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THE ARCHITECTURE OF COLLAPSE

The Global System in the 21st Century

MAURO F. GUILLÉN

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For Andrea Isabel Guillén

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why the global system has become so prone to instability and crisis over the last three decades. Finally, chapter 7 takes stock of the evidence presented in the book, and issues specific recommendations as to how to make the global system more predictable, less subject to failure, and safer overall.

2

Complexity

> Redundancy of components and pathways, in which one can substitute for another, is also a key element in the robustness of complex systems.
>
> —Robert M. May, Simon A. Levin and George Sugihara, "Complex Systems: Ecology for Bankers." *Nature* (2008:894)

The perception that over the last three decades the global system has become increasingly complex is commonplace. A system is complex to the extent that it has many moving parts in intricate arrangement. In the global system, those parts are countries. Different kinds of economic, political, social, and cultural phenomena unfold both within and across national borders. As a result of complexity, the system can become both more multifaceted and more unwieldy because of non-linear interactions among the interconnected nodes. As I observed in the introductory chapter, complexity can also provide for redundancy and duplication, thus making the system safer. In this chapter I will identify exactly which types of complexity in the global system foster stability and which may have the opposite effect.

It is relatively straightforward to document the increasing complexity of the global system over time from the point of view of both the network and the nodes in the network. I will consider multiple indicators of node complexity and network complexity, and show that they have increased over time in order to demonstrate that the overall global system has become more complex.

Network Complexity

As discussed in the previous chapter, network complexity refers to an intricate pattern of relationships among nodes in the system. I would like to highlight five key indicators associated with increasing network complexity in the contemporary global system; namely the number of countries, trade in goods and services, foreign direct investment, people flows in the forms of tourism and migration, and information flows (see Figure 2.1).

How Many States?

The global system has become increasingly complex from a network perspective simply because there are more nodes in it, i.e. more states. I will use three specific counts to illustrate the trend: membership in the United Nations (UN), the International Monetary Fund (IMF), and the General Agreement on Tariffs and Trade (GATT). Membership in the UN is a relevant indicator because it enables the country to be part of the international community and to interact with other states (Meyer et al. 1997). Membership in the IMF and the GATT (or its successor, the World Trade Organization or WTO) means that the country is part of the global financial and trading communities, respectively.

