choose “creditor-friendly jurisdictions”. These jurisdictions are usually the United Kingdom and the United States. However, they are increasingly suing in debtor countries, where the level of technical details involved in the adjudication process overwhelm the weak legal systems.³

The cases brought by these vulture funds are mostly protracted with a median estimated recovery period of six years and an average of 50–333% annualized returns. Such claims in some cases are equivalent to as much as 12–13% of the GDP of the debtor state.⁴ The following are selected cases of elasticity of law in relation to sovereign debt.

4.3.1. Republic of Argentina v. NML Capital, Ltd
In sovereign debt restructuring, we find another example of the elasticity of law as the desire for political power and financial stability collide. The inclusion of a pari passu clause in an underlying contract is one way to persuade potential sovereign debt creditors that a threat of a future cessation of payments following a restructuring is highly unlikely. This clause inter alia, prevents selective payments of participants of the restructuring to encourage creditors to consent to a restructuring proposal. This was however not the case in the Republic of Argentina v. NML Capital, Ltd⁵ where Argentina passed the Lock Law in a bid to avert any recommencement of negotiations with holdouts. The Second Circuit Court of Appeals, however,
did not adhere to the narrow interpretation of the pari passu clause with the implication that it would only disallow formal subordination; instead, it relied on a broader interpretation of the clause which prohibited Argentina from paying other creditors without paying the holdouts.\(^6\)

This ruling while welcoming for a small group of well-connected investors, and it is horrendous for the rest of the world, particularly states that will face debt crises in the future (Guzman & Stiglitz, 2016). This broad and elastic interpretation of the pari passu clause leads to differential payments to bondholders and eventually undercuts productive and promising restructuring practices and carry a high price for the global financial system. It will encourage other funds to hold out making it impossible to restructure debt (Guzman & Stiglitz, 2016; Weidemaier, 2013).

4.3.2. Donegal International v. Zambia
The Zambian government purchased agricultural equipment from Romania in 1979 and by 1984, the government could not service the debt, which was about US$30 million including interest. In 1999, Romania sold the debt to Donegal International for about $3 million, equivalent to 11% of the face value of the debt. In 2003, under controversial circumstances that involved claims of corruption and bribery of public officials, Zambia signed an agreement with Donegal International which included a waiver of sovereign immunity from lawsuit, pay around $15 million of the then $44 million face value, agreeing to penal interest rates and to have any disputes resolved under English law in the event of default. Zambia made three installment payments adding up to $3.4 million and thereafter ceased payments alleging that the agreement was riddled with corruption and signed without the necessary authority.\(^7\) Donegal International, however, waited until 2006 and initiated litigation in courts in the United Kingdom seeking US$55 million. The English High Court on February 2007, ruled in favor of Donegal albeit for an amount of US$15.4 million. The Zambian government acknowledged the judgment and reassigned funds originally allocated for health programs to pay off the debt (Laryea, 2010).

4.3.3. Greece and the pressure to settle
There are instances where a state begins the negotiation process to restructure its debt with private bondholders only for vulture funds to exercise their holdout rights or rather buy up the distressed bonds in the secondary market. These funds then exploit the weak position of the debtor country on the brink of default by placing it under additional pressure. The debtor country may yield to this pressure and accept a detrimental settlement as a means to avoid costly and extended process against an aggressive litigator. This was the case in 2012 when the Greece government agreed to pay €436 million in settlement on its debt restructuring case with several holdouts. Greece apparently yielded to pressure, and chose to pay off the holdout investors to avoid litigation with the vulture funds, given the unstable and sensitive political situation in the country during that period (Guzman & Stiglitz, 2016).

In September 2015, The United Nations overwhelmingly endorsed nine principles on sovereign debt restructuring with only six countries voting against. The countries in opposition to these principles are however the major jurisdictions (this includes the United States) for sovereign lending; thus, these principles are unlikely to be effective (Guzman & Stiglitz, 2016). Unresolved sovereign debt issues are harming debtor nations, their creditors and their citizens and can create significant systemic threats to the global financial system (Schwarcz, 2017). According to the Human Rights Council of the United Nations (UN), vulture funds reveal the unjust nature of the existing financial system, and directly affects human rights in debtor States.\(^8\) A critical examination of the various cases in the past, from the Third World Debt Crisis of the 1980s involving governments in Latin America, Eastern Europe, Africa and Asia, to the Eurozone crisis, it becomes obvious that the elasticity of law works against countries on the periphery and in favor of the holdout bondholders positioned at the apex (Haar, 2016).
5. The global financial network

In one way or another, the biggest questions of our time, ranging from the production of goods and services, sustainable development, job creation and poverty alleviation, financial security for the aging population around the world, etc., are linked to the global financial system, its efficiency, its fairness and its stability. The last few decades have witnessed a number of financial crises, with each successive crisis being deeper, more global, and more destructive than the previous. The global financial system has become very big, highly interconnected, and so complex that experts are in disagreement on whether it is under-regulated, overregulated, or regulated albeit in a completely ineffective way.

Researchers are progressively employing network science to grasp the complexities of the global financial system. A network is a collection of actors—nodes in network terminology—and relationships—ties connecting nodes. In the global financial system, the actors are made up of financial institutions, non-financial institutions, sovereign entities as well as individuals and the ties are the financial contracts actors enter into among themselves. The advantage of adopting a network science approach to understanding financial systems is that it emanates empirically from the relationships that actors really hold instead of making assumptions about the behavior of the agents within the system. The resultant structures are therefore not biased towards any theoretical perspective or normative approach imposed “by the eye of the researcher”. The modeling by network theory, on the contrary, could validate behavioral assumptions economic theories make (Kenett & Havlin, 2015).

Social networks have been intensively studied because they depict patterns of human interactions and their structure controls the extent to which information (and diseases) spread (Sornette, 2017). A similar, behavioral reaction to the fear of infection can be observed in the financial markets. Financial networks spawn chains of claims. During periods of stress, these chains can intensify uncertainties about the actual exposure to counterparties. “Who is really at the end of the chain—Warren Buffett or Bernard Madoff?”. Networks have significant effects on the dynamics of financial instrument pricing through their impact on counterparty uncertainty (Haldane, 2009, p. 14). Counterparties face Knightian uncertainty—which is different from risk—on the exact structure of the network because counterparty risk is not only unknown but also unknowable, therefore, the higher the network dimensionality, the greater the uncertainty (Haldane, 2009).

In The Architecture of Complexity, Herbert Simon discusses how networks, both social and physical, exhibit a hierarchical structure. This is not an evolutionary accident. For many networks, hierarchy develops naturally. It is the consequence of a Darwinian selection process where it is only the hierarchical structures that survive to maturity (Simon, 1962). Pistor (2013b) however contends that the specific manifestation of financial networks is anything but natural. The countries that are at the top of the global hierarchy find themselves there as a result of historical contingencies such as winning world wars (in case of the United States) or being beneficiaries of cold wars (as in the case of Germany). Their position has further been solidified by the fact that they (the G7) also coordinated the global financial regulations established in the Basel Accords and the Basel Concordat, and not coincidentally, by the prowess of the international financial institutions they house (Pistor, 2013b).

In a hierarchical network, one country acts as the financial center to which other national financial systems are connected. The other countries are directly connected to only a few other countries, and majority of their connections to other countries are through the central country (Oatley et al., 2013). In a hierarchical international financial system, the probability of a banking crisis spreading to other countries is a function of the origin of the crisis. Since countries on the periphery are connected to only a few other countries, with the few existing ties being relatively weak, any banking crisis in a peripheral country tends to have a very limited effect on the balance sheets of banks of other countries. Furthermore, although countries on the periphery attract assets from the apex, these assets for any single peripheral country are insignificant relative to the total
bank capital of the center. Therefore, it is highly unlikely that an isolated banking crisis in the periphery will inflict significant losses on the center that could trigger a systemic banking crisis in the center. This makes hierarchical systems highly resilient to banking crisis at the periphery (Oatley et al., 2013).

A banking crisis in the apex, on the other hand, can spread throughout the system. Because many countries are connected to the apex, crises at the apex can reduce the value of the assets for many countries at the periphery. The concentration of assets in the apex—a characteristic of a hierarchical system—renders the global financial system vulnerable to crises in the apex. Hierarchical systems, therefore, have dual global consequences of stabilizing the system against majority of the shocks that occur but occasionally causing banking crises in the apex that destabilize the system (Oatley et al., 2013).

Interconnected networks possess a tipping point or knife-edge characteristic. Connections serve as a shock absorber within a given range where the system functions as a mutual insurance mechanism that disperses and dissipates disturbances thus connectivity engenders robustness. The system can, however, flip to the wrong side of the knife-edge when a certain threshold is breached and in such scenarios, interconnectedness acts as a shock-amplifier as losses cascade. The system in this circumstance becomes a mutual incendiary mechanism instead of a mutual insurance device (Haldane, 2013). Gai and Kapadia (2010) applied techniques borrowed from the epidemiological literature to confirm that greater interconnectedness minimizes the probability of widespread default, however, dense financial networks exhibit “robust-yet-fragile” characteristic thus the probability of contagion is generally low, but when it occurs the effects are widespread and difficult to isolate. (Chinazzi, Fagiolo, Reyes, & Schiavo, 2013) also report that higher interconnectedness minimizes the intensity of crisis, as it allows shocks to dissipate faster. However, the hierarchical nature of financial networks implies that countries that are situated at the periphery are more vulnerable in periods of crisis.

Furthermore, the Global Financial Crisis led to changes in the topology of the GFN and the time evolution of its statistical properties although core-periphery structure of the GFN did not change. Some scholars, however, argue that the BRICS (Brazil, Russia, India and China) will play a more significant role in the GFN, and China will emerge as the primus inter pares of this group where others also argue that the centrality of the United States will be replaced by a US–EU condominium. Thus, the hierarchical structure of the GFN will be replaced by a flat one (Drezner, 2009; Helleiner & Kirshner, 2012, 2008). The three areas where the robustness of the financial network can be improved are: regulating; mapping; and restructuring (Haldane, 2013).

6. Data

The data from this study is obtained from the World Bank and IMF. We use the consolidated banking statistics for both banking and non-banking sectors from the Bank for International Settlements (BIS) with data available for 162 states in December 1977, 196 states in December 1997 and 212 and 215 states for December 2007 and June 2017 respectively. Table 1 presents the network statistics using data from BIS for 1977, 1997, 2007 and 2017. Table 2 presents network statistics using CPIS data for 2001, 2008 and 2016. The second columns of Tables 3–6 contain data on the total banking and non-banking sector liabilities of selected countries for this study.

Data available from the database of BIS contains only interbank deposits for less than 30 countries, we, therefore, build a second network using the Coordinated Portfolio Investment Survey (CPIS) of the International Monetary Fund and comprises total cross-border portfolio assets, holdings of equity securities, and long- and short-term debt securities. We use available data from all foreign portfolio assets for 201 states in December 2001, 218 states in December 2008 and 227 states in December 2016. The second columns of Tables 7–9 contain the total cross-border
7. Network analysis

In this section, we apply some measures in network science to examine the global financial network. We investigate the centrality of countries within the global financial network using four measures of centrality, that are commonly used in network science, namely: betweenness, degree, closeness, and eigenvector. We also measure graph density and average path length. Knowledge of the amount and distribution of network connectivity enables us to study the structural features of the GFN and the relative importance of nodes within this structure. These measures are important for understanding the behavior of the network.

7.1. Degree centrality

Degree centrality is the number of links incident upon a node. This can be interpreted in terms of the sudden risk of a node catching whatever flows through the network. In a directed network where ties have direction, there are two separate measures of degree centrality: indegree and outdegree. Indegree is the number of ties directed to the node and outdegree is the number of ties the node directs to other nodes.

7.2. Closeness centrality

We investigate the closeness centrality value of countries within the global financial network. Closeness centrality is measured based on the distance of each country to every other country in the network. Closeness centrality for country $i$ is given as:

$$b_i = \left[ \sum_{j=1}^{N} d(b_i, b_j) \right]^{-1}$$

(1)

where $d$ is the path distance between banks $i$ and $j$. A country is construed to be important if it is relatively close to all other countries. Closeness centrality denotes the influence of a node on the entire network.

7.3. Betweenness centrality

Betweenness centrality depicts how well situated a node is in terms of paths that it lies on. Betweenness centrality of country $i$ in the network is measured as:

$$B(b_i) = \sum_{j \neq k} \frac{g_{jk}(b_i)}{g_{jk}}$$

(2)
| Rank | Country        | Total liabilities ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------|-------------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | United Kingdom | 88,570                  | 135.00   | 150.00    | 285.00 | 0.96                 | 6390.74                | 1.00                   |
| 2    | France         | 39,771                  | 126.00   | 140.00    | 266.00 | 0.90                 | 5218.03                | 0.97                   |
| 3    | Germany        | 25,354                  | 111.00   | 124.00    | 235.00 | 0.83                 | 2860.39                | 0.91                   |
| 4    | Luxembourg     | 0.00                    | 109.00   | 119.00    | 228.00 | 0.81                 | 2901.79                | 0.87                   |
| 5    | Belgium        | 28,989                  | 108.00   | 122.00    | 230.00 | 0.81                 | 2785.90                | 0.87                   |
| 6    | Japan          | 7282                    | 66.00    | 63.00     | 129.00 | 0.63                 | 427.39                 | 0.69                   |
| 7    | United States  | 73,839                  | 62.00    | 62.00     | 124.00 | 0.62                 | 401.49                 | 0.66                   |
| 8    | Sweden         | 3362                    | 60.00    | 57.00     | 117.00 | 0.61                 | 352.13                 | 0.63                   |
| 9    | Switzerland    | 77,482                  | 55.00    | 57.00     | 112.00 | 0.61                 | 343.91                 | 0.60                   |
| 10   | Netherlands    | 25,407                  | 43.00    | 41.00     | 84.00  | 0.58                 | 125.49                 | 0.53                   |
| 17   | Brazil         | 6387                    | 11.00    | 11.00     | 22.00  | 0.52                 | 0.08                   | 0.27                   |
| 24   | Argentina      | 4631                    | 10.00    | 10.00     | 20.00  | 0.52                 | 0.08                   | 0.26                   |
| 28   | Soviet Union   | 4473                    | 10.00    | 10.00     | 20.00  | 0.52                 | 0.08                   | 0.25                   |
| 31   | South Africa   | 1059                    | 10.00    | 9.00      | 19.00  | 0.51                 | 0.08                   | 0.25                   |
| 36   | India          | 1950                    | 9.00     | 8.00      | 17.00  | 0.51                 | 0.08                   | 0.24                   |
| 52   | China          | 2541                    | 8.00     | 8.00      | 16.00  | 0.51                 | 0.08                   | 0.22                   |
| 59   | Nigeria        | 791                     | 8.00     | 8.00      | 16.00  | 0.51                 | 0.08                   | 0.21                   |
| Rank | Country       | Total liabilities ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------------|-------------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | United Kingdom| 1,255,251               | 169.00   | 190.00    | 359.00 | 0.98                 | 6947.50                | 1.00                   |
| 2    | France        | 361,655                 | 167.00   | 170.00    | 337.00 | 0.89                 | 5941.88                | 0.99                   |
| 3    | Switzerland   | 517,838                 | 164.00   | 188.00    | 352.00 | 0.97                 | 6289.17                | 0.98                   |
| 4    | Germany       | 465,653                 | 140.00   | 152.00    | 292.00 | 0.82                 | 3193.26                | 0.91                   |
| 5    | Luxembourg    | 227,547                 | 130.00   | 169.00    | 299.00 | 0.88                 | 3172.06                | 0.84                   |
| 6    | Belgium       | 181,837                 | 128.00   | 179.00    | 307.00 | 0.92                 | 3600.96                | 0.84                   |
| 7    | Japan         | 729,500                 | 103.00   | 106.00    | 209.00 | 0.69                 | 1342.44                | 0.75                   |
| 8    | United States | 1,192,700               | 104.00   | 120.00    | 224.00 | 0.72                 | 1646.27                | 0.75                   |
| 9    | Sweden        | 34,380                  | 94.00    | 102.00    | 196.00 | 0.68                 | 919.58                 | 0.71                   |
| 10   | Ireland       | 53,932                  | 82.00    | 78.00     | 160.00 | 0.63                 | 934.60                 | 0.64                   |
| 23   | South Africa  | 9000                    | 14.00    | 13.00     | 27.00  | 0.52                 | 0.02                   | 0.26                   |
| 28   | China         | 65,078                  | 13.00    | 14.00     | 27.00  | 0.52                 | 0.02                   | 0.26                   |
| 37   | Russia        | 14,806                  | 13.00    | 13.00     | 26.00  | 0.52                 | 0.02                   | 0.26                   |
| 44   | Argentina     | 36,613                  | 12.00    | 13.00     | 25.00  | 0.52                 | 0.02                   | 0.24                   |
| 45   | Brazil        | 60,108                  | 12.00    | 13.00     | 25.00  | 0.52                 | 0.02                   | 0.24                   |
| 47   | India         | 20,993                  | 12.00    | 12.00     | 24.00  | 0.51                 | 0.02                   | 0.24                   |
| 78   | Nigeria       | 4461                    | 10.00    | 7.00      | 17.00  | 0.51                 | 0.02                   | 0.21                   |
| Rank | Country       | Total liabilities ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------------|-------------------------|----------|-----------|--------|---------------------|------------------------|------------------------|
| 1    | United Kingdom| 5,212,740               | 184.00   | 205.00    | 389.00 | 0.97                | 6228.53                | 1.00                   |
| 2    | Switzerland   | 1,676,148               | 183.00   | 201.00    | 384.00 | 0.95                | 5448.84                | 0.99                   |
| 3    | France        | 1,172,837               | 183.00   | 192.00    | 375.00 | 0.92                | 5034.64                | 0.99                   |
| 4    | Germany       | 2,075,225               | 167.00   | 179.00    | 346.00 | 0.87                | 3269.83                | 0.96                   |
| 5    | Belgium       | 742,015                 | 158.00   | 189.00    | 347.00 | 0.91                | 3403.02                | 0.92                   |
| 6    | Luxembourg    | 891,302                 | 151.00   | 177.00    | 328.00 | 0.86                | 2878.95                | 0.90                   |
| 7    | South Korea   | 83,026                  | 148.00   | 81.00     | 229.00 | 0.62                | 945.89                 | 0.89                   |
| 8    | Chinese Taipei| 138,220                 | 140.00   | 104.00    | 244.00 | 0.66                | 1793.87                | 0.85                   |
| 9    | Austria       | 135,875                 | 122.00   | 149.00    | 271.00 | 0.77                | 1437.97                | 0.81                   |
| 10   | Denmark       | 170,129                 | 122.00   | 144.00    | 266.00 | 0.76                | 1603.90                | 0.80                   |
| 24   | Brazil        | 67,016                  | 34.00    | 52.00     | 86.00  | 0.57                | 36.91                  | 0.39                   |
| 33   | South Africa  | 60,181                  | 23.00    | 21.00     | 44.00  | 0.53                | 0.52                   | 0.33                   |
| 34   | China         | 281,943                 | 22.00    | 23.00     | 45.00  | 0.53                | 0.35                   | 0.32                   |
| 38   | Russia        | 232,145                 | 21.00    | 21.00     | 42.00  | 0.53                | 0.13                   | 0.31                   |
| 39   | India         | 49,537                  | 21.00    | 21.00     | 42.00  | 0.53                | 0.11                   | 0.31                   |
| 41   | Argentina     | 29,386                  | 21.00    | 20.00     | 41.00  | 0.52                | 0.12                   | 0.31                   |
| 87   | Nigeria       | 36,781                  | 14.00    | 14.00     | 28.00  | 0.52                | 0.00                   | 0.23                   |
| Rank | Country          | Total Liabilities ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|------------------|-------------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | Switzerland      | 662,119                 | 203.00   | 212.00    | 435.00 | 0.99                 | 3901.75                | 1.00                   |
| 2    | Belgium          | 431,984                 | 190.00   | 206.00    | 396.00 | 0.96                 | 3006.40                | 0.97                   |
| 3    | France           | 1,178,770               | 186.00   | 195.00    | 381.00 | 0.92                 | 2500.26                | 0.95                   |
| 4    | United Kingdom   | 4,084,290               | 186.00   | 206.00    | 392.00 | 0.96                 | 2933.43                | 0.95                   |
| 5    | Denmark          | 171,663                 | 177.00   | 191.00    | 368.00 | 0.90                 | 2216.37                | 0.93                   |
| 6    | Luxembourg       | 900,401                 | 178.00   | 198.00    | 376.00 | 0.93                 | 2416.54                | 0.92                   |
| 7    | South Korea      | 119,156                 | 171.00   | 154.00    | 325.00 | 0.78                 | 1582.45                | 0.90                   |
| 8    | Germany          | 1,442,919               | 160.00   | 183.00    | 343.00 | 0.87                 | 1587.35                | 0.87                   |
| 9    | Austria          | 99,910                  | 158.00   | 197.00    | 355.00 | 0.93                 | 2113.08                | 0.86                   |
| 10   | Chinese Taipei   | 248,738                 | 159.00   | 198.00    | 357.00 | 0.93                 | 2439.89                | 0.85                   |
| 21   | United States    | 3,420,831               | 91.00    | 148.00    | 239.00 | 0.76                 | 479.45                 | 0.60                   |
| 22   | South Africa     | 44,437                  | 91.00    | 110.00    | 201.00 | 0.67                 | 472.06                 | 0.58                   |
| 28   | Brazil           | 91,338                  | 44.00    | 60.00     | 104.00 | 0.58                 | 33.36                  | 0.39                   |
| 33   | China            | 713,439                 | 28.00    | 28.00     | 56.00  | 0.54                 | 0.21                   | 0.32                   |
| 39   | India            | 67,259                  | 27.00    | 27.00     | 54.00  | 0.53                 | 0.10                   | 0.31                   |
| 42   | Argentina        | 22,091                  | 27.00    | 27.00     | 54.00  | 0.53                 | 0.07                   | 0.31                   |
| 69   | Nigeria          | 26,698                  | 24.00    | 22.00     | 46.00  | 0.53                 | 0.03                   | 0.29                   |
| 74   | Russia           | 137,735                 | 25.00    | 24.00     | 49.00  | 0.53                 | 0.11                   | 0.29                   |
| Rank | Country       | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------------|-------------------|----------|-----------|--------|----------------------|------------------------|-----------------------|
| 1    | United States | 3,105,841         | 66       | 122       | 188    | 0.719424             | 1242.20601             | 1                     |
| 2    | United Kingdom| 1,289,876         | 62       | 108       | 170    | 0.682594             | 475.789563             | 0.962269              |
| 3    | Germany       | 1,167,313         | 61       | 94        | 155    | 0.649351             | 339.577947             | 0.960013              |
| 4    | France        | 776,583           | 60       | 93        | 153    | 0.649351             | 354.995721             | 0.940836              |
| 5    | Netherlands   | 705,536           | 60       | 93        | 153    | 0.649351             | 390.213597             | 0.936253              |
| 6    | Italy         | 579,551           | 58       | 116       | 174    | 0.704225             | 920.227504             | 0.915162              |
| 7    | Japan         | 540,800           | 58       | 81        | 139    | 0.623053             | 286.645998             | 0.910206              |
| 8    | Switzerland   | 218,587           | 57       | 121       | 178    | 0.716846             | 856.830988             | 0.90189               |
| 9    | Canada        | 319,795           | 56       | 83        | 139    | 0.626959             | 272.054646             | 0.89217               |
| 10   | Luxembourg    | 525,324           | 55       | 138       | 193    | 0.763359             | 1291.279158            | 0.882848              |
| 24   | Russia        | 26,254            | 46       | 26        | 72     | 0.510204             | 85.801083              | 0.769223              |
| 25   | Brazil        | 81,399            | 45       | 62        | 107    | 0.581395             | 177.002908             | 0.751578              |
| 26   | Argentina     | 25,154            | 46       | 32        | 78     | 0.530504             | 33.892572              | 0.742457              |
| 31   | China         | 20,417            | 38       | 0         | 38     | 0                    | 0                      | 0.667554              |
| 40   | India         | 15,521            | 36       | 0         | 36     | 0                    | 0                      | 0.615622              |
| 41   | South Africa  | 19,895            | 35       | 41        | 76     | 0.547945             | 77.408811              | 0.615565              |
| 77   | Nigeria       | 370               | 16       | 0         | 16     | 0                    | 0                      | 0.309923              |
Table 8. Total foreign portfolio assets: CPIS 2008

| Rank | Country           | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | United Kingdom    | 2,807,752         | 72       | 155       | 227    | 0.777778             | 1448.659277             | 1                      |
| 2    | United States     | 6,395,458         | 71       | 127       | 198    | 0.704545             | 668.232037              | 0.988072               |
| 3    | France            | 2,074,807         | 69       | 138       | 207    | 0.733108             | 769.182544              | 0.965975               |
| 4    | Germany           | 2,742,396         | 69       | 115       | 184    | 0.680251             | 263.020762              | 0.965975               |
| 5    | Netherlands       | 1,518,841         | 69       | 124       | 193    | 0.7                | 470.689816              | 0.959317               |
| 6    | Luxembourg        | 1,483,186         | 68       | 154       | 222    | 0.775               | 973.437728              | 0.952481               |
| 7    | Ireland           | 1,005,120         | 68       | 118       | 186    | 0.684543             | 458.334242              | 0.952472               |
| 8    | Canada            | 632,040           | 67       | 88        | 155    | 0.62536             | 136.851461              | 0.944864               |
| 9    | Cayman Islands    | 1,312,301         | 67       | 68        | 135    | 0.584906             | 109.572701              | 0.94394                |
| 10   | Switzerland       | 470,142           | 67       | 133       | 200    | 0.72093             | 598.046203              | 0.940608               |
| 13   | China             | 265,317           | 62       | 0         | 62     | 0                  | 0                       | 0.89003                |
| 21   | Brazil            | 204,944           | 60       | 80        | 140    | 0.604457             | 241.306515              | 0.861835               |
| 23   | Russian Federation| 74,404            | 60       | 50        | 110    | 0.554987             | 100.265068              | 0.859117               |
| 31   | India             | 198,402           | 54       | 38        | 92     | 0.527981             | 30.287851               | 0.760033               |
| 33   | South Africa      | 66,837            | 52       | 63        | 115    | 0.581769             | 154.109333              | 0.762256               |
| 47   | Argentina         | 13,376            | 42       | 39        | 81     | 0.535802             | 94.1203                 | 0.648802               |
| 99   | Nigeria           | 1987              | 21       | 0         | 21     | 0                  | 0                       | 0.346026               |
| Rank | Country               | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector Centrality |
|------|-----------------------|-------------------|----------|-----------|--------|----------------------|------------------------|-----------------------|
| 1    | United States         | 12,990,563        | 79       | 116       | 195    | 0.675758             | 531.5116               | 1                     |
| 2    | United Kingdom        | 3,803,554         | 77       | 165       | 242    | 0.793394             | 1244.787395            | 0.990064              |
| 3    | Germany               | 2,864,659         | 76       | 136       | 212    | 0.719355             | 305.990482             | 0.985741              |
| 4    | Ireland               | 1,727,323         | 76       | 140       | 216    | 0.728758             | 369.154525             | 0.98501               |
| 5    | Netherlands           | 2,057,739         | 75       | 132       | 207    | 0.710191             | 346.36158              | 0.976496              |
| 6    | Cayman Islands        | 2,867,494         | 72       | 138       | 210    | 0.724026             | 398.76992              | 0.973433              |
| 7    | Luxembourg            | 3,075,087         | 74       | 177       | 251    | 0.828996             | 1356.742817            | 0.971679              |
| 8    | France                | 3,085,208         | 76       | 149       | 225    | 0.750842             | 630.472339             | 0.969611              |
| 9    | Japan                 | 2,129,430         | 73       | 126       | 199    | 0.696875             | 256.449283             | 0.964918              |
| 10   | Switzerland           | 924,891           | 72       | 151       | 223    | 0.755322             | 565.903477             | 0.961788              |
| 11   | Brazil                | 414,477           | 74       | 103       | 177    | 0.648256             | 394.92982              | 0.95538               |
| 15   | China, P.R. Mainland  | 844,369           | 70       | 124       | 194    | 0.692547             | 217.349643             | 0.946727              |
| 28   | South Africa          | 164,933           | 64       | 74        | 138    | 0.597855             | 91.19698               | 0.877178              |
| 29   | Russian Federation    | 152,844           | 67       | 81        | 148    | 0.605978             | 79.920683              | 0.873421              |
| 30   | India                 | 418,455           | 64       | 50        | 114    | 0.55611              | 78.747081              | 0.872399              |
| 42   | Argentina             | 56,742            | 55       | 36        | 91     | 0.533493             | 3.285962               | 0.800059              |
| 78   | Nigeria               | 77,356            | 35       | 0         | 35     | 0                    | 0                       | 0.537761              |
Where \( g_{jk} \) is the number of shortest paths between \( j \) and \( k \) and \( g_{jk}(b) \) is the number of shortest paths between country \( j \) and \( k \) that country \( i \) resides on. Betweenness centrality is based on the concept that a vertex is central if it is required to connect to other pair of vertices. A node with a high betweenness centrality has the potential of influencing the spread of information through the network.

### 7.4. Eigenvector centrality

The eigenvector centrality is given as:

\[
C(G, \beta) = (I - \beta G)^{-1} G
\]

where \( \beta \) is the weight, \( G \) is the adjacency matrix and \( I \) is the identity matrix. Eigenvector centrality is based on the concept that a given node is more central when there are more connections within its local network. More connections in its local network imply that the node is more powerful. Relative scores are assigned to all nodes in the network based on the concept that being connected to high-scoring nodes contribute more to the score of a given node than equal connections to nodes lower scores.

### 7.5. Graph density

The magnitude of financial contagion reveals a kind of transitional phase: so far as the extent of negative shocks that affect financial markets are sufficiently small, a more densely connected financial system enhances financial stability (Acemoglu, Ozdaglar, & Tahbaz-Salehi, 2015). In mathematics, a dense graph is a graph in which the number of edges is close to the maximal number of edges. The opposite—a graph with only a few edges—is a sparse graph. For directed simple graphs, the graph density is defined as:

\[
D = \frac{|E|}{V(V-1)}
\]

where \( E \) is the number of edges and \( V \) is the number of vertices in the graph.

### 7.6. Average path length

Average path length is a concept in network topology that is defined as the average number of steps along the shortest paths for all possible pairs of network nodes. It is a measure of the efficiency of information or mass transport on a network. The average path length is given as:

\[
AvPL = \frac{\sum_{i,j \geq 1} d_{ij}}{n(n-1)/2}
\]

### 8. Results

The weighted, directed networks constructed from both BIS and CPIS data indicate that in line with the LTF, the contemporary global financial system is hierarchical. Our result from BIS and CPIS shows that the average degree increased from 11.142 to 33.888 and 17.327 to 28.216, respectively. This implies that there is an increasing interconnectedness among countries in the global financial network. (Chinazzi et al., 2013) report that higher interconnectedness minimizes the severity of crisis, as adverse shocks to dissipate quicker in a highly connected network.

Furthermore, the graph density increased from 0.069 to 0.158 for BIS data and 0.086 to 0.125 for CPIS data. The average path length of the global financial network has also decreased over time. When the magnitude of negative shocks to financial institutions is appropriately small, a more densely connected financial network augments financial stability. Yet, beyond a certain point, a densely connected financial network becomes more fragile as the dense interconnectedness acts as a means for propagating shocks, therefore, the same features that contribute to resilience under certain conditions may act as significant sources of systemic risk under other conditions (Acemoglu et al., 2015).
Results from BIS data (Figure 1 and Table 6) show that the United Kingdom lost its position as the most important node in the GFN to Switzerland as measured by our selected measures of centrality (Appendix 1.4). It, however, remains the country with the largest amount of cross-country banking and non-banking sector holdings followed by the United States as at June 2017. Possibly, Brexit—the prospective withdrawal of the United Kingdom from the European Union—may have contributed to the decline in centrality of the United Kingdom in the cross-border banking and non-banking GFN. In a referendum on 23 June 2016, 51.9% of the United Kingdom electorate who participated in the referendum voted to leave the European Union. The United Kingdom government invoked Article 50 of the Treaty on the European Union on 29 March 2017. The UK is thus due to leave the EU on 29 March 2019 (BBC, 2017). Sowells (2017), for example, argues that Brexit could have a major impact on financial services in the United Kingdom, depending on how it unfolds while. For the first time since 1930, the City of London lost in British political life. For the past 30 years, no other country has benefited more from the free movement of capital within advanced economies than the City but London’s status is potentially threatened due to the Brexit vote (Thompson, 2016).

Results from CPIS data (Figure 2 and Table 9) on the other hand show that the United States is the most important node in the GFN on cross-border portfolio holdings. United States, however, lost its position in all our selected measures of centrality including the most important node in the GFN on cross-border portfolio holdings in 2008 to the United Kingdom although it still had the largest holdings in cross-border portfolio followed by the United Kingdom in that year (Table 8). Results from December 2016 however shows that United States has reclaimed its number one
position on all measures of centrality. Our findings are in line with Chinazzi et al. (2013) who report in the *Post-Mortem Examination of the International Financial Network* that in 2008, the United Kingdom replaced the United States as the number one country using the binary hub centrality (BHC) measure although core-periphery structure of the GFN did not change. In line with Winecoff (2015), we find that there is a continuation of the prominence of the United States as the most important node in the GFN and a lack of emergence of any of the major emerging economies into the core of the GFN.

Table 10 shows the GDP of the selected countries in this study and Table 11 shows foreign-exchange reserves of these countries. From Tables 10 and 11, it can be seen that some emerging economies have improved significantly in terms of GDP and international reserves. China, for example, as at 2017 was the second largest economy by GDP in the world and held the largest foreign reserves, improving significantly from its position in 1977. Brazil, Argentina and India have also shown significant improvements in GDP from 1977 to 2017. Although all these emerging countries have made significant improvements in terms of GDP and international reserves relative to other advanced countries included in Table 5 to Table 9, none of these emerging economies have been able to make it among the top ten in our network metrics. Table 3 to Table 11, therefore, confirm that among the most significant 10 nodes in GFN, there has been no evidence of flattening. Contrary to Simmons (2001) and Drezner (2008), we find that an increasing market size did not translate into increase in ranking or prestige among the most important nodes in the GFN.

The apex of the GFN is mainly populated by the United States and Western European countries. Data from BIS shows that the United Kingdom was at the apex and thus the most important node of the GFN in 1977, 1997, and 2007 but Switzerland replaced the United Kingdom as the most important node in 2017. Data from CPIS, on the other hand, shows the United States as the most central country although it lost its position in 2008 to the United Kingdom and regained top
| Country       | 1977             | 2017             | 1977             | 2007             | 2017             |
|--------------|------------------|------------------|------------------|------------------|------------------|
| United States| 2,085,951,000,000| 19,390,604,000,000| 8,608,515,000,000| 14,477,635,000,000| 14,477,635,000,000|
| Japan        | 721,411,786,537  | China            | 3,552,182,311,653| China            | 3,552,182,311,653  |
| Germany      | 598,226,205,424  | Germany          | 3,439,953,462,907| Germany          | 3,439,953,462,907  |
| France       | 410,279,486,494  | 1,552,483,628,029| 3,074,359,743,898| United Kingdom   | 2,622,433,959,604  |
| United Kingdom| 263,066,457,352  | France           | 2,657,213,249,834| India            | 2,597,491,162,898  |
| Brazil       | 176,171,284,312  | Brazil           | 1,397,084,345,950| France           | 2,582,501,307,216  |
| China        | 174,938,098,827  | Brazil           | 883,199,625,325  | Russia           | 2,055,505,502,225  |
| Netherlands  | 125,395,875,999  | India            | 1,201,111,768,410| Russia           | 1,577,524,145,963  |
| India        | 119,866,746,574  | Russia           | 404,926,534,140  | South Korea      | 1,122,679,154,632  |
| Sweden       | 93,136,775,101   | Argentina        | 292,859,000,000  | Switzerland      | 479,913,034,322    |
| Belgium      | 83,283,328,419   | Switzerland      | 286,519,135,327  | Belgium          | 471,821,105,940    |
| Argentina    | 56,781,000,101   | Sweden           | 264,477,727,279  | Austria          | 388,691,445,387    |
| South Africa | 40,649,724,011   | Belgium          | 254,813,599,459  | Denmark          | 319,423,370,134    |
| Nigeria      | 36,035,407,725   | South Africa     | 152,586,154,514  | South Africa     | 299,033,511,000    |
| Luxembourg   | 3,922,895,892    | Ireland          | 82,826,166,132   | Argentina        | 287,530,508,431    |
| Switzerland  | —                | Nigeria          | 35,822,342,618   | Denmark          | 166,451,213,396    |
| Russia       | —                | Luxembourg       | 19,731,912,494   | Luxembourg       | 50,888,134,410     |
| Chinese Taipei| —                | Chinese Taipei   | —                | Chinese Taipei   | na                |
| Source: World Bank |           |                  |                  |                  |                  |
| Country | 1997 | 2017 |
|---------|------|------|
| Germany | 54,220,834,450 | 3,255,881,607,213 |
| Japan | 226,679,071,189 | 8,111,095,675,048 |
| China | 1,546,364,666,967 | 4,312,790,507,584 |
| United States | 53,374,370,833 | 146,448,007,912 |
| Switzerland | 478,822,287,316 | 42,804,901,514 |
| United States | 24,255,728,295 | 105,207,933,493 |
| Switzerland | 3,195,012,632 | 135,932,303,453 |
| Japan | 6,195,012,632 | 135,932,303,453 |
| United States | 23,778,086,731 | 135,932,303,453 |
| Switzerland | 5,693,177,833 | 135,932,303,453 |
| Canada | 5,708,520,617 | 115,487,087,627 |
| United States | 22,642,593,460 | 37,662,299,563 |
| Switzerland | 2,908,520,617 | 77,715,470,522 |
| Japan | 14,753,246,520 | 75,172,322,901 |
| United States | 25,907,718,768 | 75,172,322,901 |
| Switzerland | 14,753,246,520 | 75,172,322,901 |
| Canada | 10,958,486,439 | 77,715,470,522 |
| United States | 7,441,920,872 | 77,715,470,522 |
| Switzerland | 6,095,439,869 | 53,907,054,589 |
| Switzerland | 4,392,816,299 | 46,199,488,658 |
| Argentina | 4,335,987,601 | 54,318,340,315 |
| South Africa | 3,843,942,355 | 32,919,404,771 |
| South Africa | 2,019,343,736 | 18,193,957,088 |
| Luxembourg | — | 199,983,070,374 |
| Luxembourg | — | 190,857,673,779 |
| China | — | 190,857,673,779 |
| Source: World Bank | — | — |

Table 11: RESERVES (US$)

Source: World Bank

Sarpong & Deodutt, Cogent Economics & Finance (2019), 7: 1593071

https://doi.org/10.1080/23322039.2019.1593071
position n 2016. Data from both BIS and CPIS shows that the top 10 most important nodes in the GFN are mainly the United States and Western European countries. Regardless of the significant improvement in GDP and international foreign reserves by emerging countries particularly China, India, Brazil and Russia, none of these countries have been able to make it among the top 10 nodes in the GFN. This shows that there is no flattening of the GFN contrary to Drezner (2009), Kirshner (2008) and Helleiner and Kirshner (2012).

The hierarchical nature of the GFN explains why law tends to be relatively more elastic at the apex and less elastic at the periphery. The given the centrality of the nodes at the apex to other nodes in the network, a strict application of the law ex ante during periods of stress may pose systemic risk to the network as a whole which may lead to the collapse of the system with devastating consequences. Peripheral nodes pose negligible systemic risk to the network given the minimal connections of these nodes to other nodes in the network. A stringent application of legal commitments of such nodes even in periods of stress, therefore, pose no risk to network as the collapse of such nodes has negligible consequence to the network.

We find that almost all the countries in Latin America, Eastern Europe, Africa and Asia with the exception of Japan, are all found at the periphery of the GFN. These countries have relatively low centrality measures. Since countries on the periphery are connected to only a few other countries with the few existing ties being relatively weak, any crisis in a peripheral country will have a very limited effect on the balance sheets other countries within the GFN. By virtue of their position and size of balance sheets, it becomes obvious the elasticity of law in the GFN will not work in their favor.

Overall, the most central countries in the GFN has remained relatively unchanged over time. Our results are partially contrary to Oatley et al. (2013) who conclude that global crises are not sufficient to change the system structure of the GFN arguing that there must be a large gap between the underlying distribution of fitness and the existing hierarchical structure. On the other hand, our study supports the argument of Oatley et al. (2013) that the United States is the most important node in the GFN and the center of the network.

9. Conclusion
Prevailing finance and economic theories implicitly assume a system of laws which are taken as given and thus a critical analysis of the influence of law in finance is largely ignored in the study of financial market behavior. Pistor’s (2013b) LTF, however, throws some light on the fact that law is “in” finance and prices through the misconstrued implicit assumption of equality before the law, which according to the LTF, is in direct conflict with finance given its hierarchical nature. In this study, we test the hierarchical assertion of the LTF using data from the Bank for International Settlements (BIS) and Coordinated Portfolio Investment Survey (CPIS) from the International Monetary Fund (IMF). In line with the LTF, we find that the GFN is a hierarchical network with the United States at the apex surrounded by other western European countries and Japan with other countries at the periphery using data from CPIS. Our data from BIS reveal that the United Kingdom has lost its position as the most important node in the GFN in all our measures of centrality. Furthermore, no emerging economy has been able to make it among the top 10 most central nodes in the global finance network although these economies have made significant improvements in GDP and international reserves with China, for example, ranked as the second largest economy and the largest holder of international reserves. There is, therefore, no evidence of a flattening of the GFN.

The elasticity of law is a function of one’s position within the GFN and thus countries at the apex continue to receive preferential treatment. Countries at the periphery of the GFN, on the other hand, suffer the negative consequences of the elasticity of law. The contemporary financial system is in conflict with the idea of equality of all before the law. The elasticity of law in finance, however, can be attributed to the architecture of the GFN. Given its hierarchical nature, the nodes at the apex of the GFN are very critical for the survival of the network as a whole and therefore a stringent application of the law in times of stress may not only negatively affect the nodal state but also all other states connected to this state.
due to its centrality and may, therefore, pose a systemic risk to the whole network. Peripheral nodes, on the other hand, do not enjoy such centrality and thus any stringent application of the law, no matter how debilitating, will not pose any significant risk to the network.

Subsequent to the Global Financial Crisis, financial regulations globally distinguish between financial institutions based on the systemic risk they pose to the financial system. These “systemically important” institutions are subjected to more stringent regulations than other smaller institutions within the financial network. Our evaluation of the GFN reveals that this argument is also applicable to countries at the apex of the GFN. The hierarchical nature implies that some counties are more central than others and therefore pose systemic risk to the GFN while others can fail with no systemic consequences. The approach to regulating the global financial system should, therefore, focus on more stringent rules for the most central countries. This could be more effective in ensuring stability in the global financial system.

Funding
The authors received no direct funding for this research.

Author details
Prince Kwasi Sarpong1
E-mail: Pk.sarpong@cfps.co.za
Jugjith Deodutt2
E-mail: DEODUTTJ@ukzn.ac.za
1 Centre for Financial Planning Studies, Cape Town, South Africa.
2 School of Accounting, Economics and Finance, University of KwaZulu-Natal, Durban, South Africa.

Citation information
Cite this article as: Legal theory of finance: Evidence from global financial networks, Prince Kwasi Sarpong & Jugjith Deodutt, Cogent Economics & Finance (2019), 7: 1593071.

Notes
1. Ben Bernanke, the former chairman of the Federal Reserve Bank of the US, famously defined this role as “we do everything it takes” to save the financial system.
2. The agreements can be found at: https://www.newyorkfed.org/markets/liquidity_swap.html.
3. “Vulture Funds and Poor Country Debt: Recent Developments and Policy Responses”, Jubilee USA Network, Briefing Note No. 4, April 2008, p. 3.
4. African Development Bank, “Vulture Funds in the Sovereign Debt Context”, at: http://www.afrdb.org/en-topics-and-sectors/initiatives-partnerships/african-legal-supportfacility/vulture-funds-in-the-sovereign-debt-context/.
5. 727 F.3d 230 (2d Cir. 2013), cert. denied, 134 S. Ct. 2819 (2014).
6. Republic of Argentina v. NML Capital, Ltd., (2d Cir. 26 October 2012) (Nos. 12–105) p 18.
7. ArHRC/14/21, 20 April 2010, para. 24.
8. ArHRC/33/56.

Cover image
Source: Author.

References
Acemoglu, D., Ozdaglar, A., & Tahbaz-Salehi, A. (2015). Systemic risk and stability in financial networks. The American Economic Review, 105(2), 564–608. doi:10.1257/aer.20130456
Amorollo, L. (2016). Europe goes ‘countercyclical’: A legal assessment of the new countercyclical dimension of the CRR/CRD IV package. European Business Organization Law Review, 17(1–2), 137–171. doi:10.1007/s40804-016-0032-4
Bailey, M. J., & Rubin, P. H. (1994). A positive theory of legal change. International Review of Law and Economics, 14(4), 467–477. doi:10.1016/0144-8188(94)90027-2
BBC. (2017). Article 50: Theresa May to trigger Brexit process next week. [Online] Retrieved from http://www.bbc.com/news/uk-politics-39325561
Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Law and finance: Why does legal origin matter? Journal of Comparative Economics, 31(4), 653–675. doi:10.1016/S0142-6416(02)00099-8
Bonavita, J. (2016). Asset securitisation in Germany: Risk transfer or legal transformation? European Business Organization Law Review, 17(1–2), 15–39. doi:10.1007/s40804-016-0029-z
Chinazzi, M., Fogliolo, G., Reyes, J. A., & Schiavo, S. (2013). Post-mortem examination of the international financial network. Journal of Economic Dynamics and Control, 37(8), 1692–1713. doi:10.1016/j.jedc.2013.01.010
Deskin, S. (2013). The legal theory of finance: Implications for methodology and empirical research. Journal of Comparative Economics, 41(2), 338–342. doi:10.1016/j.jce.2013.03.005
Drezner, D. W. (2008). All politics is global: Explaining international regulatory regimes. Princeton, NJ: Princeton University Press.
Drezner, D. W. (2009). Bad debts: Assessing China’s financial influence in great power politics. International Security, 34(2), 7–45. doi:10.1162/isec.2009.34.2.7
Fisman, R., Jakiela, P., Kariv, S., & Markovits, D. (2015). The distributional preferences of an elite. Science, 349(6254), aab0096. doi:10.1126/science.aab0096
Gai, P., & Kapadia, S. (2010). Contagion in financial networks. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Science, 466(2120(2401)). doi:10.1098/rspa.2009.0410
Ghert, A. C., & Kudlyak, M. (2011). Recourse and residential mortgage default: Evidence from US states. Review of Financial Studies, 24(9), 3139–3186. doi:10.1093/rfs/hhr055
Guzman, M., & Stiglitz, J. E. (2016). How hedge funds held Argentina for ransom. Retrieved from https://www8.gsb.columbia.edu/faculty/jstiglitz/sites/jstiglitz/files/How%20Hedge%20Funds%20Held%20Argentina%20for%20Ransom%20-%20The%20New%20York%20Times.pdf
Hear, B. (2016). Freedom of contract and financial stability through the lens of the legal theory of finance (LTJ)-LTJ approaches to ABS, pari passu-clauses, CCPs, and Basel III. Sustainable architecture for finance in Europe, 141. Retrieved from https://ssrn.com/abstract=2831713
### Table A1.1. BIS rank of countries by eigenvector centrality—1977

| Rank | Country       | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | United Kingdom | 88 570.00         | 135      | 150       | 285    | 0.96                 | 6390.74                | 1                      |
| 2    | France        | 39 771.00         | 126      | 140       | 266    | 0.9                 | 5218.03                | 0.97                   |
| 3    | Germany       | 25 354.00         | 111      | 124       | 235    | 0.83                 | 2860.39                | 0.91                   |
| 4    | Luxembourg    | —                 | 109      | 119       | 228    | 0.81                 | 2901.79                | 0.87                   |
| 5    | Belgium       | 28 989.00         | 108      | 122       | 230    | 0.81                 | 2785.9                 | 0.87                   |
| 6    | Japan         | 7 282.00          | 66       | 63        | 129    | 0.63                 | 427.39                 | 0.69                   |
| 7    | United States | 73 839.00         | 62       | 62        | 124    | 0.62                 | 401.49                 | 0.66                   |
| 8    | Sweden        | 3 362.00          | 60       | 57        | 117    | 0.61                 | 352.13                 | 0.63                   |
| 9    | Switzerland   | 77 482.00         | 55       | 57        | 112    | 0.61                 | 343.91                 | 0.6                    |
| 10   | Netherlands   | 25 407.00         | 43       | 41        | 84     | 0.58                 | 125.49                 | 0.53                   |
| 11   | Denmark       | 3 040.00          | 31       | 48        | 79     | 0.59                 | 109.85                 | 0.43                   |
| 12   | Ireland       | 2 044.00          | 29       | 15        | 44     | 0.53                 | 19.09                  | 0.41                   |
| 13   | Bahamas       | 20 827.00         | 12       | 11        | 23     | 0.52                 | 0.15                   | 0.29                   |
| 14   | Canada        | 12 598.00         | 12       | 12        | 24     | 0.52                 | 0.15                   | 0.29                   |
| 15   | Austria       | 7 297.00          | 11       | 12        | 23     | 0.52                 | 0.08                   | 0.27                   |
| 16   | Australia     | 1 034.00          | 11       | 10        | 21     | 0.52                 | 0.08                   | 0.27                   |
| 17   | Brazil        | 6 387.00          | 11       | 11        | 22     | 0.52                 | 0.08                   | 0.27                   |
| 18   | Spain         | 9 415.00          | 11       | 12        | 23     | 0.52                 | 0.08                   | 0.27                   |

(Continued)
| Rank | Country         | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-----------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 19   | Finland         | 1 373.00          | 11       | 13        | 24     | 0.52                 | 0.42                   | 0.27                   |
| 20   | Italy           | 14 145.00         | 11       | 12        | 23     | 0.52                 | 0.08                   | 0.27                   |
| 21   | Norway          | 2 808.00          | 11       | 11        | 22     | 0.52                 | 0.08                   | 0.27                   |
| 22   | Panama          | 7 294.00          | 11       | 11        | 22     | 0.52                 | 0.08                   | 0.27                   |
| 23   | Portugal        | 1 243.00          | 11       | 10        | 21     | 0.52                 | 0.08                   | 0.27                   |
| 24   | Argentina       | 4 631.00          | 10       | 10        | 20     | 0.52                 | 0.08                   | 0.26                   |
| 25   | Hong Kong SAR   | 7 223.00          | 10       | 11        | 21     | 0.52                 | 0.08                   | 0.26                   |
| 26   | Indonesia       | 2 369.00          | 10       | 9         | 19     | 0.51                 | 0.08                   | 0.26                   |
| 27   | Mexico          | 5 348.00          | 10       | 11        | 21     | 0.52                 | 0.08                   | 0.26                   |
| 28   | Soviet Union    | 4 473.00          | 10       | 10        | 20     | 0.52                 | 0.08                   | 0.25                   |
| 29   | Chile           | 890.00            | 10       | 8         | 18     | 0.51                 | 0.08                   | 0.25                   |
| 30   | Singapore       | 7 816.00          | 10       | 12        | 22     | 0.52                 | 0.08                   | 0.25                   |
| 31   | South Africa    | 1 059.00          | 10       | 9         | 19     | 0.51                 | 0.08                   | 0.25                   |
| 32   | Colombia        | 1 348.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.24                   |
| 33   | Liberia         | 1 306.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.24                   |
| 34   | Peru            | 470.00            | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.24                   |
| 35   | Venezuela       | 8 390.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.24                   |
| 36   | India           | 1 950.00          | 9        | 8         | 17     | 0.51                 | 0.08                   | 0.24                   |
| 37   | Turkey          | 593.00            | 9        | 11        | 20     | 0.52                 | 0.08                   | 0.24                   |
| 38   | International organisations | 7 053.00 | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.24                   |
| 39   | Egypt           | 2 763.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.23                   |
| 40   | Israel          | 3 852.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.23                   |
| 41   | Yugoslavia      | 2 372.00          | 9        | 8         | 17     | 0.51                 | 0.08                   | 0.23                   |
| Rank | Country                   | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------|------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 42   | Philippines              | 1 840.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.23                   |
| 43   | Poland                   | 443.00            | 9        | 12        | 21     | 0.52                 | 0.08                   | 0.23                   |
| 44   | Iran                     | 6 976.00          | 9        | 8         | 17     | 0.51                 | 0.08                   | 0.23                   |
| 45   | Saudi Arabia             | 22 508.00         | 9        | 8         | 17     | 0.51                 | 0.08                   | 0.23                   |
| 46   | Cayman Islands           | 13 925.00         | 9        | 10        | 19     | 0.52                 | 0.08                   | 0.23                   |
| 47   | Hungary                  | 1 034.00          | 9        | 9         | 18     | 0.51                 | 0.08                   | 0.23                   |
| 48   | Malaysia                 | 1 981.00          | 8        | 8         | 16     | 0.51                 | 0.08                   | 0.22                   |
| 49   | Chinese Taipei           | 3 536.00          | 8        | 9         | 17     | 0.51                 | 0.08                   | 0.22                   |
| 50   | Bermuda                  | 4 069.00          | 8        | 9         | 17     | 0.51                 | 0.08                   | 0.22                   |
| 51   | Ecuador                  | 632.00            | 8        | 9         | 17     | 0.51                 | 0.08                   | 0.22                   |
| 52   | China                    | 2 541.00          | 8        | 8         | 16     | 0.51                 | 0.08                   | 0.22                   |
| 53   | Greece                   | 3 470.00          | 8        | 9         | 17     | 0.51                 | 0.08                   | 0.22                   |
| 54   | Pakistan                 | 640.00            | 8        | 6         | 14     | 0.51                 | 0.02                   | 0.21                   |
| 55   | Algeria                  | 2 027.00          | 8        | 8         | 16     | 0.51                 | 0.08                   | 0.21                   |
| 56   | Iraq                     | 4 568.00          | 8        | 7         | 15     | 0.51                 | 0.08                   | 0.21                   |
| 57   | Kuwait                   | 4 835.00          | 8        | 7         | 15     | 0.51                 | 0.08                   | 0.21                   |
| 58   | Libya                    | 3 070.00          | 8        | 5         | 13     | 0.51                 | 0.02                   | 0.21                   |
| 59   | Nigeria                  | 791.00            | 8        | 8         | 16     | 0.51                 | 0.08                   | 0.21                   |
| 60   | Serbia and Montenegro    | 1 077.00          | 9        | 7         | 16     | 0.51                 | 0.08                   | 0.21                   |
| 61   | Bulgaria                 | 517.00            | 8        | 8         | 16     | 0.51                 | 0.08                   | 0.21                   |
| 62   | Romania                  | 213.00            | 8        | 9         | 17     | 0.51                 | 0.15                   | 0.21                   |
| 63   | Bahrain                  | 3 362.00          | 8        | 8         | 16     | 0.51                 | 0.15                   | 0.21                   |
| 64   | South Korea              | 3 045.00          | 7        | 8         | 15     | 0.51                 | 0.08                   | 0.21                   |
| Rank | Country              | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------------|-------------------|----------|-----------|--------|----------------------|------------------------|-----------------------|
| 65   | Thailand             | 1,189.00          | 7        | 8         | 15     | 0.51                 | 0.08                   | 0.2                   |
| 66   | Netherlands Antilles | 2,316.00          | 7        | 8         | 15     | 0.51                 | 0.08                   | 0.2                   |
| 67   | Lebanon              | 3,798.00          | 7        | 7         | 14     | 0.51                 | 0.08                   | 0.2                   |
| 68   | Morocco              | 925.00            | 7        | 7         | 14     | 0.51                 | 0.08                   | 0.2                   |
| 69   | Uruguay              | 1,092.00          | 7        | 7         | 14     | 0.51                 | 0.08                   | 0.2                   |
| 70   | Czechoslovakia       | 476.00            | 7        | 7         | 14     | 0.51                 | 0.06                   | 0.2                   |
| 71   | Cuba                 | 256.00            | 7        | 8         | 15     | 0.51                 | 0.08                   | 0.2                   |
| 72   | Syria                | 704.00            | 7        | 6         | 13     | 0.51                 | 0.08                   | 0.19                  |
| 73   | Angola               | 157.00            | 7        | 3         | 10     | 0.5                  | 0                      | 0.19                  |
| 74   | Trinidad and Tobago  | 766.00            | 7        | 5         | 12     | 0.51                 | 0.08                   | 0.19                  |
| 75   | United Arab Emirates | 2,498.00          | 6        | 7         | 13     | 0.51                 | 0.08                   | 0.18                  |
| 76   | Kenya                | 840.00            | 6        | 6         | 12     | 0.51                 | 0.08                   | 0.18                  |
| 77   | Congo Democratic Republic | 400.00 | 6 | 6 | 12 | 0.51 | 0.08 | 0.18 |
| 78   | Yemen                | 1,057.00          | 6        | 5         | 11     | 0.51                 | 0.06                   | 0.18                  |
| 79   | Bolivia              | 184.00            | 6        | 6         | 12     | 0.51                 | 0.08                   | 0.18                  |
| 80   | Cote d’Ivoire       | 525.00            | 6        | 6         | 12     | 0.51                 | 0.08                   | 0.18                  |
| 81   | Cyprus               | 413.00            | 6        | 4         | 10     | 0.51                 | 0.06                   | 0.17                  |
| 82   | Malta                | 690.00            | 6        | 2         | 8      | 0.5                  | 0                      | 0.17                  |
| 83   | Tunisia              | 365.00            | 6        | 5         | 11     | 0.51                 | 0.08                   | 0.17                  |
| 84   | Tanzania             | 306.00            | 6        | 4         | 10     | 0.5                  | 0.02                   | 0.17                  |
| 85   | Sudan                | 154.00            | 6        | 7         | 13     | 0.51                 | 0.08                   | 0.17                  |
| Rank | Country                     | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-----------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 86   | New Zealand                 | 313.00            | 6        | 8         | 14     | 0.51                 | 0.06                   | 0.17                   |
| 87   | German Democratic Republic  | 471.00            | 6        | 6         | 12     | 0.5                  | 0.08                   | 0.16                   |
| 88   | Andorra                     | 89.00             | 5        | 3         | 8      | 0.5                  | 0                      | 0.16                   |
| 89   | Dominican Republic          | 11.00             | 5        | 2         | 7      | 0.5                  | 0                      | 0.16                   |
| 90   | Ethiopia                    | 249.00            | 5        | 3         | 8      | 0.5                  | 0.06                   | 0.16                   |
| 91   | Gabon                       | 161.00            | 5        | 5         | 10     | 0.51                 | 0.08                   | 0.16                   |
| 92   | Iceland                     | 122.00            | 5        | 5         | 10     | 0.51                 | 0.08                   | 0.16                   |
| 93   | Jordan                      | 664.00            | 5        | 5         | 10     | 0.51                 | 0.08                   | 0.16                   |
| 94   | Madagascar                  | 61.00             | 5        | 3         | 8      | 0.5                  | 0                      | 0.16                   |
| 95   | Mauritania                  | 61.00             | 5        | 4         | 9      | 0.5                  | 0.08                   | 0.16                   |
| 96   | Mauritius                   | 53.00             | 5        | 2         | 7      | 0.5                  | 0.06                   | 0.16                   |
| 97   | Mozambique                  | 103.00            | 5        | 3         | 8      | 0.5                  | 0.08                   | 0.16                   |
| 98   | Oman                        | 247.00            | 5        | 5         | 10     | 0.51                 | 0.08                   | 0.16                   |
| 99   | Somalia                     | 139.00            | 5        | 1         | 6      | 0.49                 | 0                      | 0.16                   |
| 100  | Vietnam                     | 96.00             | 5        | 6         | 11     | 0.51                 | 0.06                   | 0.15                   |
| 101  | Albania                     | 63.00             | 5        | 0         | 5      | 0                    | 0                      | 0.14                   |
| 102  | West Indies UK              | 266.00            | 5        | 5         | 10     | 0.51                 | 0                      | 0.14                   |
| 103  | Afghanistan                 | 172.00            | 4        | 1         | 5      | 0.48                 | 0                      | 0.13                   |
| 104  | Bangladesh                  | 97.00             | 4        | 4         | 8      | 0.5                  | 0.02                   | 0.13                   |
| 105  | Costa Rica                  | 152.00            | 4        | 5         | 9      | 0.51                 | 0.02                   | 0.13                   |
| 106  | Myanmar                     | 22.00             | 4        | 3         | 7      | 0.5                  | 0                      | 0.13                   |
| 107  | Papua New Guinea            | 177.00            | 4        | 2         | 6      | 0.5                  | 0                      | 0.13                   |
| 108  | Paraguay                    | 103.00            | 4        | 2         | 6      | 0.5                  | 0                      | 0.13                   |