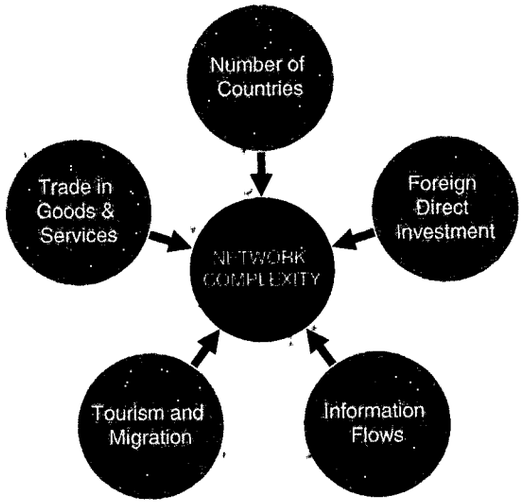


Figure 2.1. Indicators of Network Complexity

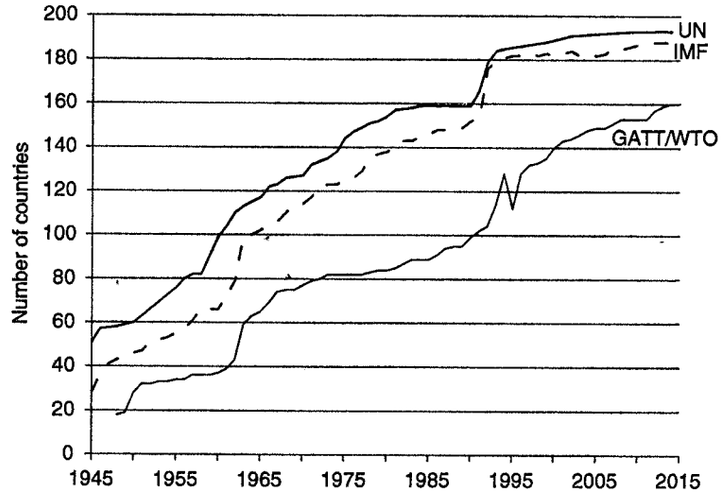


Figure 2.2. Number of Members of the UN, IMF, and GATT/WTO, 1945–2015

Whereas in 1945 there were only 51 member states in the UN and 28 members of the IMF, by the end of 2014 the numbers had risen to 193 and 188, respectively. Similarly, the GATT was founded in 1948 with 18 states as members, a figure that rose to 160 by 2014, with only a temporary decline as the transition was made to the World Trade Organization in 1995 (see Figure 2.2). Clearly, the process of decolonization during the 1960s and 70s, and the unravelling of the Soviet Union and Yugoslavia in the 1990s, are behind the sharp increases in membership during those decades. Thus, the proliferation of states in the world during the second half of the twentieth century was to be expected given the legacy of empire and the long-term unviability of the communist regimes. This trend could continue in the near future due to separatist movements in North America, Africa, Western Europe, Eastern Europe, and the Caucasus, although it could be partially offset if members of the 28-state European Union manage to create a true political union.

An increasing number of countries brings about several consequences, and all of them are associated with complexity. First, there are simply more countries sitting at the table. As a result, multilateral negotiations take longer. For instance, during the 1950s, negotiation rounds at the GATT took less than 10 months to complete, while the Tokyo round of 1973 lasted 74 months, and the Uruguay round of 1986

took 87 months to complete. One consequence of the proliferation of regional trade blocs such as the European Union or the North American Free Trade Agreement is that trade negotiations can be simplified by having fewer actors sitting at the table (Milner and Mansfield 1999). Second, economic and political treaties become more complex and implementation much harder given that individual countries enter into many different overlapping agreements with different sets of countries (Estevadeordal et al. eds. 2009). For instance, the WTO reports that as of the end of 2014 there were more than 270 trade agreements in force in the world, with some countries being signatories to more than 40. And third, global governance per se becomes much harder when an ever larger number of countries seek representation on committees or key executive positions at international agencies (Patrick 2014). Each of these aspects raises the network complexity of the global system.

The Rising Tide of Trade

A second key indicator of network complexity has to do with trade, i.e. with the flow of goods and services across national boundaries. Trade is a pervasive phenomenon, one with implications for virtually every topic of global significance. Figure 2.3 indicates that trade in tangible goods has more than doubled from about 19% of global GDP in 1960 to about 49% in 2013. Trade in services has also expanded at a similar rate, resulting in a combined ratio of 60% of global GDP, slightly more than twice the level back in 1960.

The density of the global trade network has also increased swiftly since the early 1960s. Figure 2.4 shows the dyadic trade density for the entire global economy between 1870 and 2009. It was calculated by taking into account all bilateral (e.g. dyadic) trade flows between pairs of countries for a given year, weighing them by the dollar value of bilateral trade and deflating it to correct for the changing value of the dollar over time. Trade densities grew steadily during the late nineteenth century, and accelerated during the early twentieth century driven by new transportation technologies like the steamship and the railroad, hand in hand with the expansion of manufacturing industry and the diffusion of the second industrial revolution throughout Europe, North America, and Japan. The end of World War I resulted