(Continued)
| Rank | Country  | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------|-------------------|----------|-----------|--------|---------------------|------------------------|------------------------|
| 109  | Benin    | 34.00             | 4        | 2         | 6      | 0.5                 | 0                      | 0.13                   |
| 110  | Cameroon | 89.00             | 4        | 5         | 9      | 0.51                | 0.06                   | 0.13                   |
| 111  | Guatemala| 139.00            | 4        | 5         | 9      | 0.51                | 0.06                   | 0.13                   |
| 112  | Senegal  | 73.00             | 4        | 5         | 9      | 0.51                | 0.06                   | 0.13                   |
| 113  | Togo     | 43.00             | 4        | 4         | 8      | 0.51                | 0.06                   | 0.13                   |
| 114  | Uganda   | 97.00             | 4        | 2         | 6      | 0.5                 | 0                      | 0.13                   |
| 115  | Guinea   | 27.00             | 4        | 4         | 8      | 0.5                 | 0.02                   | 0.12                   |
| 116  | Vanuatu  | 79.00             | 4        | 4         | 8      | 0.51                | 0.08                   | 0.12                   |
| 117  | Rwanda   | 102.00            | 4        | 1         | 5      | 0.45                | 0.02                   | 0.12                   |
| 118  | Zambia   | 153.00            | 4        | 6         | 10     | 0.51                | 0.06                   | 0.12                   |
| 119  | Zimbabwe | 55.00             | 4        | 2         | 6      | 0.5                 | 0                      | 0.12                   |
| 120  | Mali     | 13.00             | 4        | 1         | 5      | 0.48                | 0                      | 0.12                   |
| 121  | North Korea | 45.00     | 4        | 7         | 11     | 0.51                | 0                      | 0.12                   |
| 122  | Ghana    | 143.00            | 4        | 4         | 8      | 0.5                 | 0                      | 0.12                   |
| 123  | Sri Lanka| 204.00            | 3        | 3         | 6      | 0.5                 | 0                      | 0.1                    |
| 124  | Qatar    | 594.00            | 3        | 5         | 8      | 0.51                | 0                      | 0.1                    |
| 125  | Sierra Leone | 72.00     | 3        | 3         | 6      | 0.5                 | 0                      | 0.1                    |
| 126  | Djibouti | 50.00             | 3        | 2         | 5      | 0.49                | 0                      | 0.1                    |
| 127  | Malawi   | 98.00             | 3        | 2         | 5      | 0.5                 | 0                      | 0.1                    |
| 128  | Burundi  | 52.00             | 3        | 1         | 4      | 0.45                | 0                      | 0.1                    |
| 129  | Belize   | 18.00             | 3        | 2         | 5      | 0.5                 | 0.06                   | 0.1                    |
| 130  | Congo    | 66.00             | 3        | 4         | 7      | 0.5                 | 0                      | 0.1                    |
| 131  | Haiti    | 9.00              | 3        | 1         | 4      | 0.48                | 0                      | 0.1                    |
| 132  | Niger    | 29.00             | 3        | 3         | 6      | 0.5                 | 0.06                   | 0.1                    |

(Continued)
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 133  | Honduras                | 90.00             | 3        | 4         | 7      | 0.5                  | 0.02                   | 0.09                   |
| 134  | Nepal                   | 59.00             | 3        | 0         | 3      | 0                    | 0                      | 0.09                   |
| 135  | Gambia                  | 22.00             | 3        | 3         | 6      | 0.5                  | 0                      | 0.09                   |
| 136  | El Salvador             | 72.00             | 3        | 4         | 7      | 0.51                 | 0.06                   | 0.09                   |
| 137  | Vatican City State      | 97.00             | 3        | 0         | 3      | 0                    | 0                      | 0.09                   |
| 138  | Fiji                    | 142.00            | 3        | 2         | 5      | 0.5                  | 0.06                   | 0.09                   |
| 139  | Gibraltar               | 78.00             | 3        | 1         | 4      | 0.49                 | 0                      | 0.09                   |
| 140  | Brunei                  | 1 258.00          | 3        | 1         | 4      | 0.49                 | 0                      | 0.08                   |
| 141  | Central African Republic| 19.00             | 2        | 1         | 3      | 0.48                 | 0                      | 0.07                   |
| 142  | Jamaica                 | 52.00             | 2        | 4         | 6      | 0.51                 | 0                      | 0.07                   |
| 143  | Macao SAR               | 24.00             | 2        | 0         | 2      | 0                    | 0                      | 0.07                   |
| 144  | Cape Verde              | 11.00             | 2        | 0         | 2      | 0                    | 0                      | 0.07                   |
| 145  | Guinea-Bissau           | 8.00              | 2        | 0         | 2      | 0                    | 0                      | 0.07                   |
| 146  | Sao Tome and Principe   | 20.00             | 2        | 0         | 2      | 0                    | 0                      | 0.07                   |
| 147  | Cambodia                | 23.00             | 2        | 0         | 2      | 0                    | 0                      | 0.07                   |
| 148  | Botswana                | 39.00             | 2        | 2         | 4      | 0.5                  | 0                      | 0.06                   |
| 149  | Nicaragua               | 41.00             | 2        | 5         | 7      | 0.51                 | 0                      | 0.06                   |
| 150  | Suriname                | 130.00            | 2        | 1         | 3      | 0.49                 | 0                      | 0.06                   |
| 151  | Burkina Faso            | 13.00             | 2        | 1         | 3      | 0.48                 | 0                      | 0.06                   |
| 152  | Laos                    | 5.00              | 2        | 1         | 3      | 0.48                 | 0                      | 0.06                   |
| 153  | Barbados                | 26.00             | 1        | 2         | 3      | 0.49                 | 0                      | 0.03                   |
| 154  | Guyana                  | 43.00             | 1        | 2         | 3      | 0.5                  | 0                      | 0.03                   |

(Continued)
| Rank | Country                        | Total value (M$n) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------------|------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 155  | British Overseas Territories  | 8.00             | 1        | 0         | 1      | 0                    | 0                      | 0.03                   |
| 156  | Chad                           | 13.00            | 1        | 1         | 2      | 0.48                 | 0                      | 0.03                   |
| 157  | Comoros                        | 3.00             | 1        | 0         | 1      | 0                    | 0                      | 0.03                   |
| 158  | French Polynesia               | 8.00             | 1        | 1         | 2      | 0.45                 | 0                      | 0.03                   |
| 159  | Equatorial Guinea              | 0                | 2        | 2         | 2      | 0.5                  | 0                      | 0                      |
| 160  | Namibia                        | 4                | 0        | 0         | 0      | 0                    | 0                      | 0                      |
| 161  | US Pacific Islands             | 16               | 0        | 0         | 0      | 0                    | 0                      | 0                      |
| 162  | Tonga                          | 0                | 0        | 0         | 0      | 0                    | 0                      | 0                      |
Table A1.2. BIS rank of countries by eigenvector centrality—1997

| Rank | Country        | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|----------------|------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 1    | United Kingdom | 1 255 251.00     | 169      | 190       | 359    | 0.98               | 6947.5                | 1                      |
| 2    | France         | 361 655.00       | 167      | 170       | 337    | 0.89               | 5941.88               | 0.99                   |
| 3    | Switzerland    | 517 838.00       | 164      | 188       | 352    | 0.97               | 6289.17               | 0.98                   |
| 4    | Germany        | 465 653.00       | 140      | 152       | 292    | 0.82               | 3193.26               | 0.91                   |
| 5    | Luxembourg     | 227 547.00       | 130      | 169       | 299    | 0.88               | 3172.06               | 0.84                   |
| 6    | Belgium        | 181 837.00       | 128      | 179       | 307    | 0.92               | 3600.96               | 0.84                   |
| 7    | Japan          | 729 500.00       | 103      | 106       | 209    | 0.69               | 1342.44               | 0.75                   |
| 8    | United States  | 1 192 700.00     | 104      | 120       | 224    | 0.72               | 1646.27               | 0.75                   |
| 9    | Sweden         | 34 380.00        | 94       | 102       | 196    | 0.68               | 919.58                | 0.71                   |
| 10   | Ireland        | 53 932.00        | 82       | 78        | 160    | 0.63               | 934.6                 | 0.64                   |
| 11   | Denmark        | 42 318.00        | 72       | 111       | 183    | 0.7                | 763.08                | 0.6                    |
| 12   | Finland        | 20 649.00        | 57       | 60        | 117    | 0.59               | 212.63                | 0.52                   |
| 13   | Netherlands    | 255 547.00       | 53       | 53        | 106    | 0.58               | 146.38                | 0.51                   |
| 14   | Australia      | 27 080.00        | 27       | 26        | 53     | 0.53               | 24.37                 | 0.34                   |
| 15   | Bermuda        | 20 210.00        | 14       | 13        | 27     | 0.52               | 0.02                  | 0.26                   |
| 16   | Canada         | 62 010.00        | 14       | 14        | 28     | 0.52               | 0.02                  | 0.26                   |
| 17   | Chinese Taipei | 36 719.00        | 14       | 12        | 26     | 0.51               | 0.02                  | 0.26                   |
| 18   | Hong Kong SAR  | 304 573.00       | 14       | 14        | 28     | 0.52               | 0.02                  | 0.26                   |
| 19   | Indonesia      | 12 033.00        | 14       | 14        | 28     | 0.52               | 0.02                  | 0.26                   |
| 20   | Italy          | 206 525.00       | 14       | 14        | 28     | 0.52               | 0.02                  | 0.26                   |
| 21   | Malaysia       | 13 126.00        | 14       | 14        | 28     | 0.52               | 0.02                  | 0.26                   |
| 22   | Singapore      | 222 435.00       | 14       | 14        | 28     | 0.52               | 0.02                  | 0.26                   |
| 23   | South Africa   | 9 000.00         | 14       | 13        | 27     | 0.52               | 0.02                  | 0.26                   |
| 24   | South Korea    | 41 838.00        | 14       | 13        | 27     | 0.52               | 0.02                  | 0.26                   |

(Continued)
Table A1.2.  (Continued)

| Rank | Country           | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------|-------------------|----------|-----------|--------|---------------------|------------------------|------------------------|
| 25   | Austria           | 49 299.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 26   | Bahamas           | 153 350.00        | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 27   | Cayman Islands    | 380 239.00        | 13       | 14        | 27     | 0.52                | 0.02                   | 0.26                   |
| 28   | China             | 65 078.00         | 13       | 14        | 27     | 0.52                | 0.02                   | 0.26                   |
| 29   | Czech Republic    | 8 299.00          | 13       | 12        | 25     | 0.51                | 0.02                   | 0.26                   |
| 30   | Greece            | 34 026.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 31   | Hungary           | 3 366.00          | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 32   | Mexico            | 43 263.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 33   | Norway            | 6 059.00          | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 34   | Philippines       | 9 705.00          | 13       | 12        | 25     | 0.51                | 0.02                   | 0.26                   |
| 35   | Poland            | 15 483.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 36   | Portugal          | 48 185.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 37   | Russia            | 14 806.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 38   | Spain             | 106 160.00        | 13       | 14        | 27     | 0.52                | 190.02                 | 0.26                   |
| 39   | Turkey            | 22 928.00         | 13       | 13        | 26     | 0.52                | 0.02                   | 0.26                   |
| 40   | Egypt             | 23 351.00         | 12       | 12        | 24     | 0.51                | 0.02                   | 0.24                   |
| 41   | Iceland           | 387.00            | 12       | 12        | 24     | 0.51                | 0.02                   | 0.24                   |
| 42   | Israel            | 14 719.00         | 12       | 12        | 24     | 0.51                | 0.02                   | 0.24                   |
| 43   | Tanzania          | 1 257.00          | 12       | 8         | 20     | 0.51                | 0.02                   | 0.24                   |
| 44   | Argentina         | 36 613.00         | 12       | 13        | 25     | 0.52                | 0.02                   | 0.24                   |
| 45   | Brazil            | 60 108.00         | 12       | 13        | 25     | 0.52                | 0.02                   | 0.24                   |
| 46   | Chile             | 14 105.00         | 12       | 13        | 25     | 0.52                | 0.02                   | 0.24                   |
| 47   | India             | 20 993.00         | 12       | 12        | 24     | 0.51                | 0.02                   | 0.24                   |
| 48   | Panama            | 38 486.00         | 12       | 12        | 24     | 0.51                | 0.02                   | 0.24                   |

(Continued)
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|--------------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|------------------------|
| 49   | Thailand                 | 9 465.00          | 12       | 14        | 26     | 0.52                | 0.02                  | 0.24                   |
| 50   | International organisations | 80 776.00        | 12       | 13        | 25     | 0.52                | 0.02                  | 0.24                   |
| 51   | New Zealand              | 4 589.00          | 12       | 12        | 24     | 0.51                | 0.02                  | 0.24                   |
| 52   | Bahrain                  | 19 389.00         | 12       | 11        | 23     | 0.51                | 0.02                  | 0.24                   |
| 53   | Saudi Arabia             | 54 268.00         | 12       | 11        | 23     | 0.51                | 0.02                  | 0.24                   |
| 54   | Cyprus                   | 7 310.00          | 12       | 10        | 22     | 0.51                | 0.02                  | 0.24                   |
| 55   | Jordan                   | 7 645.00          | 11       | 7         | 18     | 0.51                | 0.01                  | 0.23                   |
| 56   | Kenya                    | 3 214.00          | 11       | 10        | 21     | 0.51                | 0.02                  | 0.23                   |
| 57   | Liberia                  | 11 728.00         | 11       | 10        | 21     | 0.51                | 0.02                  | 0.23                   |
| 58   | Pakistan                 | 3 680.00          | 11       | 10        | 21     | 0.51                | 0.02                  | 0.23                   |
| 59   | Syria                    | 10 316.00         | 11       | 7         | 18     | 0.51                | 0.02                  | 0.23                   |
| 60   | Venezuela                | 23 701.00         | 11       | 12        | 23     | 0.51                | 0.02                  | 0.23                   |
| 61   | Zambia                   | 409.00            | 11       | 6         | 17     | 0.51                | 0.01                  | 0.23                   |
| 62   | Bulgaria                 | 2 730.00          | 11       | 11        | 22     | 0.51                | 0.02                  | 0.23                   |
| 63   | Romania                  | 2 612.00          | 11       | 13        | 24     | 0.52                | 0.02                  | 0.23                   |
| 64   | Netherlands Antilles     | 76 961.00         | 11       | 12        | 23     | 0.51                | 0.02                  | 0.23                   |
| 65   | Libya                    | 7 108.00          | 11       | 6         | 17     | 0.51                | 0.01                  | 0.22                   |
| 66   | United Arab Emirates     | 48 036.00         | 11       | 9         | 20     | 0.51                | 0.02                  | 0.22                   |
| 67   | West Indies UK           | 21 210.00         | 11       | 9         | 20     | 0.51                | 0.02                  | 0.22                   |
| 68   | Iran                     | 6 687.00          | 11       | 12        | 23     | 0.51                | 0.02                  | 0.22                   |
| 69   | Sri Lanka                | 1 617.00          | 10       | 9         | 19     | 0.51                | 0.02                  | 0.21                   |
| 70   | Colombia                 | 9 042.00          | 10       | 11        | 21     | 0.51                | 0.02                  | 0.21                   |

(Continued)
| Rank | Country   | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-----------|-------------------|----------|-----------|--------|----------------------|------------------------|-----------------------|
| 71   | Cuba      | 1 153.00          | 10       | 8         | 18     | 0.51                 | 0.02                   | 0.21                  |
| 72   | Ethiopia  | 1 128.00          | 10       | 8         | 18     | 0.51                 | 0.02                   | 0.21                  |
| 73   | Lebanon   | 16 081.00         | 10       | 11        | 21     | 0.51                 | 0.02                   | 0.21                  |
| 74   | Morocco   | 6 636.00          | 10       | 10        | 20     | 0.51                 | 0.02                   | 0.21                  |
| 75   | Uruguay   | 9 483.00          | 10       | 10        | 20     | 0.51                 | 0.02                   | 0.21                  |
| 76   | Vietnam   | 1 350.00          | 10       | 9         | 19     | 0.51                 | 0.02                   | 0.21                  |
| 77   | Kuwait    | 14 447.00         | 10       | 10        | 20     | 0.51                 | 0.02                   | 0.21                  |
| 78   | Nigeria   | 4 461.00          | 10       | 7         | 17     | 0.51                 | 0.02                   | 0.21                  |
| 79   | Oman      | 3 566.00          | 10       | 9         | 19     | 0.51                 | 0.02                   | 0.21                  |
| 80   | Barbados  | 10 421.00         | 10       | 7         | 17     | 0.51                 | 0.02                   | 0.21                  |
| 81   | Ghana     | 1 071.00          | 10       | 11        | 21     | 0.51                 | 0.02                   | 0.21                  |
| 82   | Zimbabwe  | 719.00            | 10       | 9         | 19     | 0.51                 | 0.02                   | 0.21                  |
| 83   | Algeria   | 6 701.00          | 10       | 9         | 19     | 0.51                 | 0.02                   | 0.21                  |
| 84   | Latvia    | 584.00            | 10       | 9         | 19     | 0.51                 | 0.02                   | 0.21                  |
| 85   | Slovakia  | 1 777.00          | 10       | 11        | 21     | 0.51                 | 0.02                   | 0.21                  |
| 86   | Andorra   | 7 632.00          | 10       | 6         | 16     | 0.51                 | 0.02                   | 0.21                  |
| 87   | Gibraltar | 6 998.00          | 10       | 8         | 18     | 0.51                 | 0.02                   | 0.21                  |
| 88   | Malta     | 2 388.00          | 10       | 9         | 19     | 0.51                 | 0.02                   | 0.21                  |
| 89   | Ukraine   | 1 884.00          | 10       | 8         | 18     | 0.51                 | 0.02                   | 0.21                  |
| 90   | Peru      | 7 201.00          | 9        | 10        | 19     | 0.51                 | 0.02                   | 0.21                  |
| 91   | Cote d'Ivoire | 1 537.00   | 9        | 8         | 17     | 0.51                 | 0.02                   | 0.21                  |
| 92   | Yemen     | 744               | 9        | 4         | 13     | 0.5                  | 0.01                   | 0.19                  |
| 93   | Mozambique | 2522             | 9        | 9         | 18     | 0.51                 | 0.02                   | 0.19                  |
| 94   | Tunisia   | 2522              | 9        | 9         | 18     | 0.51                 | 0.02                   | 0.19                  |
| Rank | Country          | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|------------------|------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 95   | Papua New Guinea | 470              | 9        | 7         | 16     | 0.51               | 0.01                  | 0.19                   |
| 96   | Croatia          | 3329             | 9        | 8         | 17     | 0.51               | 0.02                  | 0.18                   |
| 97   | Estonia          | 524              | 9        | 10        | 19     | 0.51               | 0.02                  | 0.18                   |
| 98   | Bolivia          | 1430             | 8        | 9         | 17     | 0.51               | 0.02                  | 0.18                   |
| 99   | Costa Rica       | 3461             | 8        | 7         | 15     | 0.51               | 0.01                  | 0.18                   |
| 100  | Ecuador          | 3952             | 8        | 10        | 18     | 0.51               | 0.02                  | 0.18                   |
| 101  | Jamaica          | 1078             | 8        | 8         | 16     | 0.51               | 0.02                  | 0.18                   |
| 102  | Niger            | 172              | 8        | 4         | 12     | 0.5                | 0.01                  | 0.18                   |
| 103  | Senegal          | 757              | 8        | 7         | 15     | 0.51               | 0.02                  | 0.18                   |
| 104  | Trinidad and Tobago | 1266         | 8        | 6         | 14     | 0.51               | 0                     | 0.18                   |
| 105  | Iraq             | 1631             | 8        | 8         | 16     | 0.51               | 0.01                  | 0.18                   |
| 106  | Angola           | 1721             | 8        | 7         | 15     | 0.51               | 0.02                  | 0.18                   |
| 107  | Qatar            | 2846             | 8        | 9         | 17     | 0.51               | 0.02                  | 0.18                   |
| 108  | Bangladesh       | 974              | 8        | 5         | 13     | 0.51               | 0                     | 0.18                   |
| 109  | Belize           | 539              | 8        | 5         | 13     | 0.51               | 0                     | 0.18                   |
| 110  | Uganda           | 688              | 8        | 7         | 15     | 0.51               | 0.02                  | 0.18                   |
| 111  | Kazakhstan       | 515              | 8        | 8         | 16     | 0.51               | 0.02                  | 0.17                   |
| 112  | Nepal            | 575              | 8        | 5         | 13     | 0.5                | 0                     | 0.17                   |
| 113  | Slovenia         | 2958             | 8        | 8         | 16     | 0.51               | 0.02                  | 0.17                   |
| 114  | Armenia          | 63               | 7        | 4         | 11     | 0.5                | 0.02                  | 0.16                   |
| 115  | Gabon            | 532              | 7        | 7         | 14     | 0.51               | 0.02                  | 0.16                   |
| 116  | Georgia          | 278              | 7        | 4         | 11     | 0.5                | 0.01                  | 0.16                   |
| 117  | Brunei           | 752              | 7        | 2         | 9      | 0.5                | 0                     | 0.16                   |

(Continued)
| Rank | Country               | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|-----------------------|-------------------|----------|-----------|--------|---------------------|----------------------|------------------------|
| 118  | Burundi               | 277               | 7        | 4         | 11     | 0.5                 | 0.01                 | 0.16                   |
| 119  | Cameroon              | 754               | 7        | 7         | 14     | 0.51                | 0.02                 | 0.16                   |
| 120  | Dominican Republic    | 1991              | 7        | 6         | 13     | 0.51                | 0.01                 | 0.16                   |
| 121  | Guatemala             | 2439              | 7        | 7         | 14     | 0.51                | 0.01                 | 0.16                   |
| 122  | Guinea                | 210               | 7        | 7         | 14     | 0.51                | 0.02                 | 0.16                   |
| 123  | Haiti                 | 526               | 7        | 2         | 9      | 0.48                | 0                    | 0.16                   |
| 124  | Mauritania            | 267               | 7        | 4         | 11     | 0.5                 | 0.02                 | 0.16                   |
| 125  | Paraguay              | 1248              | 7        | 7         | 14     | 0.51                | 0.01                 | 0.16                   |
| 126  | Rwanda                | 347               | 7        | 3         | 10     | 0.5                 | 0.01                 | 0.16                   |
| 127  | Sudan                 | 958               | 7        | 4         | 11     | 0.5                 | 0                    | 0.16                   |
| 128  | Vanuatu               | 2706              | 7        | 4         | 11     | 0.5                 | 0                    | 0.16                   |
| 129  | Gambia                | 117               | 7        | 4         | 11     | 0.5                 | 0                    | 0.16                   |
| 130  | Togo                  | 217               | 7        | 4         | 11     | 0.5                 | 0.01                 | 0.16                   |
| 131  | Sierra Leone          | 108               | 7        | 2         | 9      | 0.5                 | 0                    | 0.16                   |
| 132  | Nicaragua             | 309               | 7        | 6         | 13     | 0.51                | 0                    | 0.16                   |
| 133  | Botswana              | 650               | 7        | 4         | 11     | 0.5                 | 0                    | 0.16                   |
| 134  | Vatican City State    | 1804              | 7        | 0         | 7      | 0                   | 0                    | 0.16                   |
| 135  | Mauritius             | 937               | 7        | 8         | 15     | 0.51                | 0.02                 | 0.15                   |
| 136  | Malawi                | 177               | 7        | 3         | 10     | 0.5                 | 0                    | 0.15                   |
| 137  | Turks and Caicos Islands | 469       | 7        | 4         | 11     | 0.5                 | 0.01                 | 0.15                   |
| 138  | Albania               | 246               | 6        | 5         | 11     | 0.51                | 0.02                 | 0.14                   |
| 139  | Belarus               | 441               | 6        | 6         | 12     | 0.51                | 0.02                 | 0.14                   |
| 140  | Benin                 | 180               | 6        | 4         | 10     | 0.5                 | 0.01                 | 0.14                   |
| Rank | Country                  | Total value ($Mn) | Outdegree | Indegree | Degree centrality | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------|-------------------|-----------|----------|-------------------|----------------------|------------------------|------------------------|
| 141  | Cambodia                | 66                | 6         | 2        | 8                 | 0.48                 | 0                      | 0.14                   |
| 142  | Congo                   | 272               | 6         | 6        | 12                | 0.51                 | 0.02                   | 0.14                   |
| 143  | Madagascar              | 721               | 6         | 6        | 12                | 0.51                 | 0.02                   | 0.14                   |
| 144  | Mali                    | 181               | 6         | 3        | 9                 | 0.5                  | 0                      | 0.14                   |
| 145  | North Korea             | 170               | 8         | 14       | 0.51              | 0.01                 | 0.01                   | 0.14                   |
| 146  | Afghanistan             | 269               | 6         | 8        | 14.95             | 0.51                 | 0.01                   | 0.14                   |
| 147  | Uzbekistan              | 400               | 6         | 6        | 12.7              | 0.51                 | 0.01                   | 0.14                   |
| 148  | El Salvador             | 1607              | 6         | 8        | 14.1              | 0.51                 | 0.01                   | 0.14                   |
| 149  | Congo Democratic Republic| 213               | 6         | 6        | 12.1              | 0.51                 | 0.01                   | 0.14                   |
| 150  | Djibouti                | 415               | 6         | 2        | 8                 | 0.48                 | 0                      | 0.14                   |
| 151  | Dominican Rep.          | 10.045            | 6         | 4        | 10.0              | 0.5                  | 0.01                   | 0.14                   |
| 152  | Macao SAR               | 310               | 6         | 7        | 13.4              | 0.51                 | 0.02                   | 0.14                   |
| 153  | Suriname                | 453               | 8         | 10       | 8                 | 0.55                 | 0                      | 0.14                   |
| 154  | Myanmar                 | 157               | 6         | 3        | 10.03             | 0.51                 | 0.01                   | 0.14                   |
| 155  | Central African Rep.    | 188               | 6         | 6        | 12.0              | 0.51                 | 0.01                   | 0.14                   |
| 156  | Arabia                  | 719               | 6         | 4        | 8                 | 0.55                 | 0                      | 0.14                   |
| 157  | Manduro                 | 150               | 6         | 7        | 13.1              | 0.51                 | 0.02                   | 0.14                   |
| 158  | Nauru                   | 136               | 2         | 13.6     | 8                 | 0.55                 | 0                      | 0.14                   |
| 159  | Seychelles              | 284               | 4         | 14.6     | 4                 | 0.55                 | 0                      | 0.14                   |
| 160  | Fiji                    | 223               | 6         | 6        | 12.2              | 0.51                 | 0.01                   | 0.14                   |
| 161  | Macedonia, F.R.         | 170               | 6         | 4        | 10.0              | 0.55                 | 0                      | 0.14                   |
| 162  | Namibia                 | 121               | 5         | 1        | 6                 | 0.55                 | 0                      | 0.14                   |
| 163  | Burkina Faso            | 121               | 5         | 1        | 6                 | 0.47                 | 0                      | 0.14                   |

(Continued)
| Rank | Country                     | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-----------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 164  | Chad                        | 61                | 5        | 2         | 7      | 0.5                  | 0                      | 0.12                   |
| 165  | Comoros                     | 31                | 5        | 2         | 7      | 0.5                  | 0                      | 0.12                   |
| 166  | Grenada                     | 43                | 5        | 4         | 9      | 0.5                  | 0                      | 0.12                   |
| 167  | Lesotho                     | 47                | 5        | 2         | 7      | 0.5                  | 0                      | 0.12                   |
| 168  | Guinea-Bissau               | 40                | 5        | 2         | 7      | 0.5                  | 0                      | 0.12                   |
| 169  | Azerbaijan                  | 137               | 3        | 5         | 8      | 0.5                  | 0                      | 0.11                   |
| 170  | Somalia                     | 70                | 5        | 1         | 6      | 0.47                 | 0                      | 0.11                   |
| 171  | British Overseas            | 407               | 5        | 5         | 10     | 0.51                 | 0                      | 0.11                   |
| 172  | Cape Verde                  | 44                | 5        | 3         | 8      | 0.5                  | 0                      | 0.11                   |
| 173  | St. Vincent and the Grenadines | 506             | 5        | 5         | 10     | 0.51                 | 0                      | 0.11                   |
| 174  | Tuvalu                      | 263               | 4        | 7         | 11     | 0.51                 | 0                      | 0.11                   |
| 175  | Marshall Islands            | 253               | 4        | 4         | 8      | 0.51                 | 0                      | 0.11                   |
| 176  | Equatorial Guinea           | 33                | 4        | 3         | 7      | 0.51                 | 0                      | 0.11                   |
| 177  | Samoa                       | 41                | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 178  | Moldova                     | 196               | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 179  | Kyrgyz Republic             | 82                | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 180  | Laos                        | 24                | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 181  | Sao Tome and Principe       | 10                | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 182  | French Polynesia            | 164               | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 183  | New Caledonia               | 120               | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
| 184  | Guyana                      | 18                | 4        | 4         | 7      | 0.51                 | 0                      | 0.11                   |
### Table A1.2. (Continued)

| Rank | Country              | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|----------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|------------------------|
| 185  | Swaziland            | 270               | 3        | 4         | 7      | 0.5                 | 0                     | 0.08                   |
| 186  | Mongolia             | 60                | 3        | 2         | 5      | 0.5                 | 0                     | 0.07                   |
| 187  | US Pacific Islands   | 95                | 3        | 2         | 5      | 0.5                 | 0                     | 0.07                   |
| 188  | St. Lucia            | 40                | 3        | 1         | 4      | 0.47                | 0                     | 0.07                   |
| 189  | Bhutan               | 9                 | 3        | 2         | 5      | 0.5                 | 0                     | 0.07                   |
| 190  | Maldives             | 24                | 3        | 4         | 7      | 0.5                 | 0                     | 0.07                   |
| 191  | Tajikistan           | 42                | 2        | 2         | 4      | 0.5                 | 0                     | 0.05                   |
| 192  | Falkland Islands     | 54                | 2        | 0         | 2      | 0                   | 0                     | 0.05                   |
| 193  | Solomon Islands      | 50                | 2        | 1         | 3      | 0.47                | 0                     | 0.05                   |
| 194  | Tonga                | 7                 | 2        | 0         | 2      | 0                   | 0                     | 0.05                   |
| 195  | Kiribati             | 7                 | 1        | 0         | 1      | 0                   | 0                     | 0.03                   |
| 196  | Wallis and Futuna    | 38,271            | 2        | 1         | 3      | 0.39                | 195                   | 0.01                   |
| 197  | Jersey               | 0                 | 0        | 1         | 1      | 0.28                | 0                     | 0                      |
| 198  | Tuvalu               | 1                 | 0        | 0         | 0      | 0                   | 0                     | 0                      |
| Rank | Country       | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweeness centrality | Eigenvector centrality |
|------|---------------|-------------------|----------|-----------|--------|----------------------|-----------------------|------------------------|
| 1    | United Kingdom | 5 212 740.00      | 184      | 205       | 389    | 0.97                 | 6228.53               | 1                      |
| 2    | Switzerland   | 1 676 148.00      | 183      | 201       | 384    | 0.95                 | 5448.84               | 0.99                   |
| 3    | France        | 1 172 837.00      | 183      | 192       | 375    | 0.92                 | 5034.64               | 0.99                   |
| 4    | Germany       | 2 075 225.00      | 167      | 179       | 346    | 0.87                 | 3269.83               | 0.96                   |
| 5    | Belgium       | 742 015.00        | 158      | 189       | 347    | 0.91                 | 3403.02               | 0.92                   |
| 6    | Luxembourg    | 891 302.00        | 151      | 177       | 328    | 0.86                 | 2878.95               | 0.9                    |
| 7    | South Korea   | 83 026.00         | 110      | 145       | 229    | 0.62                 | 945.89                | 0.89                   |
| 8    | Chinese Taipei | 138 220.00        | 140      | 104       | 244    | 0.66                 | 1793.87               | 0.85                   |
| 9    | Austria       | 135 875.00        | 122      | 149       | 271    | 0.77                 | 1437.97               | 0.81                   |
| 10   | Denmark       | 170 129.00        | 122      | 144       | 266    | 0.76                 | 1603.9                | 0.8                    |
| 11   | Sweden        | 183 216.00        | 120      | 115       | 235    | 0.69                 | 1008.27               | 0.79                   |
| 12   | Ireland       | 593 731.00        | 118      | 129       | 274    | 0.72                 | 1225.53               | 0.78                   |
| 13   | Australia     | 108 268.00        | 115      | 132       | 247    | 0.73                 | 1516.16               | 0.75                   |
| 14   | Japan         | 760 453.00        | 107      | 109       | 216    | 0.67                 | 769.47                | 0.74                   |
| 15   | Jersey        | 588 344.00        | 106      | 188       | 294    | 0.9                  | 2207.76               | 0.73                   |
| 16   | United States | 4 162 507.00      | 81       | 101       | 182    | 0.66                 | 464.44                | 0.63                   |
| 17   | Finland       | 100 606.00        | 73       | 78        | 151    | 0.61                 | 264.57                | 0.59                   |
| 18   | Netherlands   | 1 082 033.00      | 57       | 57        | 114    | 0.58                 | 77.88                 | 0.53                   |
| 19   | Canada        | 153 553.00        | 56       | 52        | 108    | 0.57                 | 101.96                | 0.5                    |
| 20   | Macao SAR     | 26 216.00         | 52       | 62        | 114    | 0.58                 | 144.85                | 0.47                   |
| 21   | Guernsey      | 194 526.00        | 47       | 55        | 102    | 0.57                 | 69.23                 | 0.45                   |
| 22   | Chile         | 28 509.00         | 43       | 47        | 90     | 0.56                 | 47.05                 | 0.44                   |
| 23   | Mexico        | 77 607.00         | 35       | 26        | 61     | 0.53                 | 30.34                 | 0.39                   |
| 24   | Brazil        | 67 016.00         | 34       | 52        | 86     | 0.57                 | 36.91                 | 0.39                   |

(Continued)
| Rank | Country          | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|-----------------------|
| 25   | Isle of Man      | 91 584.00         | 30       | 31        | 61     | 0.54               | 6.96                  | 0.36                  |
| 26   | Greece           | 80 462.00         | 32       | 32        | 64     | 0.54               | 13.28                 | 0.35                  |
| 27   | Italy            | 411 813.00        | 26       | 25        | 51     | 0.53               | 1.49                  | 0.35                  |
| 28   | Spain            | 362 477.00        | 26       | 27        | 53     | 0.53               | 12.83                 | 0.35                  |
| 29   | Norway           | 180 129.00        | 25       | 24        | 49     | 0.53               | 0.89                  | 0.34                  |
| 30   | Hong Kong SAR    | 664 479.00        | 24       | 23        | 47     | 0.53               | 0.64                  | 0.34                  |
| 31   | Singapore        | 513 137.00        | 24       | 21        | 45     | 0.53               | 0.54                  | 0.34                  |
| 32   | Cayman Islands   | 1 882 665.00      | 24       | 25        | 49     | 0.53               | 0.97                  | 0.33                  |
| 33   | South Africa     | 60 181.00         | 23       | 21        | 44     | 0.53               | 0.52                  | 0.33                  |
| 34   | China            | 281 943.00        | 22       | 23        | 45     | 0.53               | 0.35                  | 0.32                  |
| 35   | Malaysia         | 46 355.00         | 22       | 19        | 41     | 0.52               | 0.19                  | 0.32                  |
| 36   | Israel           | 51 792.00         | 22       | 16        | 38     | 0.52               | 0.05                  | 0.32                  |
| 37   | Panama           | 99 504.00         | 22       | 20        | 42     | 0.52               | 0.22                  | 0.32                  |
| 38   | Russia           | 232 165.00        | 21       | 21        | 42     | 0.53               | 0.13                  | 0.31                  |
| 39   | India            | 49 537.00         | 21       | 18        | 39     | 0.53               | 0.11                  | 0.31                  |
| 40   | Thailand         | 39 003.00         | 21       | 18        | 39     | 0.52               | 0.08                  | 0.31                  |
| 41   | Argentina        | 29 386.00         | 21       | 20        | 41     | 0.52               | 0.12                  | 0.31                  |
| 42   | Saudi Arabia     | 163 993.00        | 21       | 19        | 40     | 0.52               | 0.25                  | 0.31                  |
| 43   | Portugal         | 129 837.00        | 22       | 23        | 45     | 0.53               | 0.76                  | 0.31                  |
| 44   | Indonesia        | 12 811.00         | 20       | 20        | 40     | 0.52               | 0.1                   | 0.3                   |
| 45   | Bermuda          | 111 953.00        | 20       | 20        | 40     | 0.52               | 0.14                  | 0.3                   |
| 46   | Bahamas          | 428 171.00        | 21       | 22        | 43     | 0.53               | 0.39                  | 0.3                   |
| 47   | United Arab Emirates | 110 771.00   | 20       | 19        | 39     | 0.52               | 0.22                  | 0.3                   |
| Rank | Country         | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|-----------------|-------------------|----------|-----------|--------|--------------------|------------------------|-----------------------|
| 48   | Cyprus          | 47 445.00         | 20       | 18        | 38     | 0.52               | 0.29                   | 0.3                   |
| 49   | Peru            | 15 423.00         | 20       | 18        | 38     | 0.52               | 0.12                   | 0.3                   |
| 50   | Philippines     | 25 951.00         | 19       | 19        | 38     | 0.52               | 0.1                   | 0.3                   |
| 51   | Turkey          | 61 259.00         | 19       | 22        | 41     | 0.53               | 0.17                   | 0.29                  |
| 52   | Romania         | 8 667.00          | 19       | 18        | 37     | 0.52               | 0.22                   | 0.29                  |
| 53   | Pakistan        | 16 033.00         | 19       | 17        | 36     | 0.52               | 0.06                   | 0.29                  |
| 54   | New Zealand     | 22 208.00         | 19       | 19        | 38     | 0.52               | 0.11                   | 0.29                  |
| 55   | Bahrain         | 43 415.00         | 20       | 22        | 42     | 0.53               | 0.48                   | 0.29                  |
| 56   | Venezuela       | 53 522.00         | 19       | 20        | 39     | 0.52               | 0.25                   | 0.28                  |
| 57   | Malta           | 16 222.00         | 19       | 18        | 37     | 0.52               | 0.42                   | 0.28                  |
| 58   | Poland          | 45 825.00         | 18       | 19        | 37     | 0.52               | 0.04                   | 0.28                  |
| 59   | Czech Republic  | 21 292.00         | 19       | 20        | 39     | 0.52               | 0.05                   | 0.28                  |
| 60   | West Indies UK  | 252 362.00        | 19       | 21        | 40     | 0.53               | 0.39                   | 0.27                  |
| 61   | Netherlands Antilles | 155 629.00      | 19       | 16        | 35     | 0.52               | 0.12                   | 0.27                  |
| 62   | Iran            | 35 483.00         | 17       | 18        | 35     | 0.52               | 0.03                   | 0.27                  |
| 63   | Hungary         | 11 407.00         | 17       | 18        | 35     | 0.52               | 0.11                   | 0.27                  |
| 64   | Morocco         | 13 192.00         | 17       | 15        | 32     | 0.52               | 0.05                   | 0.27                  |
| 65   | Uruguay         | 13 370.00         | 18       | 17        | 35     | 0.52               | 0.05                   | 0.27                  |
| 66   | Bulgaria        | 8 505.00          | 17       | 19        | 36     | 0.52               | 0.11                   | 0.27                  |
| 67   | Jordan          | 17 171.00         | 16       | 15        | 31     | 0.52               | 0                      | 0.26                  |
| 68   | Slovakia        | 4 451.00          | 17       | 16        | 33     | 0.52               | 0.04                   | 0.26                  |
| 69   | Colombia        | 15 910.00         | 17       | 16        | 33     | 0.52               | 0                      | 0.26                  |
| 70   | International organisations | 243 853.00 | 18       | 17        | 35     | 0.52               | 0                      | 0.26                  |
| Rank | Country  | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------|------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 71   | Kuwait   | 51 354.00        | 16       | 18        | 34     | 0.52                 | 0.05                   | 0.26                   |
| 72   | Kenya    | 9 573.00         | 16       | 16        | 32     | 0.52                 | 0                      | 0.26                   |
| 73   | Oman     | 10 728.00        | 15       | 18        | 33     | 0.52                 | 0.03                   | 0.25                   |
| 74   | Vietnam  | 6 329.00         | 15       | 16        | 31     | 0.52                 | 0                      | 0.25                   |
| 75   | Ukraine  | 20 636.00        | 16       | 17        | 33     | 0.52                 | 0.03                   | 0.25                   |
| 76   | Mauritius| 27 226.00        | 16       | 16        | 32     | 0.52                 | 0.11                   | 0.25                   |
| 77   | Egypt    | 40 642.00        | 16       | 19        | 35     | 0.52                 | 0                      | 0.25                   |
| 78   | Bangladesh| 5 052.00       | 15       | 14        | 29     | 0.52                 | 0                      | 0.25                   |
| 79   | Liberia  | 17 662.00        | 15       | 15        | 30     | 0.52                 | 0                      | 0.24                   |
| 80   | Lebanon  | 33 938.00        | 15       | 16        | 31     | 0.52                 | 0.04                   | 0.24                   |
| 81   | Iceland  | 21 920.00        | 15       | 16        | 31     | 0.52                 | 0                      | 0.24                   |
| 82   | Belize   | 7 938.00         | 15       | 11        | 26     | 0.51                 | 0.08                   | 0.24                   |
| 83   | Latvia   | 4 355.00         | 15       | 15        | 30     | 0.52                 | 0                      | 0.24                   |
| 84   | Paraguay | 1 664.00         | 15       | 10        | 25     | 0.51                 | 0                      | 0.24                   |
| 85   | Sri Lanka| 2 757.00         | 14       | 16        | 30     | 0.52                 | 0                      | 0.24                   |
| 86   | Guatemala| 3 918.00         | 14       | 10        | 24     | 0.51                 | 0                      | 0.24                   |
| 87   | Nigeria  | 36 781.00        | 14       | 14        | 28     | 0.52                 | 0                      | 0.23                   |
| 88   | Ghana    | 1 514.00         | 14       | 14        | 28     | 0.52                 | 0                      | 0.23                   |
| 89   | Andorra  | 8 568.00         | 15       | 12        | 27     | 0.51                 | 0.05                   | 0.23                   |
| 90   | Gibraltar| 25 425.00        | 15       | 14        | 29     | 0.52                 | 0.08                   | 0.23                   |
| 91   | Costa Rica| 6 817.00        | 14       | 17        | 31     | 0.52                 | 0                      | 0.23                   |
| 92   | Tunisia  | 8 513.00         | 14       | 14        | 28     | 0.52                 | 0                      | 0.23                   |
| 93   | Iraq     | 1 912.00         | 14       | 11        | 25     | 0.51                 | 0                      | 0.23                   |
| 94   | Syria    | 25 329.00        | 14       | 12        | 26     | 0.51                 | 0                      | 0.23                   |
| Rank | Country                    | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|----------------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|------------------------|
| 95   | Tanzania                   | 2 882.00          | 14       | 13        | 27     | 0.52                | 0                     | 0.23                   |
| 96   | Belarus                    | 4 762.00          | 14       | 9         | 23     | 0.51                | 0                     | 0.23                   |
| 97   | Croatia                    | 14 966.00         | 14       | 14        | 28     | 0.52                | 0                     | 0.23                   |
| 98   | Estonia                    | 3 464.00          | 14       | 14        | 28     | 0.52                | 0                     | 0.23                   |
| 99   | Barbados                   | 39 530.00         | 14       | 13        | 27     | 0.52                | 0                     | 0.23                   |
| 100  | Bolivia                    | 3 511.00          | 14       | 10        | 24     | 0.51                | 0                     | 0.23                   |
| 101  | Algeria                    | 12 006.00         | 14       | 11        | 25     | 0.51                | 0                     | 0.23                   |
| 102  | Jamaica                    | 2 734.00          | 14       | 16        | 30     | 0.52                | 0                     | 0.22                   |
| 103  | Qatar                      | 18 026.00         | 13       | 15        | 28     | 0.52                | 0                     | 0.22                   |
| 104  | Slovenia                   | 6 960.00          | 13       | 14        | 27     | 0.52                | 0                     | 0.22                   |
| 105  | Seychelles                 | 3 382.00          | 13       | 9         | 22     | 0.51                | 0                     | 0.22                   |
| 106  | Brunei                     | 3 701.00          | 13       | 8         | 21     | 0.51                | 0.04                  | 0.22                   |
| 107  | Macedonia, FYR             | 1 192.00          | 13       | 11        | 24     | 0.51                | 0                     | 0.22                   |
| 108  | Zambia                     | 1 083.00          | 13       | 8         | 21     | 0.51                | 0                     | 0.21                   |
| 109  | Malawi                     | 217.00            | 13       | 10        | 23     | 0.51                | 0.04                  | 0.21                   |
| 110  | Ecuador                    | 5 406.00          | 13       | 13        | 26     | 0.51                | 0.04                  | 0.21                   |
| 111  | Botswana                   | 2 495.00          | 13       | 7         | 20     | 0.51                | 0.04                  | 0.21                   |
| 112  | Marshall Islands           | 6 599.00          | 12       | 11        | 23     | 0.51                | 0                     | 0.21                   |
| 113  | Cuba                       | 1 836.00          | 13       | 12        | 25     | 0.51                | 0.03                  | 0.21                   |
| 114  | Georgia                    | 1 064.00          | 12       | 11        | 23     | 0.51                | 0                     | 0.21                   |
| 115  | Bosnia and Herzegovina     | 6 447.00          | 12       | 9         | 21     | 0.51                | 0                     | 0.2                    |
| 116  | Ethiopia                   | 932.00            | 12       | 7         | 19     | 0.51                | 0                     | 0.2                    |
| 117  | Libya                      | 80 140.00         | 12       | 10        | 22     | 0.51                | 0                     | 0.2                    |

(Continued)
| Rank | Country               | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|-----------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 118  | Dominican Republic    | 7 536.00          | 12       | 14        | 26     | 0.52               | 0                     | 0.2                    |
| 119  | Nicaragua             | 720.00            | 12       | 10        | 22     | 0.51               | 0                     | 0.2                    |
| 120  | Yemen                 | 7 607.00          | 12       | 12        | 24     | 0.51               | 0                     | 0.2                    |
| 121  | Cote d'Ivoire         | 2 528.00          | 12       | 10        | 22     | 0.51               | 0                     | 0.2                    |
| 122  | Kazakhstan            | 11 992.00         | 12       | 19        | 31     | 0.52               | 0                     | 0.2                    |
| 123  | Zimbabwe              | 1 032.00          | 12       | 12        | 24     | 0.51               | 0                     | 0.2                    |
| 124  | Trinidad and Tobago   | 8 064.00          | 13       | 10        | 23     | 0.51               | 0                     | 0.2                    |
| 125  | Cambodia              | 495.00            | 11       | 7         | 18     | 0.51               | 0                     | 0.19                   |
| 126  | Swaziland             | 750.00            | 11       | 5         | 16     | 0.5                | 0                     | 0.19                   |
| 127  | Mongolia              | 683.00            | 11       | 5         | 16     | 0.5                | 0                     | 0.19                   |
| 128  | Nepal                 | 1 179.00          | 11       | 6         | 17     | 0.51               | 0                     | 0.19                   |
| 129  | British Overseas Territories | 2 521.00 | 11       | 5         | 16     | 0.5                | 0                     | 0.19                   |
| 130  | Dominica              | 185.00            | 11       | 5         | 16     | 0.5                | 0                     | 0.18                   |
| 131  | Samoa                 | 4 883.00          | 11       | 7         | 18     | 0.51               | 0                     | 0.18                   |
| 132  | Mozambique            | 1 350.00          | 11       | 10        | 21     | 0.51               | 0.02                  | 0.18                   |
| 133  | Turks and Caicos Islands | 1 439.00      | 11       | 6         | 17     | 0.51               | 0                     | 0.18                   |
| 134  | Angola                | 9 260.00          | 11       | 9         | 20     | 0.51               | 0.05                  | 0.18                   |
| 135  | Serbia                | 6 577.00          | 10       | 9         | 19     | 0.51               | 0                     | 0.17                   |
| 136  | Azerbaijan            | 2 887.00          | 10       | 13        | 23     | 0.52               | 0                     | 0.17                   |
| 137  | Albania               | 1 327.00          | 10       | 10        | 20     | 0.51               | 0                     | 0.17                   |
| 138  | Senegal               | 1 706.00          | 10       | 11        | 21     | 0.51               | 0                     | 0.17                   |

(Continued)
| Rank | Country, Region | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------|------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 139  | Armenia        | 708.00           | 10       | 7         | 17     | 0.51                 | 0                      | 0.17                   |
| 140  | Myanmar        | 360.00           | 10       | 4         | 14     | 0.51                 | 0                      | 0.17                   |
| 141  | St. Vincent and the Grenadines | 3 046.00 | 10 | 6 | 16 | 0.51 | 0 | 0.17 |
| 142  | Uganda         | 1 749.00         | 10       | 9         | 19     | 0.51                 | 0                      | 0.17                   |
| 143  | Laos           | 1 265.00         | 10       | 9         | 19     | 0.51                 | 0                      | 0.17                   |
| 144  | Afghanistan    | 457.00           | 10       | 11        | 21     | 0.51                 | 0                      | 0.16                   |
| 145  | North Korea    | 1 637.00         | 9        | 5         | 14     | 0.5                  | 0                      | 0.16                   |
| 146  | Cape Verde     | 1 482.00         | 9        | 4         | 13     | 0.5                  | 0                      | 0.16                   |
| 147  | Madagascar     | 985.00           | 9        | 6         | 15     | 0.51                 | 0                      | 0.16                   |
| 148  | Vatican City State | 2 290.00 | 9 | 1 | 10 | 0.49 | 0 | 0.16 |
| 149  | Guinea         | 472.00           | 9        | 4         | 13     | 0.5                  | 0                      | 0.16                   |
| 150  | Namibia        | 519.00           | 9        | 9         | 18     | 0.51                 | 0                      | 0.16                   |
| 151  | Sierra Leone   | 186.00           | 9        | 3         | 12     | 0.5                  | 0                      | 0.16                   |
| 152  | Malawi         | 431.00           | 9        | 9         | 18     | 0.51                 | 0                      | 0.16                   |
| 153  | Papua New Guinea | 1 180.00 | 9 | 8 | 17 | 0.51 | 0 | 0.16 |
| 154  | Honduras       | 3 965.00         | 9        | 11        | 20     | 0.51                 | 0                      | 0.16                   |
| 155  | Sudan          | 2 103.00         | 9        | 8         | 17     | 0.51                 | 0                      | 0.16                   |
| 156  | Mozambique     | 957.00           | 9        | 7         | 16     | 0.51                 | 0                      | 0.16                   |
| 157  | Burundi        | 345.00           | 8        | 7         | 15     | 0.5                  | 0                      | 0.16                   |
| 158  | Cameroon       | 4 987.00         | 8        | 10        | 18     | 0.51                 | 0                      | 0.16                   |
| 159  | Montenegro     | 760.00           | 8        | 7         | 15     | 0.51                 | 0                      | 0.16                   |