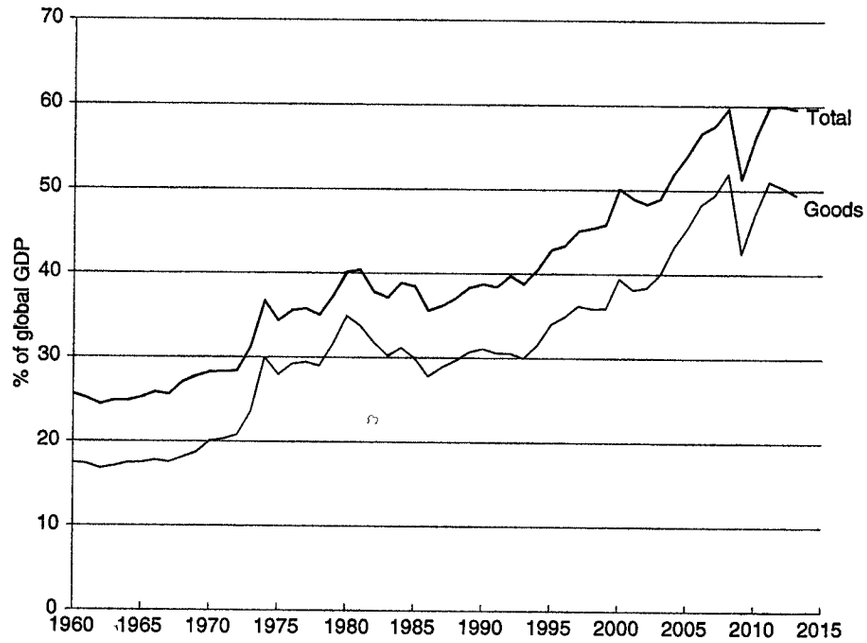


Figure 2.3. Trade (% of Global GDP), 1960–2013

Source: World Development Indicators.

in a sudden decrease. Monetary turmoil and the Great Depression assessed important blows to global trade during the 1920s and 30s. Trade densities did not recover until the beginning of World War II. The postwar period was characterized by a slow increase in trade densities until the 1970s. The fastest rate of increase over the entire period, however, took place beginning at the turn of the twenty-first century, mostly due to the growth of emerging economies and their ever more important role in global trade.

It is important to note that trade contributes to network complexity but not to network coupling. The growth of trade may not only help individual national economies specialize, as Adam Smith observed, but also diversify sources and destinations, as more countries join the global trading system. This is especially true in the case of the type of trade conceptualized by Paul Krugman (1979, 1980), and driven by increasing returns to scale, the presence of monopolistic competition, product differentiation, and network effects. The main corollary of Krugman's theory, compared to Smith's original approach, is that

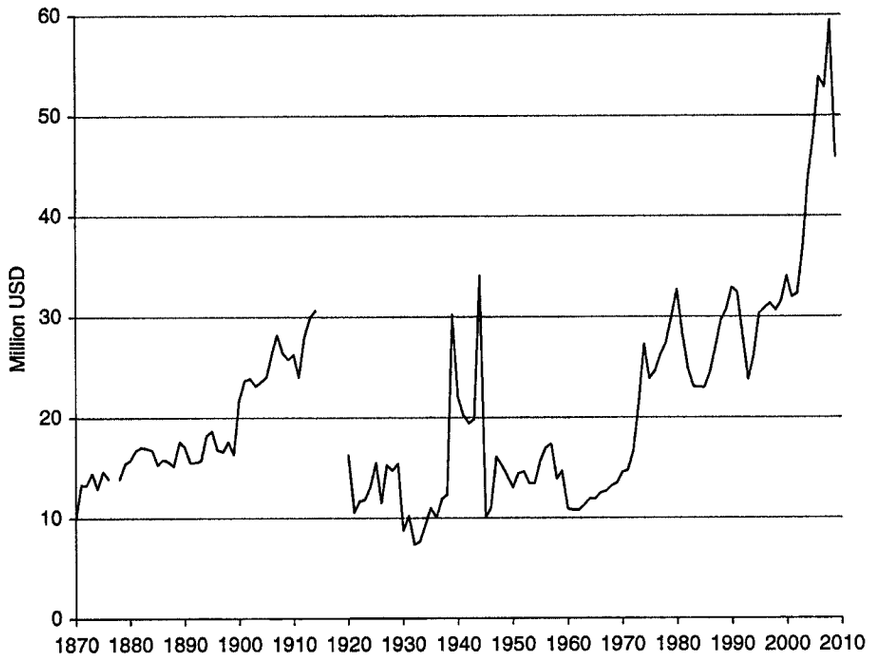


Figure 2.4. Dyadic Trade Density (weighted and deflated), 1870–2009

Sources of data: *Dyadic trade data*: http://www.correlatesofwar.org/COW2%20Data/Trade/Trade.html
Price index: http://www.minneapolisfed.org/community_education/teacher/calc/hist1800.cfm.

production of a certain good or service may occur in many different locations around the world, leading to complex patterns of trade with multiple suppliers of the same (differentiated) good. Thus, trade flows certainly increase the complexity of the system, but they do not contribute to coupling because they actually offer countries more options whenever there is a disruption or crisis. Moreover, complexity in trade patterns makes more suppliers and more buyers available to choose from, thus contributing to the stability of the overall system. This point can be readily illustrated with a very common current occurrence in the global economy. Whenever a specific source of supply for a raw material, a component, or a final product is disrupted by a political event, a force of nature, or some other cause, companies can readily rearrange their supply chains thus avoiding major long-term consequences (Matsuo 2014; Simchi-Levi et al. 2014).