(Continued)
| Rank | Country            | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|--------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|-----------------------|
| 162  | Benin              | 368.00            | 8        | 5         | 13     | 0.5                 | 0                     | 0.14                  |
| 163  | Togo               | 418.00            | 8        | 6         | 14     | 0.5                 | 0                     | 0.14                  |
| 164  | Congo              | 695.00            | 8        | 7         | 15     | 0.51                | 0                     | 0.14                  |
| 165  | Gabon              | 1 241.00          | 8        | 10        | 18     | 0.51                | 0                     | 0.14                  |
| 166  | French Polynesia   | 1 131.00          | 8        | 8         | 16     | 0.51                | 0                     | 0.14                  |
| 167  | Vanuatu            | 915.00            | 8        | 7         | 15     | 0.51                | 0                     | 0.14                  |
| 168  | Turkmenistan       | 9 667.00          | 8        | 6         | 14     | 0.51                | 0                     | 0.14                  |
| 169  | El Salvador        | 2 512.00          | 8        | 12        | 20     | 0.51                | 0                     | 0.14                  |
| 170  | Aruba              | 1 367.00          | 8        | 8         | 16     | 0.51                | 0                     | 0.13                  |
| 171  | Palestinian Territory | 761.00   | 7        | 4         | 11     | 0.5                 | 0                     | 0.13                  |
| 172  | Burkina Faso       | 344.00            | 7        | 10        | 17     | 0.51                | 0                     | 0.13                  |
| 173  | Congo Democratic Republic | 1 324.00 | 7       | 8         | 15     | 0.51                | 0                     | 0.13                  |
| 174  | Rwanda             | 673.00            | 7        | 5         | 12     | 0.5                 | 0                     | 0.13                  |
| 175  | Niger              | 122.00            | 7        | 3         | 10     | 0.5                 | 0                     | 0.13                  |
| 176  | Chad               | 344.00            | 7        | 6         | 13     | 0.51                | 0                     | 0.12                  |
| 177  | Kyrgyz Republic    | 254.00            | 7        | 5         | 12     | 0.5                 | 0                     | 0.12                  |
| 178  | Maldives           | 130.00            | 7        | 7         | 14     | 0.51                | 0                     | 0.12                  |
| 179  | Eritrea            | 53.00             | 7        | 2         | 9      | 0.49                | 0                     | 0.12                  |
| 180  | Fiji               | 195.00            | 7        | 5         | 12     | 0.5                 | 0                     | 0.12                  |
| 181  | Guyana             | 604.00            | 7        | 3         | 10     | 0.49                | 0                     | 0.12                  |
| 182  | Greenland          | 139.00            | 7        | 3         | 10     | 0.48                | 0                     | 0.11                  |
| 183  | Djibouti           | 668.00            | 6        | 7         | 13     | 0.51                | 0                     | 0.11                  |
| 184  | San Marino         | 1 610.00          | 6        | 3         | 9      | 0.5                 | 0                     | 0.11                  |

(Continued)
| Rank | Country             | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweeness centrality | Eigenvector centrality |
|------|---------------------|-------------------|----------|-----------|--------|----------------------|-----------------------|------------------------|
| 185  | Gambia              | 237.00            | 6        | 7         | 13     | 0.51                 | 0.11                  | 0.11                   |
| 186  | New Caledonia       | 1,295.00          | 6        | 6         | 12     | 0.47                 | 0.09                  | 0.09                   |
| 187  | Equatorial Guinea  | 747.00            | 6        | 2         | 8      | 0.49                 | 0.09                  | 0.09                   |
| 188  | Grenada             | 90.00             | 6        | 4         | 10     | 0.5                  | 0.09                  | 0.09                   |
| 189  | St. Lucia           | 360.00            | 6        | 4         | 10     | 0.5                  | 0.09                  | 0.09                   |
| 190  | Suriname            | 90.00             | 6        | 2         | 8      | 0.49                 | 0.09                  | 0.09                   |
| 191  | Haiti               | 670.00            | 6        | 7         | 13     | 0.51                 | 0.11                  | 0.11                   |
| 192  | Somalia             | 54.00             | 5        | 2         | 7      | 0.48                 | 0.09                  | 0.09                   |
| 193  | Lesotho             | 34.00             | 5        | 3         | 8      | 0.48                 | 0.09                  | 0.09                   |
| 194  | Tajikistan          | 191.00            | 5        | 4         | 9      | 0.5                  | 0.09                  | 0.09                   |
| 195  | Nauru               | 270.00            | 5        | 1         | 6      | 0.48                 | 0.08                  | 0.08                   |
| 196  | US Pacific Islands  | 237.00            | 5        | 2         | 7      | 0.48                 | 0.08                  | 0.08                   |
| 197  | Sao Tome and Prince | 72.00             | 5        | 5         | 10     | 0.5                  | 0.08                  | 0.08                   |
| 198  | Central African     | 95.00             | 4        | 1         | 5      | 0.48                 | 0.08                  | 0.08                   |
| 199  | Republic            | 270.00            | 4        | 8         | 12     | 0.51                 | 0.07                  | 0.07                   |
| 200  | Faeroe Islands      | 170.00            | 4        | 1         | 5      | 0.49                 | 0.06                  | 0.06                   |
| 201  | Timor Leste         | 52.00             | 3        | 2         | 5      | 0.48                 | 0.03                  | 0.03                   |
| 202  | Guinea-Bissau       | 405.00            | 3        | 1         | 4      | 0.43                 | 0.03                  | 0.03                   |
| 203  | Bhutan              | 158.00            | 3        | 2         | 5      | 0.44                 | 0.03                  | 0.03                   |
| 204  | Solomon Islands     | 150.00            | 3        | 3         | 6      | 0.5                  | 0.05                  | 0.05                   |
| 205  | Wallis and Futuna   | 150.00            | 3        | 4         | 8      | 0.5                  | 0.05                  | 0.05                   |
| 206  | Falkland Islands    | 150.00            | 3        | 5         | 6      | 0.49                 | 0.05                  | 0.05                   |
| 207  | Kiribati            | 132.00            | 3        | 6         | 6      | 0.5                  | 0.05                  | 0.05                   |
| Rank | Country                      | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|------------------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 208  | Comoros                      | 58.00             | 2        | 3         | 5      | 0.5                | 0                     | 0.04                   |
| 209  | St. Helena and Dependencies  | 12.00             | 2        | 2         | 4      | 0.5                | 0                     | 0.03                   |
| 210  | Tuvalu                       | 1.00              | 1        | 0         | 1      | 0                  | 0                     | 0.02                   |
| 211  | Micronesia                   | 17.00             | 1        | 3         | 4      | 0.5                | 0                     | 0.02                   |
| 212  | Palau                        | 5.00              | 1        | 1         | 2      | 0.4                | 0                     | 0.01                   |
| Rank | Country          | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | Switzerland      | 662 118.57        | 203      | 212       | 415    | 0.99                 | 3901.75                | 1                      |
| 2    | Belgium          | 431 984.06        | 190      | 206       | 396    | 0.96                 | 3006.4                 | 0.97                   |
| 3    | France           | 1 178 769.71      | 186      | 195       | 381    | 0.92                 | 2500.26                | 0.95                   |
| 4    | United Kingdom   | 4 084 290.02      | 186      | 206       | 392    | 0.96                 | 2933.43                | 0.95                   |
| 5    | Denmark          | 171 662.63        | 177      | 191       | 368    | 0.9                  | 2216.37                | 0.93                   |
| 6    | Luxembourg       | 900 400.59        | 178      | 198       | 376    | 0.93                 | 2416.54                | 0.92                   |
| 7    | South Korea      | 119 155.88        | 171      | 154       | 325    | 0.78                 | 1582.45                | 0.9                    |
| 8    | Germany          | 1 442 918.64      | 160      | 183       | 343    | 0.87                 | 1587.35                | 0.87                   |
| 9    | Austria          | 99 909.79         | 158      | 197       | 355    | 0.93                 | 2113.08                | 0.86                   |
| 10   | Chinese Taipei   | 248 738.21        | 159      | 198       | 357    | 0.93                 | 2439.89                | 0.85                   |
| 11   | Ireland          | 552 885.58        | 155      | 186       | 341    | 0.88                 | 1679.94                | 0.85                   |
| 12   | Spain            | 178 664.62        | 153      | 192       | 345    | 0.91                 | 1697.16                | 0.84                   |
| 13   | Australia        | 262 480.21        | 151      | 187       | 338    | 0.89                 | 1949.89                | 0.82                   |
| 14   | Hong Kong SAR    | 1 248 834.52      | 149      | 185       | 334    | 0.88                 | 1666.39                | 0.82                   |
| 15   | Sweden           | 259 562.92        | 131      | 185       | 316    | 0.88                 | 1381.96                | 0.75                   |
| 16   | Isle of Man      | 41 971.26         | 126      | 203       | 329    | 0.95                 | 1537.88                | 0.73                   |
| 17   | Japan            | 763 021.72        | 112      | 120       | 232    | 0.69                 | 509.14                 | 0.69                   |
| 18   | Guernsey         | 115 062.96        | 102      | 158       | 260    | 0.79                 | 785.31                 | 0.63                   |
| 19   | Jersey           | 191 320.52        | 97       | 177       | 274    | 0.85                 | 704.86                 | 0.62                   |
| 20   | Finland          | 71 048.83         | 93       | 89        | 182    | 0.63                 | 321.37                 | 0.6                    |
| 21   | United States    | 3 420 831.22      | 91       | 148       | 239    | 0.76                 | 479.45                 | 0.6                    |
| 22   | South Africa     | 44 436.54         | 91       | 110       | 201    | 0.67                 | 472.06                 | 0.58                   |
| 23   | Canada           | 316 173.62        | 72       | 155       | 227    | 0.78                 | 389.02                 | 0.51                   |
| 24   | Netherlands      | 684 870.55        | 71       | 77        | 148    | 0.61                 | 138.67                 | 0.51                   |

(Continued)
| Rank | Country         | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 25   | Macao SAR      | 81,641.06         | 60       | 118       | 178    | 0.69                 | 320.02                 | 10.77                  |
| 26   | Mexico         | 128,754.53        | 52       | 46        | 98     | 0.66                 | 86.66                  | 3.36                   |
| 27   | Chile          | 91,313.781        | 49       | 106       | 155    | 0.58                 | 107.77                 | 3.36                   |
| 28   | Brazil         | 48,742.44         | 44       | 60        | 104    | 0.58                 | 12.38                  | 3.36                   |
| 29   | Greece         | 49,295.59         | 38       | 40        | 78     | 0.55                 | 12.38                  | 3.36                   |
| 30   | Norway         | 43,019.07         | 28       | 55        | 83     | 0.53                 | 0.1                    | 0.32                   |
| 31   | Portugal       | 45,893.43         | 28       | 56        | 84     | 0.54                 | 0.17                   | 0.32                   |
| 32   | Thailand       | 73,428.73         | 24       | 52        | 76     | 0.54                 | 0.21                   | 0.32                   |
| 33   | China          | 49,550.06         | 27       | 52        | 79     | 0.53                 | 0.19                   | 0.32                   |
| 34   | Italy          | 177,160,000       | 27       | 52        | 79     | 0.53                 | 0.19                   | 0.32                   |
| 35   | United Arab Emirates | 136,516.71 | 27       | 54        | 80     | 0.53                 | 0.09                   | 0.32                   |
| 36   | Bahamas        | 33,944.44         | 27       | 52        | 79     | 0.53                 | 0.09                   | 0.32                   |
| 37   | Poland         | 67,259.36         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 38   | India          | 66,503.68         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 39   | Czech Republic | 66,503.68         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 40   | Pakistan       | 25,271.85         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 41   | Portugal       | 33,686.02         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 42   | Argentina      | 15,388.85         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 43   | Venezuela      | 15,388.85         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 44   | Malaysia       | 41,016.14         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 45   | Qatar          | 41,016.14         | 27       | 54        | 80     | 0.53                 | 0.06                   | 0.32                   |
| 46   | Indonesia      | 31,581.96         | 26       | 51        | 77     | 0.53                 | 0.08                   | 0.32                   |
| 47   | Vietnam        | 21,347.68         | 26       | 51        | 77     | 0.53                 | 0.08                   | 0.32                   |
| Rank | Country          | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 49   | Hungary          | 15 304.92         | 26       | 24        | 50     | 0.53                 | 0.12                   | 0.3                    |
| 50   | Uruguay          | 15 428.85         | 26       | 20        | 46     | 0.52                 | 0.01                   | 0.3                    |
| 51   | Colombia         | 17 597.50         | 26       | 22        | 48     | 0.53                 | 0.04                   | 0.3                    |
| 52   | Egypt            | 33 878.08         | 26       | 24        | 50     | 0.53                 | 0.04                   | 0.3                    |
| 53   | Peru             | 32 903.15         | 26       | 27        | 53     | 0.53                 | 0.1                    | 0.3                    |
| 54   | Singapore        | 600 879.49        | 26       | 26        | 52     | 0.53                 | 0.05                   | 0.3                    |
| 55   | West Indies UK   | 310 452.32        | 26       | 22        | 48     | 0.53                 | 0.06                   | 0.3                    |
| 56   | Cyprus           | 47 104.75         | 26       | 24        | 50     | 0.53                 | 0.06                   | 0.3                    |
| 57   | Oman             | 14 370.10         | 25       | 22        | 47     | 0.53                 | 0.07                   | 0.3                    |
| 58   | Kuwait           | 108 502.66        | 25       | 21        | 46     | 0.53                 | 0.03                   | 0.3                    |
| 59   | Philippines      | 22 617.07         | 25       | 22        | 47     | 0.53                 | 0.08                   | 0.3                    |
| 60   | Saudi Arabia     | 222 559.46        | 25       | 24        | 49     | 0.53                 | 0.08                   | 0.3                    |
| 61   | Ukraine          | 9 858.30          | 25       | 21        | 46     | 0.53                 | 0.04                   | 0.3                    |
| 62   | Bulgaria         | 13 830.83         | 25       | 22        | 47     | 0.53                 | 0.05                   | 0.3                    |
| 63   | Costa Rica       | 6 179.11          | 25       | 21        | 46     | 0.53                 | 0.05                   | 0.3                    |
| 64   | Bermuda          | 92 977.72         | 25       | 24        | 49     | 0.53                 | 0.04                   | 0.3                    |
| 65   | Pakistan         | 11 298.19         | 25       | 23        | 48     | 0.53                 | 0.04                   | 0.3                    |
| 66   | Malta            | 15 884.07         | 25       | 22        | 47     | 0.53                 | 0.04                   | 0.29                   |
| 67   | Morocco          | 7 828.94          | 24       | 23        | 47     | 0.53                 | 0.03                   | 0.29                   |
| 68   | Zambia           | 2 230.68          | 24       | 17        | 41     | 0.52                 | 0.03                   | 0.29                   |
| 69   | Nigeria          | 26 697.95         | 24       | 22        | 46     | 0.53                 | 0.03                   | 0.29                   |
| 70   | Bolivia          | 6 622.43          | 24       | 18        | 42     | 0.52                 | 0             | 0.29                   |
| 71   | Kenya            | 13 009.20         | 24       | 20        | 44     | 0.52                 | 0.01                   | 0.29                   |
| 72   | Lebanon          | 42 813.34         | 24       | 24        | 48     | 0.53                 | 0.01                   | 0.29                   |
| Rank | Country        | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 73   | Libya          | 44,056.15         | 24       | 12        | 36     | 0.51                 | 0                      | 0.29                   |
| 74   | Russia         | 137,734.47        | 24       | 24        | 49     | 0.53                 | 0.11                   | 0.29                   |
| 75   | Sri Lanka      | 2,334.01          | 24       | 20        | 44     | 0.52                 | 0.08                   | 0.29                   |
| 76   | Trinidad and Tobago | 7,825.05  | 24       | 16        | 40     | 0.52                 | 0                      | 0.29                   |
| 77   | Slovenia       | 7,658.86          | 24       | 18        | 42     | 0.52                 | 0                      | 0.29                   |
| 78   | New Zealand    | 24,355.03         | 24       | 24        | 48     | 0.53                 | 0.05                   | 0.29                   |
| 79   | Angola         | 26,690.49         | 24       | 16        | 40     | 0.52                 | 0                      | 0.29                   |
| 80   | Romania        | 7,556.03          | 24       | 21        | 45     | 0.53                 | 0.03                   | 0.29                   |
| 81   | Ecuador        | 7,664.23          | 24       | 19        | 43     | 0.52                 | 0                      | 0.29                   |
| 82   | Bangladesh     | 12,048.35         | 24       | 19        | 43     | 0.52                 | 0.01                   | 0.28                   |
| 83   | Bahrain        | 29,119.23         | 23       | 21        | 44     | 0.53                 | 0                      | 0.28                   |
| 84   | Georgia        | 1,546.70          | 23       | 19        | 42     | 0.52                 | 0.03                   | 0.28                   |
| 85   | Serbia         | 3,918.71          | 23       | 19        | 42     | 0.52                 | 0.04                   | 0.28                   |
| 86   | Azerbaijan     | 5,666.05          | 23       | 18        | 41     | 0.52                 | 0.01                   | 0.28                   |
| 87   | Cayman Islands | 1,382,540.46      | 24       | 26        | 50     | 0.53                 | 0.05                   | 0.28                   |
| 88   | Iraq           | 5,992.48          | 23       | 17        | 40     | 0.52                 | 0                      | 0.28                   |
| 89   | Senegal        | 1,215.21          | 23       | 15        | 38     | 0.52                 | 0                      | 0.28                   |
| 90   | Algeria        | 8,084.68          | 23       | 16        | 39     | 0.52                 | 0                      | 0.28                   |
| 91   | Iran           | 14,891.90         | 23       | 19        | 42     | 0.52                 | 0.01                   | 0.28                   |
| 92   | Nepal          | 4,637.03          | 23       | 15        | 38     | 0.52                 | 0.01                   | 0.28                   |
| 93   | Croatia        | 6,871.31          | 23       | 20        | 43     | 0.52                 | 0.01                   | 0.28                   |
| 94   | Latvia         | 6,042.70          | 23       | 19        | 42     | 0.52                 | 0                      | 0.28                   |
| 95   | Estonia        | 3,563.46          | 24       | 16        | 40     | 0.52                 | 0.01                   | 0.28                   |
| 96   | Jordan         | 15,511.16         | 23       | 23        | 46     | 0.53                 | 0.04                   | 0.28                   |
| Rank | Country                           | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-----------------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 97   | Liberia                           | 10 215.64         | 23       | 21        | 44     | 0.53                 | 0.03                   | 0.28                   |
| 98   | Dominican Republic                | 7 653.95          | 23       | 16        | 39     | 0.52                 | 0                      | 0.28                   |
| 99   | Ethiopia                          | 2 295.78          | 22       | 17        | 39     | 0.52                 | 0                      | 0.28                   |
| 100  | Swaziland                         | 1 231.59          | 23       | 12        | 35     | 0.51                 | 0.01                   | 0.27                   |
| 101  | Belarus                           | 4 893.44          | 22       | 17        | 39     | 0.52                 | 0.03                   | 0.27                   |
| 102  | Kazakhstan                         | 26 156.84         | 22       | 20        | 42     | 0.52                 | 0.01                   | 0.27                   |
| 103  | Gabon                             | 1 325.63          | 22       | 13        | 35     | 0.52                 | 0                      | 0.27                   |
| 104  | Ghana                             | 3 933.56          | 22       | 22        | 44     | 0.53                 | 0.03                   | 0.27                   |
| 105  | Mauritius                         | 20 730.76         | 22       | 22        | 44     | 0.53                 | 0.01                   | 0.27                   |
| 106  | Mozambique                        | 3 219.93          | 22       | 17        | 39     | 0.52                 | 0.01                   | 0.27                   |
| 107  | Seychelles                        | 12 308.14         | 22       | 17        | 39     | 0.52                 | 0.01                   | 0.27                   |
| 108  | Guatemala                         | 5 757.56          | 22       | 21        | 43     | 0.53                 | 0.01                   | 0.27                   |
| 109  | Tunisia                           | 5 623.66          | 22       | 19        | 41     | 0.52                 | 0                      | 0.27                   |
| 110  | Macedonia, FYR                    | 1 470.86          | 22       | 15        | 37     | 0.52                 | 0                      | 0.27                   |
| 111  | Tanzania                          | 2 344.63          | 22       | 19        | 41     | 0.52                 | 0.01                   | 0.27                   |
| 112  | Iceland                           | 7 143.31          | 22       | 16        | 38     | 0.52                 | 0.01                   | 0.27                   |
| 113  | Cote d'Ivoire                     | 2 020.81          | 21       | 18        | 39     | 0.52                 | 0                      | 0.27                   |
| 114  | Laos                              | 1 433.64          | 21       | 14        | 35     | 0.52                 | 0                      | 0.27                   |
| 115  | Paraguay                          | 2 497.19          | 22       | 17        | 39     | 0.52                 | 0                      | 0.27                   |
| 116  | Uganda                            | 2 679.64          | 21       | 20        | 41     | 0.52                 | 0                      | 0.26                   |
| 117  | Zimbabwe                          | 1 020.36          | 21       | 16        | 37     | 0.52                 | 0                      | 0.26                   |
| 118  | Botswana                          | 1 861.74          | 21       | 14        | 35     | 0.52                 | 0                      | 0.26                   |
| 119  | Congo Democratic Republic         | 1 560.65          | 21       | 13        | 34     | 0.51                 | 0.03                   | 0.26                   |
| Rank | Country             | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------------------|-------------------|----------|-----------|--------|----------------------|------------------------|-----------------------|
| 120  | Myanmar             | 1 231.24          | 21       | 14        | 35     | 0.52                 | 0.01                   | 0.26                  |
| 121  | El Salvador         | 2 638.36          | 21       | 15        | 36     | 0.52                 | 0                      | 0.26                  |
| 122  | Malawi              | 459.69            | 21       | 14        | 35     | 0.52                 | 0                      | 0.26                  |
| 123  | Belize              | 14 086.63         | 21       | 16        | 37     | 0.52                 | 0.01                   | 0.26                  |
| 124  | Brunei              | 2 760.70          | 21       | 19        | 40     | 0.52                 | 0.01                   | 0.26                  |
| 125  | Congo               | 1 655.13          | 21       | 12        | 33     | 0.51                 | 0.01                   | 0.26                  |
| 126  | Honduras            | 5 898.50          | 21       | 14        | 35     | 0.52                 | 0                      | 0.26                  |
| 127  | Jamaica             | 2 368.72          | 21       | 16        | 37     | 0.52                 | 0                      | 0.26                  |
| 128  | Nicaragua           | 1 712.30          | 21       | 15        | 36     | 0.52                 | 0                      | 0.26                  |
| 129  | Slovakia            | 4 852.03          | 20       | 17        | 37     | 0.52                 | 0                      | 0.26                  |
| 130  | Kyrgyz Republic    | 1 208.33          | 20       | 11        | 31     | 0.51                 | 0                      | 0.26                  |
| 131  | Papua New Guinea    | 794.97            | 20       | 15        | 35     | 0.52                 | 0                      | 0.26                  |
| 132  | Yemen               | 835.08            | 20       | 12        | 32     | 0.51                 | 0                      | 0.26                  |
| 133  | Afghanistan         | 2 770.64          | 20       | 12        | 32     | 0.51                 | 0.01                   | 0.26                  |
| 134  | Andorra             | 3 361.80          | 21       | 14        | 35     | 0.52                 | 0.01                   | 0.26                  |
| 135  | Suriname            | 1 198.26          | 20       | 9         | 29     | 0.51                 | 0                      | 0.26                  |
| 136  | Cameroon            | 1 912.26          | 20       | 15        | 35     | 0.52                 | 0                      | 0.26                  |
| 137  | Uzbekistan          | 16 766.68         | 20       | 15        | 35     | 0.52                 | 0.01                   | 0.25                  |
| 138  | Cambodia            | 2 990.11          | 20       | 16        | 36     | 0.52                 | 0                      | 0.25                  |
| 139  | Curacao             | 20 837.31         | 21       | 19        | 40     | 0.52                 | 0.01                   | 0.25                  |
| 140  | International orgs. | 264 124.61        | 21       | 20        | 41     | 0.52                 | 0.05                   | 0.25                  |
| 141  | Syria               | 2 021.34          | 20       | 10        | 30     | 0.51                 | 0                      | 0.25                  |
| 142  | Barbados            | 52 150.20         | 20       | 20        | 40     | 0.52                 | 0.01                   | 0.25                  |

(Continued)
| Rank | Country                   | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 143  | Namibia                  | 1 229.69          | 20       | 16        | 36     | 0.52                 | 0                      | 0.25                   |
| 144  | Gibraltar                | 11 692.81         | 20       | 17        | 37     | 0.52                 | 0.05                   | 0.25                   |
| 145  | Sierra Leone             | 346.11            | 19       | 11        | 30     | 0.51                 | 0                      | 0.24                   |
| 146  | Rwanda                   | 366.20            | 19       | 12        | 31     | 0.51                 | 0                      | 0.24                   |
| 147  | Armenia                  | 631.28            | 19       | 15        | 34     | 0.52                 | 0                      | 0.24                   |
| 148  | Albania                  | 2 145.46          | 19       | 13        | 32     | 0.52                 | 0                      | 0.24                   |
| 149  | Fiji                     | 348.81            | 19       | 12        | 31     | 0.51                 | 0.01                   | 0.24                   |
| 150  | Madagascar               | 1 351.04          | 19       | 13        | 32     | 0.52                 | 0                      | 0.24                   |
| 151  | Marshall Islands         | 15 795.30         | 19       | 20        | 39     | 0.52                 | 0.01                   | 0.24                   |
| 152  | Benin                    | 262.55            | 19       | 12        | 31     | 0.51                 | 0                      | 0.24                   |
| 153  | Cuba                     | 3 581.83          | 19       | 13        | 32     | 0.52                 | 0                      | 0.23                   |
| 154  | St. Vincent and the Grenadines | 1 849.27          | 19       | 12        | 31     | 0.51                 | 0.01                   | 0.23                   |
| 155  | Moldova                  | 1 561.47          | 18       | 13        | 31     | 0.52                 | 0                      | 0.23                   |
| 156  | Bosnia and Herzegovina   | 2 180.26          | 18       | 16        | 34     | 0.52                 | 0.01                   | 0.23                   |
| 157  | Haiti                    | 672.48            | 18       | 9         | 27     | 0.51                 | 0                      | 0.23                   |
| 158  | Guinea                   | 438.48            | 18       | 10        | 28     | 0.51                 | 0                      | 0.23                   |
| 159  | Dominica                 | 430.26            | 18       | 7         | 25     | 0.51                 | 0                      | 0.23                   |
| 160  | Mali                     | 517.84            | 17       | 15        | 32     | 0.52                 | 0                      | 0.22                   |
| 161  | Mongolia                 | 787.17            | 17       | 13        | 30     | 0.52                 | 0                      | 0.22                   |
| 162  | St. Lucia                | 667.14            | 18       | 7         | 25     | 0.51                 | 0                      | 0.22                   |
| 163  | Vanuatu                  | 515.07            | 17       | 10        | 27     | 0.51                 | 0                      | 0.22                   |
| 164  | Gambia                   | 307.88            | 17       | 13        | 30     | 0.52                 | 0                      | 0.22                   |
| 165  | Maldives                 | 644.21            | 17       | 13        | 30     | 0.52                 | 0                      | 0.22                   |
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 166  | Montenegro              | 483.00            | 17       | 12        | 29     | 0.51                 | 0                      | 0.22                   |
| 167  | Burkina Faso            | 250.91            | 17       | 12        | 29     | 0.51                 | 0                      | 0.22                   |
| 168  | French Polynesia        | 1 041.26          | 17       | 9         | 26     | 0.51                 | 0                      | 0.22                   |
| 169  | Vatican City State      | 1 625.57          | 17       | 5         | 22     | 0.5                  | 0                      | 0.22                   |
| 170  | Niger                   | 227.83            | 17       | 10        | 26     | 0.51                 | 0                      | 0.22                   |
| 171  | Turks and Caicos Islands| 1 287.06          | 17       | 13        | 30     | 0.52                 | 0                      | 0.22                   |
| 172  | Sudan                   | 534.14            | 17       | 13        | 27     | 0.51                 | 0                      | 0.21                   |
| 173  | British Overseas Territories | 1 321.60   | 17       | 8         | 25     | 0.51                 | 0                      | 0.21                   |
| 174  | Cape Verde              | 1 566.41          | 17       | 5         | 22     | 0.5                  | 0                      | 0.21                   |
| 175  | Aruba                   | 988.80            | 16       | 11        | 27     | 0.51                 | 0                      | 0.2                    |
| 176  | Togo                    | 350.42            | 15       | 11        | 26     | 0.51                 | 0                      | 0.2                    |
| 177  | New Caledonia           | 1 499.11          | 15       | 7         | 22     | 0.51                 | 0                      | 0.2                    |
| 178  | Palestinian Territory   | 929.57            | 15       | 10        | 25     | 0.51                 | 0                      | 0.2                    |
| 179  | San Marino              | 416.31            | 15       | 6         | 21     | 0.51                 | 0                      | 0.2                    |
| 180  | Grenada                 | 172.56            | 15       | 7         | 22     | 0.51                 | 0                      | 0.19                   |
| 181  | Tajikistan              | 422.61            | 15       | 5         | 20     | 0.5                  | 0                      | 0.19                   |
| 182  | Lesotho                 | 567.87            | 15       | 5         | 20     | 0.51                 | 0                      | 0.19                   |
| 183  | Eritrea                 | 772.49            | 14       | 2         | 16     | 0.5                  | 0                      | 0.18                   |
| 184  | Timor Leste             | 588.53            | 14       | 4         | 18     | 0.5                  | 0                      | 0.18                   |
| 185  | Burundi                 | 187.95            | 14       | 12        | 26     | 0.51                 | 0                      | 0.18                   |
| 186  | Mauritania              | 756.37            | 14       | 12        | 26     | 0.51                 | 0                      | 0.18                   |
| 187  | Turkmenistan            | 24 995.08         | 13       | 11        | 24     | 0.51                 | 0                      | 0.18                   |
| 188  | Guyana                  | 408.37            | 14       | 6         | 20     | 0.51                 | 0                      | 0.18                   |