Under some very specific circumstances, however, trading patterns may contribute to the contagion of shocks. One such situation is when there is a high level of trade with a small number of partners. This situation is known as "trade cohesion" (Guler et al. 2002; Henisz et al. 2005; Polillo and Guillén 2005). Consider country A and country B, which trade intensively with each other but only sparingly with third countries. If A suffers a shock, the disruption is likely to spread from A to B. There are only a few instances of large economies with a high degree of cohesion. Mexico's relationship with the U.S. is very much a cohesive one, although the reverse is not true. Mexico sends 71% of its total exports to the U.S. and receives 51% of its imports from the colossus to the north, while from the U.S. perspective, the percentages are just 14 and 12, respectively. I will analyze in chapter 6 the implications of the high level of trade cohesion within the Euro Zone.

Now consider the situation in which countries A and B export high volumes of goods to country C. If C suffers a shock, both A and B would be affected. This triangular relationship is known as "structural equivalence," i.e. A and B are intertwined because of their triangular trade with C. Lastly, there is the possibility that A and B export high volumes of the same type of goods to country C, i.e. they are "role equivalent" in the sense that A and B play the same role relative to C (Mizruchi 1993; Guler et al. 2002). If a shock related to that type of goods affects C, both A and B would be affected. Role equivalence in trade is a relatively common phenomenon. For instance, oil exporters are generally in a role-equivalent relationship relative to oil importers. Gas exporters, by contrast, are less subject to this effect because gas exports require more extensive and customer-specific investments in pipelines, storage, or in liquefaction and gasification facilities. The economies of East Asia are in a role-equivalent situation because they export to third countries the same types of manufactured products. When the Asian Flu crisis started in Thailand with a devaluation of the baht in 1997, it spread like wildfire throughout the region as countries devalued their currencies in order to remain competitive (Glick and Rose 1999). In chapter 6 we will see that certain countries in Europe are more role equivalent relative to Germany than others, with important implications for their ability to function as part of a monetary union.

Thus, trade contributes to complexity, but depending on the pattern of trade, it can be shock-diffusing or shock-absorbing.

The Blessings of Foreign Direct Investment

Foreign direct investment (FDI) represents a third way in which network complexity has increased over the last decades. FDI involves investment in an asset or company by an individual or company from another country with the purpose of controlling and managing the invested entity (Hymer 1974). Most frequently, FDI is associated with the activities of multinational corporations, which make investments in extractive, manufacturing, distribution, and other types of activities in foreign countries. For the purposes of official statistics, a capital flow across borders is assumed to be direct investment if it represents 10% or more of the voting stock of the target company. Below that threshold, it is considered to be portfolio investment, which I will analyze in chapter 3. One important characteristic of FDI is that it is intended to support a company's competitive strategy, and thus it is not easily reversible.

Several theories of development have considered FDI to be a curse because it tends to perpetuate hierarchical relationships of dependency between the countries at the origin and the destination of the flow (Wallerstein 1974; Evans 1979). Over the last 30 years, however, governments around the world, even in the most developed regions, have worked hard and gone out of their way to attract as much FDI as possible (UNCTAD 2012). In many countries around the world, actors historically opposed to FDI—such as nationalist politicians, leftist parties, or labor unions—have come around to welcome this type of investment (Haggard 1990; Guillén 2001). This reversal has happened because, relative to other types of capital flows, FDI brings about many potential benefits and fewer problems, as I will note later in this section.

Figure 2.5 shows three maps indicating the origin, destination, and magnitude of flows of FDI at three points in time. It is quite clear that in 1914, the global network of FDI was relatively simple. The United Kingdom was the most important source of FDI, and the flows of capital were not particularly convoluted. By 1967 the global network of FDI had become much more complex. The relative importance of the UK and other European countries paled by comparison with the

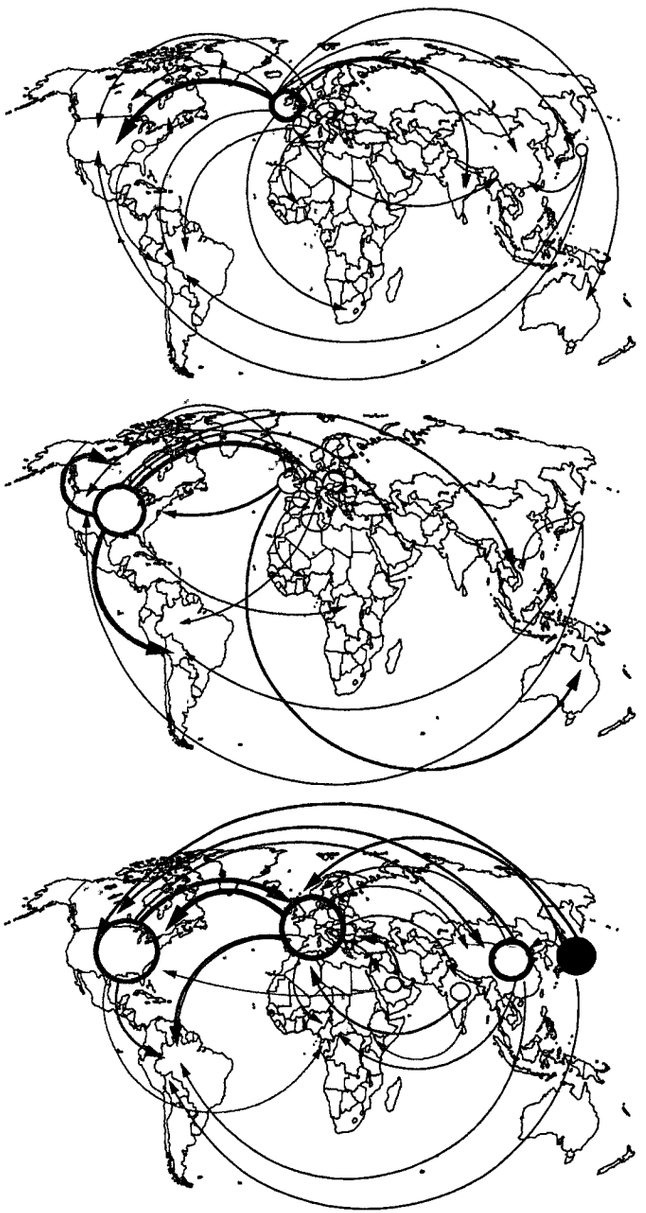


Figure 2.5. Origins and Destinations of Stocks of Foreign Direct Investment, in 1914, 1967, and 2012

Sources of the data: Woodruff (1966); *World Investment Report* (several years); *World Investment Directory* (several years).

dominant position of the United States. Meanwhile, new important destinations had been added, resulting in a more intricate global pattern of FDI flows.

Fast forward another half century to the year 2012, and the situation is radically different. There are four equally large sources of FDI, namely, the United States, the European Union, China, and Japan, with the Middle East and India becoming more and more important. In addition, there are more reciprocal flows, meaning that the global economy has become much more interrelated from the point of view of FDI. In other words, the world has become polycentric or multipolar and at the same time interconnected. Therefore, the global network of FDI is much more complex than it was back in 1914 or in 1967.

Like trade, FDI increases complexity but not coupling. The growth of FDI has been frequently touted as beneficial to host countries because it creates not only jobs and economic activity, but also provides them with a more stable and permanent source to finance their current account deficits. By contrast, portfolio investment tends to be footloose, more mobile. If a country is experiencing difficulties and foreign portfolio investors perceive there might be a crisis, currency devaluation and/or debt default, they can more readily take their money out, contributing perhaps to a self-fulfilling prophecy given that the withdrawal of portfolio capital may precipitate a crisis. In other words, portfolio investment tends to be "hot money," while FDI tends not to. Thus, FDI increases complexity but not coupling.