(Continued)
| Rank | Country | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------|------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 189  | Samoa   | 19 123.47        | 14       | 11        | 25     | 0.51                 | 0                      | 0.17                   |
| 190  | Equatorial Guinea | 342.50 | 12       | 7         | 19     | 0.51                 | 0                      | 0.16                   |
| 191  | Somalia  | 34.35            | 12       | 6         | 18     | 0.51                 | 0                      | 0.16                   |
| 192  | Bhutan   | 349.98           | 12       | 1         | 13     | 0.48                 | 0                      | 0.16                   |
| 193  | Guinea-Bissau | 142.85 | 12       | 5         | 17     | 0.5                  | 0                      | 0.16                   |
| 194  | Bonaire, Sint Eustatius and Saba | 159.81 | 12       | 3         | 15     | 0.5                  | 0                      | 0.16                   |
| 195  | Chad     | 197.73           | 12       | 6         | 18     | 0.51                 | 0                      | 0.15                   |
| 196  | Sint Maarten | 480.60 | 12       | 4         | 16     | 0.5                  | 0                      | 0.15                   |
| 197  | Faeroe Islands | 256.39 | 11       | 6         | 17     | 0.51                 | 0                      | 0.15                   |
| 198  | Central African Republic | 95.94  | 11       | 6         | 17     | 0.51                 | 0                      | 0.15                   |
| 199  | Falkland Islands | 241.32 | 11       | 5         | 16     | 0.5                  | 0                      | 0.14                   |
| 200  | Greenland | 259.74           | 10       | 6         | 16     | 0.51                 | 0                      | 0.14                   |
| 201  | Solomon Islands | 359.05 | 10       | 7         | 17     | 0.51                 | 0                      | 0.14                   |
| 202  | North Korea | 93.08            | 12       | 7         | 19     | 0.51                 | 0                      | 0.14                   |
| 203  | Tonga    | 106.40           | 10       | 4         | 14     | 0.5                  | 0                      | 0.13                   |
| 204  | Kiribati | 134.51           | 10       | 2         | 12     | 0.5                  | 0                      | 0.13                   |
| 205  | Djibouti | 701.84           | 9        | 8         | 17     | 0.51                 | 0                      | 0.12                   |
| 206  | Comoros  | 713.6            | 8        | 4         | 12     | 0.5                  | 0                      | 0.11                   |
| 207  | Sao Tome and Principe | 835.8 | 8        | 4         | 12     | 0.5                  | 0.01                   | 0.11                   |
| 208  | St. Helena and Dependencies | 12.34 | 8        | 3         | 11     | 0.5                  | 0                      | 0.1                    |
| 209  | South Sudan | 9.37            | 6        | 2         | 8      | 0.5                  | 0                      | 0.08                   |
| 210  | Wallis and Futuna | 2.04  | 6        | 6         | 12     | 0.51                 | 0                      | 0.08                   |
| 211  | Nauru    | 58.32            | 5        | 3         | 8      | 0.49                 | 0                      | 0.07                   |
| Rank | Country            | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 212  | Micronesia         | 28.14             | 4        | 3         | 7      | 0.5                  | 0                      | 0.06                   |
| 213  | US Pacific Islands | 370.17            | 4        | 2         | 6      | 0.49                 | 0                      | 0.05                   |
| 214  | Tuvalu             | 37.58             | 3        | 1         | 4      | 0.48                 | 0                      | 0.04                   |
| 215  | Palau              | 3.65              | 3        | 1         | 4      | 0.48                 | 0                      | 0.04                   |
### Table A2.1. CPIS rank of countries by eigenvector centrality—2001

| Rank | Country       | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigencentrality |
|------|---------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------|
| 1    | United States | 3 105 840.59      | 66       | 122       | 188    | 0.719                | 1242.206              | 1.000           |
| 2    | United Kingdom| 1 289 876.34      | 62       | 108       | 170    | 0.683                | 475.790                | 0.962           |
| 3    | Germany       | 1 167 312.87      | 61       | 94        | 155    | 0.649                | 339.578                | 0.960           |
| 4    | France        | 776 582.98        | 60       | 93        | 153    | 0.649                | 354.996                | 0.941           |
| 5    | Netherlands   | 705 536.33        | 60       | 93        | 153    | 0.649                | 390.214                | 0.936           |
| 6    | Italy         | 579 551.40        | 58       | 116       | 174    | 0.704                | 920.228                | 0.915           |
| 7    | Japan         | 540 800.28        | 58       | 81        | 139    | 0.623                | 286.646                | 0.910           |
| 8    | Switzerland   | 218 587.37        | 57       | 121       | 178    | 0.717                | 856.831                | 0.902           |
| 9    | Canada        | 319 794.82        | 56       | 83        | 139    | 0.627                | 272.055                | 0.892           |
| 10   | Luxembourg    | 525 324.41        | 55       | 138       | 193    | 0.763                | 1291.279              | 0.883           |
| 11   | Cayman Islands| 416 538.07        | 55       | 59        | 114    | 0.580                | 120.733                | 0.878           |
| 12   | Belgium       | 155 709.98        | 53       | 110       | 163    | 0.685                | 627.502                | 0.860           |
| 13   | Sweden        | 174 550.57        | 53       | 76        | 129    | 0.612                | 231.459                | 0.858           |
| 14   | Australia     | 162 671.77        | 53       | 51        | 104    | 0.567                | 84.084                 | 0.846           |
| 15   | Spain         | 285 066.91        | 52       | 60        | 112    | 0.580                | 60.685                 | 0.845           |
| 16   | Ireland       | 177 597.22        | 53       | 57        | 110    | 0.578                | 74.021                 | 0.844           |
| 17   | Austria       | 109 891.05        | 51       | 99        | 150    | 0.662                | 417.164                | 0.825           |
| 18   | Denmark       | 74 903.00         | 51       | 88        | 139    | 0.641                | 319.833                | 0.822           |
| 19   | Bermuda       | 170 828.27        | 49       | 81        | 130    | 0.625                | 201.256                | 0.806           |
| 20   | Mexico        | 85 643.45         | 50       | 0         | 50     | 0.000                | 0.000                  | 0.805           |
| 21   | Norway        | 50 038.88         | 48       | 60        | 108    | 0.583                | 80.250                 | 0.798           |

(Continued)
| Rank | Country                          | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigencentrality |
|------|----------------------------------|-------------------|----------|-----------|--------|--------------------|------------------------|------------------|
| 22   | China, P.R.: Hong Kong           | 96 699.50         | 47       | 20        | 67     | 0.490              | 9.516                  | 0.776            |
| 23   | Finland                          | 153 567.88        | 48       | 25        | 73     | 0.519              | 8.363                  | 0.772            |
| 24   | Russian Federation               | 26 254.26         | 46       | 26        | 72     | 0.510              | 85.801                 | 0.769            |
| 25   | Brazil                           | 81 399.37         | 45       | 62        | 107    | 0.581              | 177.003                | 0.752            |
| 26   | Argentina                        | 25 153.78         | 46       | 32        | 78     | 0.531              | 33.893                 | 0.742            |
| 27   | Korea, Republic of               | 79 565.50         | 44       | 56        | 100    | 0.570              | 119.871                | 0.742            |
| 28   | Singapore                        | 50 693.44         | 42       | 43        | 85     | 0.552              | 52.548                 | 0.716            |
| 29   | Portugal                         | 59 283.96         | 42       | 46        | 88     | 0.559              | 103.287                | 0.703            |
| 30   | Israel                           | 26 656.86         | 39       | 24        | 63     | 0.518              | 7.257                  | 0.689            |
| 31   | China, P.R.: Mainland            | 20 416.80         | 38       | 0         | 38     | 0.000              | 0.000                  | 0.668            |
| 32   | Greece                           | 68 182.03         | 38       | 54        | 92     | 0.567              | 42.953                 | 0.665            |
| 33   | Venezuela, Republica Bolivariana de | 10 754.44       | 38       | 17        | 55     | 0.482              | 12.133                 | 0.663            |
| 34   | Panama                           | 13 182.38         | 37       | 42        | 79     | 0.522              | 87.855                 | 0.658            |
| 35   | Turkey                           | 16 900.55         | 39       | 21        | 60     | 0.501              | 36.558                 | 0.653            |
| 36   | Poland                           | 12 916.01         | 36       | 43        | 79     | 0.551              | 15.589                 | 0.643            |
| 37   | Taiwan Province of China         | 41 206.94         | 36       | 0         | 36     | 0.000              | 0.000                  | 0.634            |
| 38   | Thailand                         | 12 051.36         | 35       | 23        | 58     | 0.489              | 10.238                 | 0.626            |
| 39   | Netherlands Antilles             | 64 355.72         | 38       | 60        | 98     | 0.580              | 126.032                | 0.625            |
| 40   | India                            | 15 520.84         | 36       | 0         | 36     | 0.000              | 0.000                  | 0.616            |
| 41   | South Africa                     | 19 895.37         | 35       | 41        | 76     | 0.548              | 77.409                 | 0.616            |
| 42   | Philippines                      | 12 946.54         | 35       | 25        | 60     | 0.480              | 7.041                  | 0.608            |
| Rank | Country                | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigencentrality |
|------|------------------------|-------------------|----------|-----------|--------|---------------------|------------------------|-----------------|
| 43   | Bahamas, The           | 8 083.97          | 34       | 47        | 81     | 0.549               | 28.111                 | 0.603           |
| 44   | Hungary                | 16 026.27         | 34       | 42        | 76     | 0.551               | 12.637                 | 0.594           |
| 45   | Indonesia              | 5 466.22          | 34       | 24        | 58     | 0.503               | 73.675                 | 0.592           |
| 46   | Colombia               | 6 389.15          | 33       | 22        | 55     | 0.506               | 11.615                 | 0.591           |
| 47   | New Zealand            | 16 676.15         | 35       | 19        | 54     | 0.488               | 13.020                 | 0.580           |
| 48   | Virgin Islands, British| 14 456.26         | 34       | 0         | 34     | 0.000               | 0.000                  | 0.570           |
| 49   | Malaysia               | 22 551.13         | 32       | 63        | 95     | 0.590               | 179.366                | 0.569           |
| 50   | Peru                   | 3 070.73          | 29       | 0         | 29     | 0.000               | 0.000                  | 0.556           |
| 51   | Iceland                | 3 615.93          | 29       | 32        | 61     | 0.529               | 8.924                  | 0.552           |
| 52   | Ukraine                | 1 285.94          | 30       | 4         | 34     | 0.423               | 12.405                 | 0.545           |
| 53   | Cyprus                 | 1 529.07          | 30       | 68        | 98     | 0.597               | 172.131                | 0.535           |
| 54   | Chile                  | 8 385.78          | 28       | 52        | 80     | 0.563               | 25.342                 | 0.535           |
| 55   | Ecuador                | 1 463.42          | 27       | 0         | 27     | 0.000               | 0.000                  | 0.510           |
| 56   | Jersey                 | 39 874.49         | 29       | 62        | 91     | 0.588               | 37.137                 | 0.501           |
| 57   | Bulgaria               | 4 532.62          | 27       | 19        | 46     | 0.501               | 4.189                  | 0.496           |
| 58   | Guernsey               | 14 572.47         | 28       | 103       | 131    | 0.673               | 212.995                | 0.473           |
| 59   | Croatia                | 3 594.41          | 25       | 0         | 25     | 0.000               | 0.000                  | 0.467           |
| 60   | Romania                | 1 445.19          | 26       | 10        | 36     | 0.485               | 6.739                  | 0.465           |
| 61   | Czech Republic         | 2 267.47          | 24       | 37        | 61     | 0.541               | 69.823                 | 0.460           |
| 62   | Uruguay                | 1 903.31          | 24       | 39        | 63     | 0.542               | 11.590                 | 0.449           |
| 63   | Egypt                  | 1 214.09          | 24       | 27        | 51     | 0.506               | 5.706                  | 0.440           |
| 64   | Liberia                | 1 788.87          | 21       | 21        | 21     | 0.000               | 0.000                  | 0.416           |
| 65   | Slovak Republic        | 2 056.79          | 21       | 38        | 59     | 0.542               | 15.576                 | 0.412           |
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigencentrality |
|------|--------------------------|-------------------|----------|-----------|--------|---------------------|------------------------|-------------------|
| 66   | Jamaica                  | 622.83            | 19       | 0         | 19     | 0.000               | 0.000                  | 0.370            |
| 67   | Mauritius                | 652.65            | 21       | 27        | 48     | 0.503               | 86.338                 | 0.368            |
| 68   | Gibraltar                | 3,001.84          | 19       | 0         | 19     | 0.000               | 0.000                  | 0.359            |
| 69   | Lithuania                | 954.39            | 19       | 0         | 19     | 0.000               | 0.000                  | 0.357            |
| 70   | Dominican Republic       | 458.44            | 18       | 0         | 18     | 0.000               | 0.000                  | 0.352            |
| 71   | Estonia                  | 698.70            | 18       | 21        | 39     | 0.514               | 2.267                  | 0.352            |
| 72   | Slovenia                 | 1,887.38          | 18       | 0         | 18     | 0.000               | 0.000                  | 0.351            |
| 73   | Morocco                  | 1,364.36          | 16       | 0         | 16     | 0.000               | 0.000                  | 0.331            |
| 74   | Qatar                    | 924.11            | 18       | 0         | 18     | 0.000               | 0.000                  | 0.330            |
| 75   | Barbados                 | 390.56            | 16       | 0         | 16     | 0.000               | 0.000                  | 0.316            |
| 76   | Cote d’Ivoire           | 858.55            | 16       | 0         | 16     | 0.000               | 0.000                  | 0.316            |
| 77   | Nigeria                  | 369.74            | 16       | 0         | 16     | 0.000               | 0.000                  | 0.310            |
| 78   | Costa Rica               | 410.43            | 15       | 21        | 36     | 0.461               | 3.599                  | 0.299            |
| 79   | Pakistan                 | 469.22            | 15       | 0         | 15     | 0.000               | 0.000                  | 0.285            |
| 80   | Lebanon                  | 553.06            | 15       | 53        | 68     | 0.568               | 11.372                 | 0.284            |
| 81   | Kazakhstan               | 338.25            | 15       | 11        | 26     | 0.461               | 7.497                  | 0.282            |
| 82   | Jordan                   | 298.74            | 16       | 0         | 16     | 0.000               | 0.000                  | 0.281            |
| 83   | Sri Lanka                | 368.01            | 14       | 0         | 14     | 0.000               | 0.000                  | 0.278            |
| 84   | Trinidad and Tobago      | 1,372.08          | 14       | 0         | 14     | 0.000               | 0.000                  | 0.276            |
| 85   | Isle of Man              | 533.29            | 16       | 68        | 84     | 0.601               | 86.396                 | 0.275            |
| 86   | Vietnam                  | 190.80            | 14       | 0         | 14     | 0.000               | 0.000                  | 0.274            |
| 87   | Bosnia and Herzegovina   | 36.11             | 13       | 0         | 13     | 0.000               | 0.000                  | 0.273            |
| 88   | Guatemala                | 355.87            | 14       | 0         | 14     | 0.000               | 0.000                  | 0.268            |
| Rank | Country              | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigencentrality |
|------|----------------------|-------------------|----------|-----------|--------|----------------------|------------------------|-------------------|
| 89   | Latvia               | 385.54            | 12       | 12        | 24     | 0.000                | 0.000                  | 0.266            |
| 90   | Tunisia              | 1 618.31          | 14       | 14        | 28     | 0.000                | 0.000                  | 0.263            |
| 91   | US Virgin Islands    | 259.95            | 15       | 0         | 15     | 0.000                | 0.000                  | 0.254            |
| 92   | Ireland              | 373.95            | 13       | 0         | 13     | 0.000                | 0.000                  | 0.242            |
| 93   | Papua New Guinea     | 308.94            | 11       | 11        | 22     | 0.000                | 0.000                  | 0.235            |
| 94   | Ghana                | 264.40            | 12       | 12        | 24     | 0.000                | 0.000                  | 0.234            |
| 95   | Zimbabwe             | 202.21            | 12       | 12        | 24     | 0.000                | 0.000                  | 0.233            |
| 96   | Lichtenstein         | 324.85            | 11       | 11        | 22     | 0.000                | 0.000                  | 0.229            |
| 97   | El Salvador          | 170.20            | 12       | 12        | 24     | 0.000                | 0.000                  | 0.223            |
| 98   | Serbia, Republic of  | 42.34             | 10       | 0         | 10     | 0.000                | 0.000                  | 0.220            |
| 99   | Bahrain, Kingdom     | 217.26            | 12       | 12        | 24     | 0.000                | 0.000                  | 0.219            |
| 100  | Marshall Islands,    | 2 451.63          | 13       | 13        | 26     | 0.000                | 0.000                  | 0.208            |
| 101  | Georgia              | 49.83             | 10       | 10        | 20     | 0.000                | 0.000                  | 0.205            |
| 102  | Oman                 | 230.35            | 11       | 11        | 22     | 0.000                | 0.000                  | 0.203            |
| 103  | Marshall Islands,    | 175.04            | 9        | 9         | 18     | 0.000                | 0.000                  | 0.198            |
| 104  | Republic of Georgia  | 70.99             | 8        | 8         | 16     | 0.000                | 0.000                  | 0.195            |
| 105  | Chile                | 114.43            | 9        | 9         | 18     | 0.000                | 0.000                  | 0.194            |
| 106  | Bolivia              | 108.52            | 8        | 8         | 16     | 0.000                | 0.000                  | 0.191            |
| 107  | Angola               | 77.10             | 8        | 8         | 16     | 0.000                | 0.000                  | 0.186            |
| 108  | Algeria              | 116.58            | 8        | 8         | 16     | 0.000                | 0.000                  | 0.183            |
| 109  | Kenya                | 42.18             | 7        | 7         | 14     | 0.000                | 0.000                  | 0.181            |
| 110  | Andorra              | 37.85             | 7        | 7         | 14     | 0.000                | 0.000                  | 0.179            |
| 111  | Botswana             | 56.60             | 7        | 7         | 14     | 0.000                | 0.000                  | 0.177            |
| Rank | Country               | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigencentrality |
|------|-----------------------|-------------------|----------|-----------|--------|--------------------|------------------------|-----------------|
| 112  | Nicaragua             | 107.92            | 7        | 0         | 7      | 0.000              | 0.000                  | 0.135           |
| 113  | Puerto Rico           | 32.14             | 7        | 0         | 7      | 0.000              | 0.000                  | 0.133           |
| 114  | Malta                 | 210.35            | 6        | 38        | 44     | 0.543              | 0.603                  | 0.132           |
| 115  | Namibia               | 26.33             | 6        | 0         | 6      | 0.000              | 0.000                  | 0.128           |
| 116  | Senegal               | 327.52            | 6        | 0         | 6      | 0.000              | 0.000                  | 0.127           |
| 117  | Aruba                 | 407.06            | 6        | 5         | 11     | 0.439              | 0.000                  | 0.125           |
| 118  | United Arab Emirates  | 81.83             | 7        | 0         | 7      | 0.000              | 0.000                  | 0.124           |
| 119  | Monaco                | 83.63             | 6        | 0         | 6      | 0.000              | 0.000                  | 0.119           |
| 120  | Gabon                 | 109.82            | 5        | 0         | 5      | 0.000              | 0.000                  | 0.112           |
| 121  | Turks and Caicos Islands | 114.94         | 5        | 0         | 5      | 0.000              | 0.000                  | 0.101           |
| 122  | Bangladesh            | 16.01             | 5        | 0         | 5      | 0.000              | 0.000                  | 0.098           |
| 123  | Moldova               | 160.87            | 5        | 0         | 5      | 0.000              | 0.000                  | 0.097           |
| 124  | Antigua and Barbuda   | 75.21             | 5        | 0         | 5      | 0.000              | 0.000                  | 0.096           |
| 125  | Gambia, The           | 23.41             | 4        | 0         | 4      | 0.000              | 0.000                  | 0.091           |
| 126  | Kuwait                | 406.09            | 6        | 0         | 6      | 0.000              | 0.000                  | 0.090           |
| 127  | Zambia                | 5.62              | 4        | 0         | 4      | 0.000              | 0.000                  | 0.089           |
| 128  | Malawi                | 21.16             | 4        | 0         | 4      | 0.000              | 0.000                  | 0.081           |
| 129  | Mozambique            | 11.00             | 4        | 0         | 4      | 0.000              | 0.000                  | 0.081           |
| 130  | Cuba                  | 7.33              | 3        | 0         | 3      | 0.000              | 0.000                  | 0.067           |
| 131  | Vatican               | 45.94             | 3        | 0         | 3      | 0.000              | 0.000                  | 0.066           |
| 132  | Congo, Democratic Republic of | 1.35     | 3        | 0         | 3      | 0.000              | 0.000                  | 0.066           |

Table A2.1. (Continued)
| Rank | Country                        | Total Value (Bn.) | Degree | Outdegree | Degree | Betweenness Centrality | Closeness Centrality | Eigencentrality | Degree | Outdegree | Degree | Betweenness Centrality | Closeness Centrality | Eigencentrality |
|------|--------------------------------|-------------------|--------|-----------|--------|------------------------|----------------------|------------------|--------|-----------|--------|------------------------|----------------------|------------------|
| 133  | Vanuatu                        | 10.08             | 2      | 0         | 2      | 0.426                  | 0.066                |                 |        |           |        |                        |                      |                  |
| 134  | Grenada                        | 8.55              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 135  | Cameroon                       | 47.01             | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 136  | French Territories: French Polynesia | 27.83         | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 137  | Lesotho                        | 2.73              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 138  | Belarus                        | 7.35              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 139  | Uzbekistan                     | 3.54              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 140  | Libya                          | 2.05              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 141  | Madagascar                     | 3.91              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 142  | Paraguay                       | 17.56             | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 143  | Tanzania                       | 8.36              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 144  | Anguilla                       | 10.08             | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 145  | Niger                          | 11.47             | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 146  | Madagascar                     | 4.98              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 147  | Yemen, Republic of              | 0.77              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 148  | Wallis and Futuna               | 2.83              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 149  | Burundi                        | 0.03              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 150  | Kyrgyz Republic                | 0.74              | 3      | 0         | 3      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 151  | Honduras                       | 60.88             | 2      | 0         | 2      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 152  | Tanzania                       | 49.98             | 2      | 0         | 2      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 153  | Egypt                          | 7.45              | 2      | 0         | 2      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 154  | Laos                           | 2.65              | 2      | 0         | 2      | 0.000                  | 0.000                |                 |        |           |        |                        |                      |                  |
| 155  | China, P.R.: Macao              | 78.76             | 2      | 44        | 46     | 0.557                  | 0.577                | 0.039           |        |           |        |                        |                      |                  |
| Rank | Country | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigencentrality |
|------|---------|------------------|----------|-----------|--------|---------------------|-----------------------|-----------------|
| 156  | Guinea-Bissau | 11.02            | 2        | 0         | 2      | 0.000               | 0.000                 | 0.039           |
| 157  | Myanmar   | 5.49             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.038           |
| 158  | Angola    | 9.36             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.037           |
| 159  | Dominica  | 0.61             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.036           |
| 160  | Suriname  | 0.89             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.036           |
| 161  | Sweden    | 0.56             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035           |
| 162  | West Bank and Gaza | 1.13 | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035           |
| 163  | Brunei Darussalam | 1.88 | 2        | 0         | 2      | 0.000               | 0.000                 | 0.033           |
| 164  | Turkmenistan | 17.11           | 2        | 0         | 2      | 0.000               | 0.000                 | 0.032           |
| 165  | Guiana, French | 1.06 | 2        | 0         | 2      | 0.000               | 0.000                 | 0.031           |
| 166  | Montserrat | 0.50             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.024           |
| 167  | Central African Republic | 1.06 | 1        | 0         | 1      | 0.000               | 0.000                 | 0.024           |
| 168  | Mali       | 4.00             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.024           |
| 169  | Saoa       | 1.77             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 170  | Ethiopia   | 0.01             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 171  | Iraq       | 0.06             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 172  | Nue        | 1.40             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 173  | San Marino | 1.02             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 174  | St. Kitts and Nevis | 3.13 | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 175  | Guinea     | 3.96             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 176  | Haiti      | 1.30             | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |
| 177  | St. Vincent and the Grenadines | 1.81 | 1        | 0         | 1      | 0.000               | 0.000                 | 0.022           |

Table A2.1. (Continued)
| Rank | Country                          | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigencentrality |
|------|---------------------------------|------------------|----------|-----------|--------|--------------------|------------------------|-------------------|
| 178  | Haiti                           | 0.12             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 179  | Burkina Faso                    | 2.58             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 180  | Congo, Republic of              | 0.24             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 181  | Cook Islands                    | 0.36             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 182  | Sao Tome and Principe           | 1.05             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 183  | Solomon Islands                 | 0.58             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 184  | Somalia                         | 0.19             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 185  | Togo                            | 2.87             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.022             |
| 186  | French Territories: New Caledonia | 0.02           | 1        | 0         | 1      | 0.000              | 0.000                  | 0.021             |
| 187  | Rwanda                          | 0.96             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.021             |
| 188  | British Indian Ocean Territory  | 351.81           | 1        | 0         | 1      | 0.000              | 0.000                  | 0.021             |
| 189  | Chad                            | 0.09             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.020             |
| 190  | Guadeloupe                      | 4.05             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.020             |
| 191  | Mauritania                      | 13.13            | 1        | 0         | 1      | 0.000              | 0.000                  | 0.020             |
| 192  | Faroe Islands                   | 6.66             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.020             |
| 193  | Greenland                       | 4.28             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.020             |
| 194  | Saint Helena                    | 4.49             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.014             |
| 195  | Cambodia                        | 31.47            | 1        | 0         | 1      | 0.000              | 0.000                  | 0.014             |
| 196  | Maldives                        | 2.77             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.014             |
| 197  | Syrian Arab Republic            | 0.26             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.013             |
| 198  | Armenia, Republic of            | 0.06             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.012             |
| Rank | Country                                | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigencentrality |
|------|----------------------------------------|-------------------|----------|-----------|--------|---------------------|------------------------|------------------|
| 199  | Micronesia, Federated States of         | 1.35              | 1        | 0         | 1      | 0.000               | 0.000                  | 0.011            |
| 200  | Seychelles                             | 0.39              | 1        | 0         | 1      | 0.000               | 0.000                  | 0.009            |
| 201  | Korea, Democratic People's Rep. of     | 3.80              | 1        | 0         | 1      | 0.000               | 0.000                  | 0.007            |
| 202  | St. Lucia                              | 0.00              | 0        | 0         | 0      | 0.000               | 0.000                  | 0.000            |
| Rank | Country                                   | Total value (Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------------------------------|-----------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 1    | United Kingdom                            | 2,807,751.49    | 227      | 155       | 382    | 0.778                | 1.000                  | 1.000                  |
| 2    | United States                             | 6,995,458.38    | 127      | 194       | 321    | 0.705                | 0.988                  | 0.988                  |
| 3    | France                                    | 2,074,807.75    | 138      | 207       | 345    | 0.733                | 0.733                  | 0.666                  |
| 4    | Germany                                   | 1,518,841.31    | 115      | 184       | 299    | 0.680                | 0.700                  | 0.666                  |
| 5    | Netherlands                               | 1,683,166.15    | 122      | 177       | 309    | 0.715                | 0.775                  | 0.690                  |
| 6    | Norway                                    | 1,005,420.01    | 136      | 186       | 322    | 0.725                | 0.865                  | 0.748                  |
| 7    | Ireland                                   | 6,320,039.71    | 155      | 222       | 377    | 0.625                | 0.625                  | 0.582                  |
| 8    | Cayman Islands                            | 1,312,300.32    | 135      | 200       | 335    | 0.585                | 0.721                  | 0.541                  |
| 9    | Switzerland                               | 470,141.07      | 136      | 181       | 317    | 0.685                | 0.685                  | 0.587                  |
| 10   | Belgium                                   | 312,091.62      | 105      | 155       | 260    | 0.543                | 0.543                  | 0.496                  |
| 11   | China, P.R.: Mainland                     | 265,317.21      | 62       | 62        | 124    | 0.000                | 0.000                  | 0.000                  |
| 12   | Italy                                     | 1,358,582.06    | 180      | 180       | 360    | 0.685                | 0.685                  | 0.685                  |
| 13   | Spain                                     | 1,366,916.00    | 181      | 181       | 362    | 0.685                | 0.685                  | 0.550                  |
| 14   | Australia                                 | 2,885,715.75    | 153      | 153       | 306    | 0.633                | 0.633                  | 0.587                  |
| 15   | Austria                                   | 1,825,593.25    | 111      | 111       | 222    | 0.670                | 0.670                  | 0.670                  |
| 16   | Norway                                    | 1,767,375.25    | 164      | 164       | 328    | 0.670                | 0.670                  | 0.670                  |
| 17   | Japan                                     | 1,661,711.35    | 156      | 156       | 312    | 0.636                | 0.636                  | 0.636                  |
| 18   | Japan                                     | 360,461.45      | 55       | 55        | 110    | 0.570                | 0.570                  | 0.570                  |
| 19   | Brazil                                    | 264,944.33      | 78       | 78        | 156    | 0.555                | 0.555                  | 0.555                  |
| 20   | Russia                                    | 74,403.88       | 20       | 20        | 40     | 0.500                | 0.500                  | 0.500                  |
| 21   | Mexico                                    | 111,803.57      | 58       | 58        | 116    | 0.455                | 0.455                  | 0.455                  |
| 22   | Ecuador                                   | 233,803.97      | 55       | 55        | 110    | 0.570                | 0.570                  | 0.570                  |
| 23   | Russian Federation                        | 74,403.88       | 20       | 20        | 40     | 0.500                | 0.500                  | 0.500                  |
| 24   | Mexico                                    | 111,803.57      | 58       | 58        | 116    | 0.455                | 0.455                  | 0.455                  |

Note: Table A2.2. CPIS rank of countries by eigenvector centrality—2008.
Table A2.2. (Continued)

| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------|-------------------|----------|-----------|--------|---------------------|------------------------|------------------------|
| 25   | Bermuda                  | 295 394.72        | 58       | 84        | 142    | 0.611               | 320.028                | 0.834                  |
| 26   | Denmark                  | 193 833.27        | 58       | 124       | 182    | 0.698               | 308.781                | 0.829                  |
| 27   | Korea, Republic of       | 210 836.99        | 54       | 94        | 148    | 0.638               | 111.459                | 0.800                  |
| 28   | Greece                   | 265 849.19        | 57       | 60        | 117    | 0.573               | 39.193                 | 0.793                  |
| 29   | Virgin Islands, British  | 55 607.66         | 55       | 0         | 55     | 0.000               | 0.000                  | 0.791                  |
| 30   | Turkey                   | 60 454.65         | 54       | 37        | 91     | 0.534               | 24.336                 | 0.783                  |
| 31   | India                    | 198 402.39        | 54       | 38        | 92     | 0.528               | 30.288                 | 0.769                  |
| 32   | Jersey                   | 264 994.56        | 53       | 95        | 148    | 0.625               | 230.501                | 0.763                  |
| 33   | South Africa             | 66 837.01         | 52       | 63        | 115    | 0.582               | 154.109                | 0.762                  |
| 34   | Singapore                | 87 181.72         | 51       | 51        | 102    | 0.562               | 25.508                 | 0.754                  |
| 35   | Portugal                 | 248 210.05        | 49       | 58        | 107    | 0.568               | 159.000                | 0.742                  |
| 36   | Poland                   | 68 281.02         | 49       | 40        | 89     | 0.543               | 13.589                 | 0.730                  |
| 37   | Guernsey                 | 59 513.20         | 49       | 108       | 157    | 0.666               | 162.552                | 0.719                  |
| 38   | Thailand                 | 28 823.83         | 45       | 63        | 108    | 0.576               | 173.335                | 0.694                  |
| 39   | Netherlands Antilles     | 124 358.81        | 48       | 75        | 123    | 0.603               | 74.722                 | 0.687                  |
| 40   | Panama                   | 20 838.49         | 45       | 46        | 91     | 0.545               | 30.535                 | 0.683                  |
| 41   | New Zealand              | 32 955.58         | 45       | 9         | 54     | 0.471               | 1.109                  | 0.680                  |
| 42   | Iceland                  | 14 970.26         | 44       | 47        | 91     | 0.554               | 31.219                 | 0.666                  |
| 43   | Malaysia                 | 52 316.64         | 43       | 66        | 109    | 0.585               | 75.204                 | 0.666                  |
| 44   | Indonesia                | 38 529.09         | 45       | 33        | 78     | 0.531               | 14.442                 | 0.665                  |
| 45   | Bahamas, The             | 13 553.29         | 45       | 37        | 82     | 0.533               | 14.461                 | 0.664                  |
| 46   | Israel                   | 59 759.67         | 46       | 47        | 93     | 0.554               | 21.653                 | 0.663                  |
| 47   | Argentina                | 13 375.72         | 42       | 39        | 81     | 0.536               | 9.441                  | 0.649                  |
| 48   | Hungary                  | 50 636.62         | 42       | 70        | 112    | 0.590               | 36.886                 | 0.643                  |
| Rank | Country                        | Total value ($Mn) | Indegree | Outdegree | Degree centrality | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------------------|-------------------|----------|-----------|-------------------|---------------------|------------------------|------------------------|
| 49   | Taiwan Province of China      | 86,871.10         | 43       | 0         | 0.00              | 0.00                | 0.639                  | 0.639                  |
| 50   | Kazakhstan                    | 5,436.31          | 41       | 49        | 91                | 0.55                | 0.55                  | 0.55                   |
| 51   | Czech Republic                | 24,888.11         | 40       | 17        | 71                | 0.43                | 0.43                  | 0.43                   |
| 52   | Venezuela, Republica Bolivariana de | 11,001.30     | 41       | 17        | 58                | 0.49                | 1.752                  | 0.639                  |
| 53   | Philippines                   | 21,507.83         | 43       | 9         | 52                | 0.47                | 0.777                  | 0.632                  |
| 54   | United Arab Emirates          | 21,945.56         | 43       | 0         | 43                | 0.00                | 0.00                   | 0.632                  |
| 55   | Chile                         | 17,150.82         | 44       | 9         | 98                | 0.56                | 30.567                 | 0.637                  |
| 56   | Cyprus                        | 19,350.34         | 41       | 94        | 135               | 0.63                | 65.7                  | 0.64                   |
| 57   | Peru                          | 9,183.43          | 39       | 2         | 41                | 0.43                | 0.43                   | 0.601                  |
| 58   | Ukraine                       | 13,572.12         | 38       | 34        | 72                | 0.52                | 5.043                  | 0.580                  |
| 59   | Colombia                      | 10,890.79         | 35       | 13        | 47                | 0.54                | 36.844                 | 0.549                  |
| 60   | Egypt                         | 7,761.67          | 34       | 1         | 34                | 0.00                | 0.00                   | 0.605                  |
| 61   | Qatar                         | 4,970.20          | 32       | 0         | 32                | 0.00                | 0.00                   | 0.54                   |
| 62   | Isle of Man                   | 4,403.33          | 32       | 0         | 32                | 0.00                | 0.00                   | 0.54                   |
| 63   | Uruguay                       | 4,970.20          | 32       | 0         | 32                | 0.00                | 0.00                   | 0.54                   |
| 64   | Ecuador                       | 4,970.20          | 32       | 0         | 32                | 0.00                | 0.00                   | 0.54                   |
| 65   | Mauritius                     | 4,970.20          | 32       | 0         | 32                | 0.00                | 0.00                   | 0.54                   |
| 66   | Morocco                       | 4,970.20          | 32       | 0         | 32                | 0.00                | 0.00                   | 0.54                   |
| 67   | Pakistan                      | 3,675.63          | 30       | 11        | 41                | 0.41                | 0.41                   | 0.46                   |
| 68   | Uzbekistan                    | 3,675.63          | 30       | 11        | 41                | 0.41                | 0.41                   | 0.46                   |
| 69   | Lithuania                     | 3,675.63          | 30       | 11        | 41                | 0.41                | 0.41                   | 0.46                   |
| 70   | Lebanon                       | 3,675.63          | 30       | 11        | 41                | 0.41                | 0.41                   | 0.46                   |
| 71   | Croatia                       | 6,048.00          | 30       | 0         | 30                | 0.00                | 0.00                   | 0.46                   |

(Continued)
| Rank | Country                      | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|------------------------------|-------------------|----------|-----------|--------|--------------------|------------------------|------------------------|
| 72   | Bahrain, Kingdom of          | 9883.72           | 30       | 58        | 88     | 0.573              | 45.178                 | 0.453                  |
| 73   | Saudi Arabia                 | 9653.33           | 30       | 0         | 30     | 0.000              | 0.000                  | 0.450                  |
| 74   | Vietnam                      | 3224.73           | 27       | 0         | 27     | 0.000              | 0.000                  | 0.443                  |
| 75   | Georgia                      | 337.73            | 28       | 0         | 28     | 0.000              | 0.000                  | 0.442                  |
| 76   | Gibraltar                    | 1886.03           | 25       | 39        | 64     | 0.540              | 3.539                  | 0.435                  |
| 77   | Dominican Republic           | 1189.75           | 26       | 0         | 26     | 0.000              | 0.000                  | 0.434                  |
| 78   | Bulgaria                     | 2663.71           | 28       | 43        | 71     | 0.547              | 7.516                  | 0.430                  |
| 79   | Romania                      | 5032.02           | 27       | 18        | 45     | 0.501              | 3.705                  | 0.428                  |
| 80   | Marshall Islands, Republic of| 5601.85           | 25       | 0         | 25     | 0.000              | 0.000                  | 0.422                  |
| 81   | Slovak Republic              | 12783.09          | 26       | 58        | 84     | 0.567              | 21.360                 | 0.422                  |
| 82   | Barbados                     | 1381.16           | 25       | 44        | 69     | 0.543              | 5.534                  | 0.417                  |
| 83   | Slovenia                     | 5632.68           | 26       | 0         | 26     | 0.000              | 0.000                  | 0.414                  |
| 84   | Papua New Guinea             | 3252.84           | 25       | 0         | 25     | 0.000              | 0.000                  | 0.411                  |
| 85   | Ghana                        | 671.62            | 24       | 0         | 24     | 0.000              | 0.000                  | 0.401                  |
| 86   | Estonia                      | 2983.13           | 24       | 63        | 87     | 0.577              | 15.769                 | 0.399                  |
| 87   | Malta                        | 2616.72           | 25       | 27        | 52     | 0.520              | 0.716                  | 0.396                  |
| 88   | Costa Rica                   | 725.31            | 24       | 49        | 73     | 0.547              | 10.666                 | 0.394                  |
| 89   | Jamaica                      | 926.94            | 23       | 0         | 23     | 0.000              | 0.000                  | 0.388                  |
| 90   | Latvia                       | 1451.72           | 24       | 76        | 100    | 0.596              | 95.901                 | 0.387                  |
| 91   | Trinidad and Tobago          | 1928.27           | 23       | 0         | 23     | 0.000              | 0.000                  | 0.385                  |
| 92   | Sri Lanka                    | 882.70            | 24       | 0         | 24     | 0.000              | 0.000                  | 0.378                  |
| 93   | Kuwait                       | 3584.50           | 24       | 57        | 81     | 0.568              | 93.381                 | 0.372                  |
| 94   | Lebanon                      | 2052.34           | 22       | 77        | 99     | 0.599              | 46.787                 | 0.361                  |
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|-------------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|-----------------------|
| 95   | Liechtenstein           | 2 435.91          | 21       | 0         | 21     | 0.000              | 0.000                 | 0.359                 |
| 96   | El Salvador             | 1 203.09          | 22       | 0         | 22     | 0.000              | 0.000                 | 0.359                 |
| 97   | Aruba                   | 4 274.42          | 20       | 43        | 63     | 0.541              | 1.421                 | 0.354                 |
| 98   | Oman                    | 712.15            | 22       | 0         | 22     | 0.000              | 0.000                 | 0.350                 |
| 99   | Nigeria                 | 1 986.97          | 21       | 0         | 21     | 0.000              | 0.000                 | 0.346                 |
| 100  | Puerto Rico             | 89.88             | 21       | 0         | 21     | 0.000              | 0.000                 | 0.342                 |
| 101  | Serbia, Republic of     | 2 008.09          | 21       | 0         | 21     | 0.000              | 0.000                 | 0.333                 |
| 102  | Kenya                   | 365.71            | 20       | 0         | 20     | 0.000              | 0.000                 | 0.327                 |
| 103  | Jordan                  | 1 579.46          | 21       | 0         | 21     | 0.000              | 0.000                 | 0.322                 |
| 104  | Guatemala               | 480.43            | 19       | 0         | 19     | 0.000              | 0.000                 | 0.318                 |
| 105  | Belize                  | 166.27            | 18       | 0         | 18     | 0.000              | 0.000                 | 0.316                 |
| 106  | Seychelles              | 93.01             | 18       | 0         | 18     | 0.000              | 0.000                 | 0.303                 |
| 107  | Zambia                  | 193.90            | 17       | 0         | 17     | 0.000              | 0.000                 | 0.291                 |
| 108  | US Virgin Islands       | 1 382.26          | 18       | 0         | 18     | 0.000              | 0.000                 | 0.285                 |
| 109  | Iraq                    | 938.14            | 17       | 0         | 17     | 0.000              | 0.000                 | 0.282                 |
| 110  | Macedonia, FYR          | 255.57            | 16       | 0         | 16     | 0.000              | 0.000                 | 0.275                 |
| 111  | Cote d’Ivoire           | 660.10            | 15       | 0         | 15     | 0.000              | 0.000                 | 0.266                 |
| 112  | Bosnia and Herzegovina  | 560.90            | 16       | 0         | 16     | 0.000              | 0.000                 | 0.262                 |
| 113  | Gabon                   | 384.26            | 14       | 0         | 14     | 0.000              | 0.000                 | 0.246                 |
| 114  | Faroe Islands           | 346.21            | 13       | 0         | 13     | 0.000              | 0.000                 | 0.236                 |
| 115  | Azerbaijan, Republic of | 230.51            | 13       | 0         | 13     | 0.000              | 0.000                 | 0.212                 |
| 116  | Albania                 | 177.36            | 11       | 0         | 11     | 0.000              | 0.000                 | 0.195                 |
| 117  | Zimbabwe                | 123.87            | 11       | 0         | 11     | 0.000              | 0.000                 | 0.191                 |

(Continued)
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|--------------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 118  | Senegal                  | 170.88            | 11       | 0         | 11     | 0.000              | 0.000                 | 0.191                  |
| 119  | Antigua and Barbuda      | 37.98             | 11       | 0         | 11     | 0.000              | 0.000                 | 0.184                  |
| 120  | Grenada                  | 26.92             | 10       | 0         | 10     | 0.000              | 0.000                 | 0.182                  |
| 121  | Iran                     | 620.08            | 11       | 0         | 11     | 0.000              | 0.000                 | 0.177                  |
| 122  | Bangladesh               | 462.52            | 11       | 0         | 11     | 0.000              | 0.000                 | 0.174                  |
| 123  | Falkland Islands         | 84.8              | 8        | 0         | 8      | 0.000              | 0.000                 | 0.153                  |
| 124  | Botswana                 | 324.62            | 9        | 0         | 9      | 0.000              | 0.000                 | 0.153                  |
| 125  | Fiji                     | 75.62             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.153                  |
| 126  | Mongolia                 | 86.12             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.149                  |
| 127  | Monaco                   | 24.55             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.148                  |
| 128  | Honduras                 | 206.13            | 9        | 0         | 9      | 0.000              | 0.000                 | 0.145                  |
| 129  | Anguilla                 | 198.59            | 9        | 0         | 9      | 0.000              | 0.000                 | 0.145                  |
| 130  | Armenia, Republic of     | 65.11             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.144                  |
| 131  | Nicaragua                | 112.74            | 8        | 0         | 8      | 0.000              | 0.000                 | 0.144                  |
| 132  | Bolivia                  | 49.15             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.143                  |
| 133  | Congo, Republic of       | 102.97            | 8        | 0         | 8      | 0.000              | 0.000                 | 0.142                  |
| 134  | Andorra                  | 268.56            | 8        | 0         | 8      | 0.000              | 0.000                 | 0.139                  |
| 135  | Algeria                  | 76.39             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.139                  |
| 136  | Swaziland                | 26.76             | 9        | 0         | 9      | 0.000              | 0.000                 | 0.135                  |
| 137  | Namibia                  | 664.46            | 8        | 0         | 8      | 0.000              | 0.000                 | 0.135                  |
| 138  | Paraguay                 | 59.23             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.132                  |
| 139  | Cambodia                 | 65.98             | 8        | 0         | 8      | 0.000              | 0.000                 | 0.132                  |
| 140  | Cuba                     | 213.55            | 7        | 0         | 7      | 0.000              | 0.000                 | 0.118                  |
| 141  | Montenegro               | 83.06             | 7        | 0         | 7      | 0.000              | 0.000                 | 0.114                  |
| Rank | Country                                | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|----------------------------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|------------------------|
| 142  | Sudan                                  | 290.55            | 9        | 0         | 9      | 0.000               | 0.000                 | 0.112                  |
| 143  | Kyrgyz Republic                       | 135.48            | 7        | 0         | 7      | 0.000               | 0.000                 | 0.111                  |
| 144  | St. Vincent and the Grenadines         | 240.49            | 6        | 0         | 6      | 0.000               | 0.000                 | 0.109                  |
| 145  | St. Lucia                              | 66.57             | 6        | 0         | 6      | 0.000               | 0.000                 | 0.108                  |
| 146  | Moldova                                | 72.74             | 7        | 0         | 7      | 0.000               | 0.000                 | 0.103                  |
| 147  | Uganda                                 | 185.60            | 6        | 0         | 6      | 0.000               | 0.000                 | 0.101                  |
| 148  | Cameroon                               | 127.57            | 6        | 0         | 6      | 0.000               | 0.000                 | 0.100                  |
| 149  | Tanzania                               | 66.33             | 6        | 0         | 6      | 0.000               | 0.000                 | 0.100                  |
| 150  | Mozambique                             | 113.10            | 6        | 0         | 6      | 0.000               | 0.000                 | 0.095                  |
| 151  | Guam                                   | 37.60             | 6        | 0         | 6      | 0.000               | 0.000                 | 0.095                  |
| 152  | Congo, Democratic Republic of          | 79.84             | 5        | 0         | 5      | 0.000               | 0.000                 | 0.094                  |
| 153  | Guinea                                 | 12.38             | 5        | 0         | 5      | 0.000               | 0.000                 | 0.092                  |
| 154  | Belarus                                | 11.54             | 6        | 0         | 6      | 0.000               | 0.000                 | 0.084                  |
| 155  | Angola                                 | 220.40            | 5        | 0         | 5      | 0.000               | 0.000                 | 0.082                  |
| 156  | Nepal                                  | 44.81             | 5        | 0         | 5      | 0.000               | 0.000                 | 0.081                  |
| 157  | Niger                                  | 15.88             | 5        | 0         | 5      | 0.000               | 0.000                 | 0.077                  |
| 158  | Turks and Caicos Islands               | 2.99              | 4        | 0         | 4      | 0.000               | 0.000                 | 0.076                  |
| 159  | Greenland                              | 32.90             | 4        | 0         | 4      | 0.000               | 0.000                 | 0.071                  |
| 160  | Suriname                               | 6.54              | 4        | 0         | 4      | 0.000               | 0.000                 | 0.069                  |
| 161  | Madagascar                             | 52.14             | 4        | 0         | 4      | 0.000               | 0.000                 | 0.067                  |
| 162  | Yemen, Republic of                     | 101.32            | 5        | 0         | 5      | 0.000               | 0.000                 | 0.067                  |
| 163  | Malawi                                 | 15.11             | 4        | 0         | 4      | 0.000               | 0.000                 | 0.061                  |
| Rank | Country                      | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|-----|------------------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|-----------------------|
| 164 | Cook Islands                 | 25.64             | 4        | 0         | 4      | 0.000               | 0.000                 | 0.060                 |
| 165 | Maldives                     | 27.10             | 4        | 0         | 4      | 0.000               | 0.000                 | 0.056                 |
| 166 | Libya                        | 22.53             | 4        | 0         | 4      | 0.000               | 0.000                 | 0.056                 |
| 167 | Guadeloupe                   | 8.54              | 3        | 0         | 3      | 0.000               | 0.000                 | 0.055                 |
| 168 | Mali                         | 5.24              | 4        | 0         | 4      | 0.000               | 0.000                 | 0.055                 |
| 169 | Tokelau Islands              | 4.32              | 3        | 0         | 3      | 0.000               | 0.000                 | 0.054                 |
| 170 | China, P.R.: Macao           | 240.22            | 3        | 53        | 56     | 0.568               | 0.756                 | 0.053                 |
| 171 | Guyana                       | 89.13             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.052                 |
| 172 | Syrian Arab Republic         | 68.91             | 5        | 0         | 5      | 0.000               | 0.000                 | 0.051                 |
| 173 | Reunion                      | 29.61             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.049                 |
| 174 | Uzbekistan                   | 1.61              | 3        | 0         | 3      | 0.000               | 0.000                 | 0.048                 |
| 175 | Ethiopia                     | 3.28              | 3        | 0         | 3      | 0.000               | 0.000                 | 0.047                 |
| 176 | Sierra Leone                 | 55.32             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.046                 |
| 177 | West Bank and Gaza           | 13.97             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.046                 |
| 178 | Togo                         | 46.81             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.045                 |
| 179 | Burundi                      | 5.21              | 3        | 0         | 3      | 0.000               | 0.000                 | 0.043                 |
| 180 | French Territories: French Polynesia | 27.83 | 2        | 0         | 2      | 0.000               | 0.000                 | 0.037                 |
| 181 | St. Kitts and Nevis          | 0.10              | 2        | 0         | 2      | 0.000               | 0.000                 | 0.037                 |
| 182 | Lesotho                      | 6.46              | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035                 |
| 183 | Eritrea                      | 75.99             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.033                 |
| 184 | Myanmar                      | 0.09              | 2        | 0         | 2      | 0.000               | 0.000                 | 0.031                 |
| 185 | Cabo Verde                   | 59.31             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.030                 |
| 186 | Brunei Darussalam            | 14.06             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.030                 |
| Rank | Country                                           | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|---------------------------------------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|-----------------------|
| 187  | Niue                                              | 0.59              | 2        | 0         | 2      | 0.000              | 0.000                 | 0.027                 |
| 188  | US Pacific Islands                                | 5.90              | 2        | 0         | 2      | 0.000              | 0.000                 | 0.026                 |
| 189  | Djibouti                                          | 14.37             | 2        | 0         | 2      | 0.000              | 0.000                 | 0.026                 |
| 190  | Gambia, The                                       | 0.94              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 191  | Haiti                                             | 0.00              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 192  | Lao People's Democratic Republic                  | 1.30              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 193  | Norfolk Island                                    | 61.36             | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 194  | Sao Tome and Principe                             | 10.23             | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 195  | Kiribati                                          | 1.00              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 196  | Central African Republic                          | 0.30              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 197  | French Territories: New Caledonia                 | 0.58              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 198  | Montserrat                                        | 0.94              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.020                 |
| 199  | Equatorial Guinea                                 | 5.57              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |
| 200  | Christmas Island                                  | 0.77              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |
| 201  | Cocos (Keeling) Islands                           | 0.25              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |
| 202  | Somalia                                           | 5.57              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |
| 203  | Tajikistan                                        | 26.78             | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |
| 204  | Burkina Faso                                      | 2.95              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |
| 205  | Micronesia, Federated States of                   | 0.02              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.019                 |

(Continued)
| Rank | Country                                    | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|-------------------------------------------|-------------------|----------|-----------|--------|--------------------|------------------------|------------------------|
| 206  | Afghanistan, Islamic Republic of          | 3.57              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.018                  |
| 207  | British Indian Ocean Territory            | 1.57              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.018                  |
| 208  | Turkmenistan                              | 0.12              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 209  | Samoa                                     | 4.00              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 210  | Guiana, French                            | 2.00              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 211  | Saint Pierre and Miquelon                 | 2.00              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 212  | Guinea-Bissau                             | 7.21              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.015                  |
| 213  | Solomon Islands                           | 0.04              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.014                  |
| 214  | Comoros                                   | 4.80              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.010                  |
| 215  | Mayotte                                   | 8.20              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.010                  |
| 216  | Western Sahara                            | 57.50             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.010                  |
| 217  | American Samoa                            | 0.20              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.008                  |
| 218  | Mauritania                                | 4.95              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.008                  |
| Rank | Country                  | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------|-------------------|----------|-----------|--------|---------------------|------------------------|------------------------|
| 1    | United States            | 12 990 563.26     | 79       | 116       | 195    | 0.676               | 531.512                | 1.000                  |
| 2    | United Kingdom           | 3 803 554.43      | 77       | 165       | 242    | 0.794               | 1244.787               | 0.990                  |
| 3    | Germany                  | 2 864 658.70      | 76       | 136       | 212    | 0.719               | 305.990                | 0.986                  |
| 4    | Ireland                  | 1 727 322.96      | 76       | 140       | 216    | 0.729               | 369.155                | 0.985                  |
| 5    | Netherlands              | 2 057 739.35      | 75       | 132       | 207    | 0.710               | 346.362                | 0.976                  |
| 6    | Cayman Islands           | 2 867 494.40      | 72       | 138       | 210    | 0.724               | 398.770                | 0.973                  |
| 7    | Luxembourg               | 3 075 087.02      | 74       | 177       | 251    | 0.829               | 1356.743               | 0.972                  |
| 8    | France                   | 3 085 208.54      | 76       | 149       | 225    | 0.751               | 630.472                | 0.970                  |
| 9    | Japan                    | 2 129 430.70      | 73       | 126       | 199    | 0.697               | 256.449                | 0.965                  |
| 10   | Switzerland              | 924 890.74        | 72       | 151       | 223    | 0.756               | 565.903                | 0.962                  |
| 11   | Brazil                   | 416 476.49        | 74       | 103       | 177    | 0.648               | 394.930                | 0.955                  |
| 12   | Spain                    | 989 004.21        | 72       | 46        | 118    | 0.551               | 18.806                 | 0.954                  |
| 13   | Canada                   | 1 538 217.44      | 70       | 109       | 179    | 0.662               | 115.518                | 0.950                  |
| 14   | Australia                | 1 006 719.94      | 71       | 63        | 134    | 0.576               | 61.014                 | 0.947                  |
| 15   | China, P.R.: Mainland    | 844 369.15        | 70       | 124       | 194    | 0.693               | 217.350                | 0.947                  |
| 16   | China, P.R.: Hong Kong   | 474 670.25        | 70       | 89        | 159    | 0.623               | 108.468                | 0.931                  |
| 17   | Singapore                | 301 829.68        | 68       | 28        | 96     | 0.517               | 28.454                 | 0.929                  |
| 18   | Sweden                   | 653 899.01        | 69       | 125       | 194    | 0.695               | 234.405                | 0.926                  |
| 19   | Belgium                  | 611 357.86        | 71       | 122       | 193    | 0.688               | 232.620                | 0.921                  |
| 20   | Korea, Republic of       | 507 128.31        | 68       | 123       | 191    | 0.690               | 347.231                | 0.902                  |
| 21   | Mexico                   | 338 885.05        | 67       | 42        | 109    | 0.543               | 26.556                 | 0.901                  |
| 22   | Italy                    | 1 257 355.20      | 69       | 143       | 212    | 0.736               | 447.772                | 0.899                  |
| 23   | Turkey                   | 112 531.74        | 69       | 64        | 133    | 0.576               | 77.432                 | 0.896                  |

(Continued)
| Rank | Country                        | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|--------------------------------|------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 24   | Bermuda                        | 530 000.00       | 122      | 107       | 107    | 0.686                | 333.211                | 0.894                  |
| 25   | Virgin Islands, British        | 273 115.86       | 65       | 65        | 130    | 0.600                | 70.921                 | 0.877                  |
| 26   | Finland                        | 299 461.54       | 66       | 99        | 165    | 0.641                | 111.267                | 0.889                  |
| 27   | Denmark                        | 371 365.33       | 65       | 141       | 206    | 0.731                | 260.639                | 0.882                  |
| 28   | South Africa                   | 164 912.83       | 64       | 138       | 206    | 0.598                | 91.917                 | 0.877                  |
| 29   | Russian Federation             | 152 844.10       | 67       | 148       | 206    | 0.606                | 70.921                 | 0.873                  |
| 30   | India                          | 418 446.38       | 50       | 114       | 164    | 0.556                | 76.672                 | 0.872                  |
| 31   | Norway                         | 318 297.81       | 64       | 113       | 177    | 0.668                | 301.194                | 0.872                  |
| 32   | Israel                         | 285 955.98       | 61       | 65        | 126    | 0.578                | 72.124                 | 0.864                  |
| 33   | Jordan                         | 388 575.51       | 63       | 127       | 190    | 0.699                | 146.417                | 0.864                  |
| 34   | Austria                        | 68 133.66        | 63       | 63        | 126    | 0.000                | 0.000                  | 0.842                  |
| 35   | United Arab Emirates           | 68 133.66        | 61       | 61        | 126    | 0.000                | 0.000                  | 0.842                  |
| 36   | Chile                          | 68 133.66        | 61       | 61        | 126    | 0.000                | 0.000                  | 0.842                  |
| 37   | New Zealand                    | 78 133.66        | 61       | 61        | 126    | 0.000                | 0.000                  | 0.842                  |
| 38   | Indonesia                      | 171 080.01       | 60       | 59        | 119    | 0.573                | 108.948                | 0.821                  |
| 39   | Portugal                       | 114 999.46       | 60       | 74        | 134    | 0.595                | 103.664                | 0.818                  |
| 40   | Malaysia                       | 133 601.85       | 59       | 86        | 155    | 0.613                | 147.976                | 0.809                  |
| 41   | Argentina                      | 56 742.08        | 55       | 55        | 110    | 0.533                | 3.286                  | 0.801                  |
| 42   | Greece                         | 33 943.09        | 59       | 59        | 118    | 0.553                | 14.913                 | 0.800                  |
| 43   | Panama                         | 44 314.64        | 57       | 82        | 139    | 0.604                | 146.894                | 0.796                  |
| 44   | Guernsey                       | 114 531.14       | 57       | 114       | 171    | 0.722                | 257.402                | 0.782                  |

(Continued)
| Rank | Country                              | Total value ($Mn) | Indegree | Outdegree | Degree | Betweenness centrality | Closeness centrality | Eigenvector centrality |
|------|--------------------------------------|-------------------|----------|-----------|--------|------------------------|----------------------|------------------------|
| 46   | Taiwan Province of China             | 259 003.85        | 55       | 0         | 55     | 0.000                  | 0.000                | 0.781                  |
| 47   | Colombia                             | 61 158.88         | 55       | 39        | 94     | 0.535                  | 0.778                | 0.781                  |
| 48   | Peru                                 | 30 943.81         | 54       | 56        | 110    | 0.565                  | 0.776                | 0.766                  |
| 49   | Cyprus                               | 21 029.05         | 55       | 95        | 150    | 0.635                  | 114.149              | 0.766                  |
| 50   | Thailand                             | 103 767.71        | 51       | 86        | 137    | 0.614                  | 209.833              | 0.743                  |
| 51   | Venezuela, Republica Bolivariana de  | 17 983.92         | 52       | 7         | 59     | 0.451                  | 8.389                | 0.738                  |
| 52   | Philippines                          | 65 625.43         | 49       | 29        | 78     | 0.521                  | 10.207               | 0.714                  |
| 53   | Cote d'Ivoire                        | 12 218.43         | 52       | 80        | 132    | 0.614                  | 117.463              | 0.699                  |
| 54   | Greek Republic                       | 46 883.98         | 52       | 80        | 132    | 0.614                  | 136.595              | 0.689                  |
| 55   | Austria                              | 65 625.43         | 49       | 29        | 78     | 0.521                  | 10.207               | 0.714                  |
| 56   | Costa Rica                           | 12 218.43         | 52       | 80        | 132    | 0.614                  | 117.463              | 0.699                  |
| 57   | Isle of Man                          | 46 883.98         | 52       | 80        | 132    | 0.614                  | 136.595              | 0.689                  |
| 58   | Czech Republic                       | 21 029.05         | 55       | 95        | 150    | 0.635                  | 114.149              | 0.766                  |
| 59   | Kuwait                               | 103 767.71        | 51       | 86        | 137    | 0.614                  | 209.833              | 0.743                  |
| 60   | Belgium                              | 17 983.92         | 52       | 7         | 59     | 0.451                  | 8.389                | 0.738                  |
| 61   | France                               | 12 218.43         | 52       | 80        | 132    | 0.614                  | 117.463              | 0.699                  |
| 62   | Germany                              | 46 883.98         | 52       | 80        | 132    | 0.614                  | 136.595              | 0.689                  |
| 63   | Malta                                | 65 625.43         | 49       | 29        | 78     | 0.521                  | 10.207               | 0.714                  |
| 64   | Netherlands                          | 12 218.43         | 52       | 80        | 132    | 0.614                  | 117.463              | 0.699                  |
| 65   | Iceland                              | 46 883.98         | 52       | 80        | 132    | 0.614                  | 136.595              | 0.689                  |
| 66   | United Kingdom                       | 103 767.71        | 51       | 86        | 137    | 0.614                  | 209.833              | 0.743                  |
| 67   | Sweden                               | 17 983.92         | 52       | 7         | 59     | 0.451                  | 8.389                | 0.738                  |
| 68   | Denmark                              | 12 218.43         | 52       | 80        | 132    | 0.614                  | 117.463              | 0.699                  |
| 69   | Ireland                              | 46 883.98         | 52       | 80        | 132    | 0.614                  | 136.595              | 0.689                  |

(Continued)
| Rank | Country                          | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|--------------------------------|------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 68   | Iceland                        | 10 881.26        | 44       | 52        | 96     | 0.560              | 6.797                 | 0.610                  |
| 69   | Sri Lanka                       | 10 785.50        | 39       | 0         | 39     | 0.000              | 0.000                 | 0.595                  |
| 70   | Marshall Islands, Republic of   | 15 279.69        | 40       | 0         | 40     | 0.000              | 0.000                 | 0.579                  |
| 71   | Slovak Republic                 | 27 329.84        | 43       | 63        | 106    | 0.572              | 13.463                | 0.575                  |
| 72   | Uruguay                        | 10 910.75        | 37       | 0         | 37     | 0.000              | 0.000                 | 0.574                  |
| 73   | Bahrain, Kingdom of             | 8 014.28         | 41       | 0         | 41     | 0.000              | 0.000                 | 0.573                  |
| 74   | Vietnam                         | 11 112.64        | 38       | 0         | 38     | 0.000              | 0.000                 | 0.569                  |
| 75   | Costa Rica                      | 5 527.83         | 38       | 49        | 87     | 0.552              | 31.886                | 0.569                  |
| 76   | Lithuania                       | 11 243.04        | 39       | 75        | 114    | 0.599              | 26.384                | 0.560                  |
| 77   | Oman                            | 3 202.10         | 40       | 0         | 40     | 0.000              | 0.000                 | 0.555                  |
| 78   | Nigeria                         | 7 735.69         | 35       | 0         | 35     | 0.000              | 0.000                 | 0.538                  |
| 79   | Jordan                          | 6 287.41         | 37       | 0         | 37     | 0.000              | 0.000                 | 0.530                  |
| 80   | Georgia                         | 3 549.44         | 35       | 0         | 35     | 0.000              | 0.000                 | 0.516                  |
| 81   | Azerbaijan, Republic of         | 3 785.76         | 34       | 0         | 34     | 0.000              | 0.000                 | 0.515                  |
| 82   | Dominican Republic              | 9 951.78         | 35       | 0         | 35     | 0.000              | 0.000                 | 0.513                  |
| 83   | Latvia                          | 6 695.06         | 37       | 84        | 121    | 0.613              | 75.907                | 0.513                  |
| 84   | Serbia, Republic of             | 7 569.68         | 35       | 0         | 35     | 0.000              | 0.000                 | 0.499                  |
| 85   | Kenya                           | 5 654.22         | 32       | 0         | 32     | 0.000              | 0.000                 | 0.498                  |
| 86   | Liechtenstein                   | 6 385.54         | 34       | 0         | 34     | 0.000              | 0.000                 | 0.498                  |
| 87   | Tunisia                         | 4 400.12         | 34       | 0         | 34     | 0.000              | 0.000                 | 0.497                  |
| 88   | Ghana                           | 6 610.02         | 32       | 0         | 32     | 0.000              | 0.000                 | 0.494                  |
| 89   | Estonia                         | 2 194.10         | 34       | 91        | 125    | 0.625              | 33.642                | 0.491                  |
| Rank | Country         | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|-----------------|-------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 90   | Ecuador         | 9,473.95          | 32       | 0         | 32     | 0.000              | 0.000                 | 0.485                  |
| 91   | Liberia         | 13,464.91         | 32       | 0         | 32     | 0.000              | 0.000                 | 0.482                  |
| 92   | Cote d'Ivoire   | 8,235.11          | 30       | 0         | 30     | 0.000              | 0.000                 | 0.476                  |
| 93   | Pakistan        | 10,131.56         | 30       | 26        | 56     | 0.513              | 9.492                 | 0.470                  |
| 94   | Mongolia        | 3,469.69          | 32       | 41        | 73     | 0.533              | 3.709                 | 0.469                  |
| 95   | Lebanon         | 14,421.53         | 30       | 97        | 127    | 0.635              | 138.099               | 0.466                  |
| 96   | Paraguay        | 2,047.60          | 30       | 0         | 30     | 0.000              | 0.000                 | 0.459                  |
| 97   | Honduras        | 1,726.39          | 29       | 7         | 36     | 0.442              | 0.360                 | 0.457                  |
| 98   | Barbados        | 4,184.11          | 29       | 0         | 29     | 0.000              | 0.000                 | 0.454                  |
| 99   | Guatemala       | 1,580.79          | 29       | 0         | 29     | 0.000              | 0.000                 | 0.452                  |
| 100  | El Salvador     | 3,767.45          | 28       | 0         | 28     | 0.000              | 0.000                 | 0.446                  |
| 101  | Gabon           | 1,773.77          | 28       | 0         | 28     | 0.000              | 0.000                 | 0.440                  |
| 102  | Puerto Rico     | 1,694.92          | 29       | 0         | 29     | 0.000              | 0.000                 | 0.436                  |
| 103  | Trinidad and Tobago | 1,960.01   | 27       | 0         | 27     | 0.000              | 0.000                 | 0.434                  |
| 104  | Senegal         | 1,367.23          | 27       | 0         | 27     | 0.000              | 0.000                 | 0.432                  |
| 105  | Kuwait          | 1,323.87          | 30       | 45        | 75     | 0.541              | 35.187                | 0.430                  |
| 106  | Belarus         | 1,230.45          | 28       | 13        | 41     | 0.452              | 7.969                 | 0.420                  |
| 107  | Namibia         | 1,428.05          | 26       | 0         | 26     | 0.000              | 0.000                 | 0.417                  |
| 108  | Papua New Guinea | 2,282.33   | 26       | 0         | 26     | 0.000              | 0.000                 | 0.411                  |
| 109  | Angola          | 1,868.66          | 26       | 0         | 26     | 0.000              | 0.000                 | 0.407                  |
| 110  | Macedonia, FYR  | 883.40            | 29       | 29        | 58     | 0.515              | 2.605                 | 0.405                  |
| 111  | Zambia          | 2,973.31          | 25       | 0         | 25     | 0.000              | 0.000                 | 0.400                  |
| 112  | Jamaica         | 1,552.75          | 25       | 0         | 25     | 0.000              | 0.000                 | 0.399                  |

(Continued)
| Rank | Country                | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|------------------------|-------------------|----------|-----------|--------|---------------------|-----------------------|------------------------|
| 113  | Armenia, Republic of   | 1,022.47          | 26       | 0         | 26     | 0.000               | 0.000                 | 0.389                  |
| 114  | Bangladesh             | 2,606.08          | 24       | 51        | 75     | 0.551               | 9.521                 | 0.370                  |
| 115  | Montenegro             | 483.55            | 28       | 0         | 28     | 0.000               | 0.000                 | 0.360                  |
| 116  | Iraq                   | 1,432.61          | 23       | 0         | 23     | 0.000               | 0.000                 | 0.360                  |
| 117  | Belize                 | 199.52            | 23       | 0         | 23     | 0.000               | 0.000                 | 0.360                  |
| 118  | US Virgin Islands      | 1,962.39          | 24       | 0         | 24     | 0.000               | 0.000                 | 0.357                  |
| 119  | Ethiopia               | 664.63            | 22       | 0         | 22     | 0.000               | 0.000                 | 0.346                  |
| 120  | Faroe Islands          | 1,186.90          | 23       | 0         | 23     | 0.000               | 0.000                 | 0.336                  |
| 121  | Cameroon               | 1,017.95          | 20       | 0         | 20     | 0.000               | 0.000                 | 0.326                  |
| 122  | China, P.R.: Macao     | 2,505.02          | 21       | 69        | 90     | 0.590               | 8.754                 | 0.323                  |
| 123  | Tanzania               | 1,019.17          | 19       | 0         | 19     | 0.000               | 0.000                 | 0.314                  |
| 124  | Gibraltar              | 846.49            | 19       | 66        | 85     | 0.585               | 9.352                 | 0.304                  |
| 125  | Seychelles             | 251.14            | 19       | 0         | 19     | 0.000               | 0.000                 | 0.299                  |
| 126  | Mozambique             | 562.24            | 18       | 0         | 18     | 0.000               | 0.000                 | 0.288                  |
| 127  | Togo                   | 332.08            | 18       | 0         | 18     | 0.000               | 0.000                 | 0.284                  |
| 128  | Bolivia                | 221.94            | 17       | 29        | 46     | 0.522               | 0.125                 | 0.278                  |
| 129  | Aruba                  | 883.21            | 17       | 0         | 17     | 0.000               | 0.000                 | 0.276                  |
| 130  | Monaco                 | 281.31            | 17       | 0         | 17     | 0.000               | 0.000                 | 0.266                  |
| 131  | Rwanda                 | 244.16            | 16       | 0         | 16     | 0.000               | 0.000                 | 0.262                  |
| 132  | Cambodia               | 649.92            | 17       | 0         | 17     | 0.000               | 0.000                 | 0.257                  |
| 133  | Uganda                 | 439.79            | 16       | 0         | 16     | 0.000               | 0.000                 | 0.254                  |
| 134  | Suriname               | 213.80            | 16       | 0         | 16     | 0.000               | 0.000                 | 0.253                  |
| 135  | Botswana               | 323.55            | 15       | 0         | 15     | 0.000               | 0.000                 | 0.244                  |
| Rank | Country                          | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------------------------|-------------------|----------|-----------|--------|---------------------|------------------------|-----------------------|
| 136  | Bosnia and Herzegovina           | 254.75            | 16       | 0         | 16     | 0.000               | 0.000                  | 0.238                 |
| 137  | Albania                          | 340.03            | 15       | 28        | 43     | 0.513               | 1.792                  | 0.230                 |
| 138  | Zimbabwe                         | 376.31            | 14       | 0         | 14     | 0.000               | 0.000                  | 0.225                 |
| 139  | Congo, Republic of               | 234.04            | 12       | 0         | 12     | 0.000               | 0.000                  | 0.202                 |
| 140  | Algeria                          | 611.73            | 13       | 0         | 13     | 0.000               | 0.000                  | 0.199                 |
| 141  | Burundi                          | 164.67            | 13       | 0         | 13     | 0.000               | 0.000                  | 0.199                 |
| 142  | Grenada                          | 68.51             | 11       | 0         | 11     | 0.000               | 0.000                  | 0.185                 |
| 143  | Iran                             | 278.59            | 11       | 0         | 11     | 0.000               | 0.000                  | 0.154                 |
| 144  | Antigua and Barbuda              | 66.74             | 9        | 0         | 9      | 0.000               | 0.000                  | 0.148                 |
| 145  | Fiji                             | 83.40             | 8        | 0         | 8      | 0.000               | 0.000                  | 0.140                 |
| 146  | Congo, Democratic Republic of    | 589.65            | 8        | 0         | 8      | 0.000               | 0.000                  | 0.126                 |
| 147  | Falkland Islands                 | 139.67            | 7        | 0         | 7      | 0.000               | 0.000                  | 0.114                 |
| 148  | Niger                            | 94.57             | 7        | 0         | 7      | 0.000               | 0.000                  | 0.112                 |
| 149  | Nicaragua                        | 145.90            | 6        | 0         | 6      | 0.000               | 0.000                  | 0.100                 |
| 150  | St. Vincent and the Grenadines   | 152.24            | 7        | 0         | 7      | 0.000               | 0.000                  | 0.100                 |
| 151  | Burkina Faso                     | 37.04             | 6        | 0         | 6      | 0.000               | 0.000                  | 0.099                 |
| 152  | Cuba                             | 647.00            | 6        | 0         | 6      | 0.000               | 0.000                  | 0.097                 |
| 153  | Andorra                          | 14.31             | 6        | 0         | 6      | 0.000               | 0.000                  | 0.093                 |
| 154  | Lao People’s Democratic Republic | 1,561.96          | 6        | 0         | 6      | 0.000               | 0.000                  | 0.092                 |
| 155  | Mauritania                       | 73.49             | 5        | 0         | 5      | 0.000               | 0.000                  | 0.086                 |

(Continued)
| Rank | Country                                      | Total value ($Mn) | Indegree | Outdegree | Degree | Closeness centrality | Betweenness centrality | Eigenvector centrality |
|------|---------------------------------------------|-------------------|----------|-----------|--------|----------------------|------------------------|------------------------|
| 156  | Turks and Caicos Islands                    | 354.74            | 5        | 0         | 5      | 0.000                | 0.000                  | 0.083                  |
| 157  | Greenland                                   | 91.52             | 5        | 0         | 5      | 0.000                | 0.000                  | 0.084                  |
| 158  | Samoa                                       | 25.34             | 5        | 0         | 5      | 0.000                | 0.000                  | 0.081                  |
| 159  | US Pacific Islands                          | 35.60             | 5        | 0         | 5      | 0.000                | 0.000                  | 0.081                  |
| 160  | Swaziland                                   | 142.63            | 5        | 0         | 5      | 0.000                | 0.000                  | 0.080                  |
| 161  | Cook Islands                                | 387.57            | 5        | 0         | 5      | 0.000                | 0.000                  | 0.079                  |
| 162  | St. Kitts and Nevis                         | 19.52             | 5        | 0         | 5      | 0.000                | 0.000                  | 0.079                  |
| 163  | Myanmar                                     | 387.57            | 5        | 0         | 5      | 0.000                | 0.000                  | 0.077                  |
| 164  | Sudan                                       | 29.05             | 6        | 0         | 6      | 0.000                | 0.000                  | 0.077                  |
| 165  | Malawi                                      | 55.40             | 5        | 0         | 5      | 0.000                | 0.000                  | 0.076                  |
| 166  | Nepal                                       | 50.44             | 5        | 0         | 5      | 0.000                | 0.000                  | 0.075                  |
| 167  | Mauritania                                  | 7.22              | 5        | 0         | 5      | 0.000                | 0.000                  | 0.071                  |
| 168  | Maldives                                    | 1.46              | 4        | 0         | 4      | 0.000                | 0.000                  | 0.069                  |
| 169  | Guyana                                      | 15.53             | 4        | 0         | 4      | 0.000                | 0.000                  | 0.066                  |
| 170  | French Polynesia                            | 133.27            | 4        | 0         | 4      | 0.000                | 0.000                  | 0.065                  |
| 171  | French Polynesia                            | 133.27            | 4        | 0         | 4      | 0.000                | 0.000                  | 0.064                  |
| 172  | Madagascar                                  | 83.94             | 4        | 0         | 4      | 0.000                | 0.000                  | 0.062                  |
| 173  | Bonaire, Sint                              | 328.18            | 4        | 0         | 4      | 0.000                | 0.000                  | 0.060                  |
| 174  | Libya                                       | 51.31             | 4        | 0         | 4      | 0.000                | 0.000                  | 0.059                  |
| 175  | Cocos (Keeling) Islands                     | 268.89            | 4        | 0         | 4      | 0.000                | 0.000                  | 0.059                  |
| 176  | Kyrgyz Republic                            | 67.89             | 4        | 0         | 4      | 0.000                | 0.000                  | 0.059                  |
| Rank | Country                           | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|----------------------------------|------------------|----------|-----------|--------|---------------------|-----------------------|------------------------|
| 177  | Moldova                          | 21.72            | 4        | 0         | 4      | 0.000               | 0.000                 | 0.057                  |
| 178  | Syrian Arab Republic             | 108.16           | 5        | 0         | 5      | 0.000               | 0.000                 | 0.055                  |
| 179  | Sint Maarten                     | 58.34            | 3        | 0         | 3      | 0.000               | 0.000                 | 0.051                  |
| 180  | Benin                            | 4.00             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.051                  |
| 181  | Brunei Darussalam                | 85.73            | 3        | 0         | 3      | 0.000               | 0.000                 | 0.050                  |
| 182  | Timor-Leste, Dem. Rep. of        | 9.66             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.049                  |
| 183  | Tokelau Islands                  | 13.01            | 3        | 0         | 3      | 0.000               | 0.000                 | 0.049                  |
| 184  | Turkmenistan                     | 29.95            | 3        | 0         | 3      | 0.000               | 0.000                 | 0.049                  |
| 185  | Dominica                         | 7.83             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.047                  |
| 186  | Guam                             | 26.93            | 3        | 0         | 3      | 0.000               | 0.000                 | 0.045                  |
| 187  | Eritrea                          | 0.53             | 3        | 0         | 3      | 0.000               | 0.000                 | 0.043                  |
| 188  | Cabo Verde                       | 110.24           | 3        | 0         | 3      | 0.000               | 0.000                 | 0.037                  |
| 189  | Guadeloupe                       | 30.09            | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035                  |
| 190  | Tajikistan                       | 40.28            | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035                  |
| 191  | Anguilla                         | 32.94            | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035                  |
| 192  | St. Lucia                        | 3.47             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.035                  |
| 193  | Afghanistan, Islamic Republic of | 4.08             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.033                  |
| 194  | Montserrat                       | 1.36             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.032                  |
| 195  | Gambia, The                      | 2.55             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.032                  |
| 196  | South Sudan                      | 1.25             | 2        | 0         | 2      | 0.000               | 0.000                 | 0.032                  |
| 197  | San Marino                       | 35.28            | 2        | 0         | 2      | 0.000               | 0.000                 | 0.031                  |
| 198  | Christmas Island                 | 19.41            | 2        | 0         | 2      | 0.000               | 0.000                 | 0.031                  |

(Continued)
| Rank | Country                                      | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweenness centrality | Eigenvector centrality |
|------|----------------------------------------------|-------------------|----------|-----------|--------|--------------------|------------------------|------------------------|
| 199  | Yemen, Republic of   | 46.62             | 3        | 0         | 3      | 0.000              | 0.000                  | 0.031                  |
| 200  | Haiti                         | 0.54              | 2        | 0         | 2      | 0.000              | 0.000                  | 0.031                  |
| 201  | Korea, Democratic            | 3.30              | 2        | 0         | 2      | 0.000              | 0.000                  | 0.030                  |
| 202  | People's Rep. of Central African Republic | 83.51            | 2        | 0         | 2      | 0.000              | 0.000                  | 0.039                  |
| 203  | Kosovo                        | 0.15              | 2        | 2         | 2      | 0.507              | 0.000                  | 0.028                  |
| 204  | American Samoa               | 0.62              | 2        | 0         | 2      | 0.000              | 0.000                  | 0.018                  |
| 205  | Georgia                       | 2.10              | 2        | 1         | 2      | 0.000              | 0.000                  | 0.018                  |
| 206  | Pitcairn Islands             | 5.66              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.018                  |
| 207  | Sierra Leone                 | 34.08             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 208  | Mayotte                       | 0.50              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 209  | Sao Tome and Principe         | 7.29              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 210  | Wallis and Futuna            | 24.35             | 1        | 0         | 1      | 0.000              | 0.000                  | 0.017                  |
| 211  | West Bank and Gaza           | 24.89             | 1        | 1         | 1      | 0.000              | 0.000                  | 0.016                  |
| 212  | French territories: New Caledonia | 82.75          | 3        | 3         | 3      | 0.515              | 0.000                  | 0.015                  |
| 213  | Nauru                         | 0.29              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.015                  |
| 214  | British Indian Ocean Territory | 56.88           | 1        | 1         | 1      | 0.000              | 0.000                  | 0.015                  |
| 215  | Tonga                         | 3.25              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.015                  |
| 216  | Guiana, French               | 56.88             | 1        | 1         | 1      | 0.000              | 0.000                  | 0.015                  |
| 217  | Western Sahara               | 0.07              | 1        | 0         | 1      | 0.000              | 0.000                  | 0.015                  |
| Rank | Country                        | Total value ($Mn) | Indegree | Outdegree | Degree | Closness centrality | Betweeness centrality | Eigenvector centrality |
|------|--------------------------------|-------------------|----------|-----------|--------|--------------------|-----------------------|------------------------|
| 219  | Saint Pierre and Miquelon      | 6.20              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.013                  |
| 220  | Micronesia, Federated States of| 0.93              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.013                  |
| 221  | Chad                           | 0.47              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.013                  |
| 222  | Lesotho                        | 0.80              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.012                  |
| 223  | Reunion                         | 0.10              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.012                  |
| 224  | Djibouti                       | 0.34              | 1        | 0         | 1      | 0.000              | 0.000                 | 0.008                  |
| 225  | Malta                          | —                 | 0        | 28        | 28     | 0.522              | 0.000                 | 0.000                  |
| 226  | Hungary                        | —                 | 0        | 83        | 83     | 0.607              | 0.000                 | 0.000                  |
| 227  | Palau                          | —                 | 0        | 1         | 1      | 0.404              | 0.000                 | 0.000                  |