Another way to assess the nature of FDI is to look at it from the perspective of the firm. FDI provides companies with so-called "real options," namely, it gives them the opportunity to learn about how to operate in a specific host country and, more importantly, to expand or contract their operations in that country depending on changing circumstances. Like financial options, real options are more valuable under conditions of uncertainty (Kogut and Kulatilaka 1993). To the extent that FDI creates real options for companies, it increases complexity but not coupling because real options help companies adapt to shocks. Like trade, the complexity of FDI can lead to shock-diffusing or shock-absorbing dynamics, depending on the underlying pattern.

People on the Move

The global system has also become increasingly complex as a result of cross-border people movements, whether permanent (migration) or temporary (tourism). The impact of migration on both the origin and destination countries was perhaps higher in the past than it is today. Examples with major implications for modern economic history include the arrival of European conquerors and settlers to the Americas, the trans-Atlantic slave trade, or the great migrations of the late nineteenth and early twentieth centuries from both Asia and Europe to the Americas. Still, recent decades have seen a rapid growth in the impact of migration (see Figure 2.6). While the number of immigrants as a percentage of the total population of the world has hovered around 3% since 1960, migration levels to the high-income countries have more than doubled from about 5% of the population in those countries to

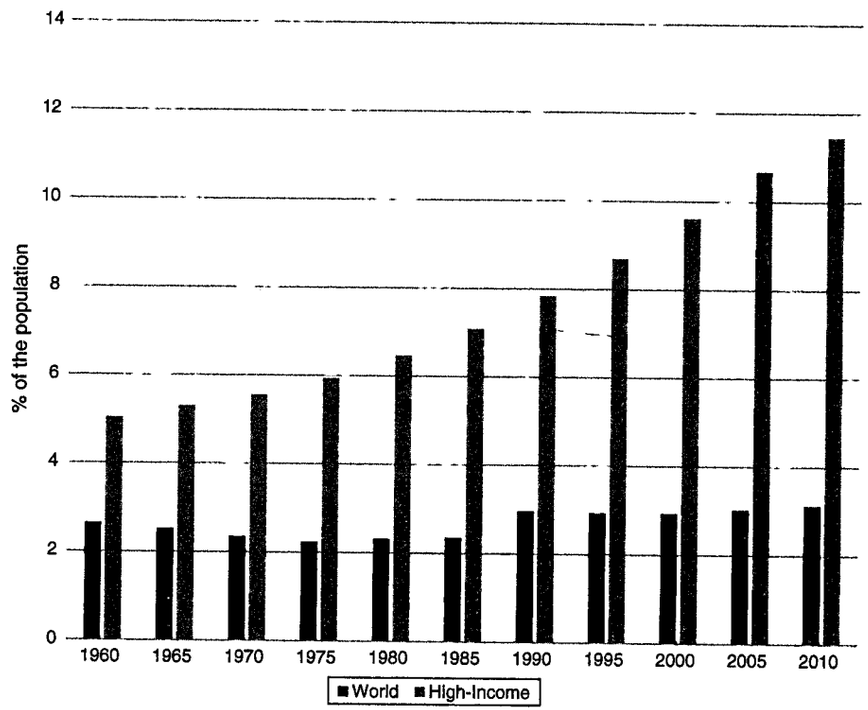


Figure 2.6. Immigrants as a Percentage of the Population, 1960–2010

Source of the data: World Development Indicators.

nearly 12% as of the census year of 2010. As a result of these movements, remittances to friends and family in the home country have also more than doubled from around 0.3% of global GDP in the 1970s to 0.7% in 2012.

Another kind of movement of people has also increased markedly due to political and ethnic conflict, namely, refugees. The number of international refugees in the mid-1960s stood at around six million. By the late 2000s it had more than doubled to 14 million.[1] To this figure one could add the 27 million of internally displaced people, i.e. within their own country. The rise in the number of refugees also makes the world much more complex.

Tourism has risen quickly over the last few decades as well. Back in 1995 tourism arrivals represented less than 10% of the world's population. By 2012 the ratio had grown to just over 15%. Receipts for tourism, however, have stagnated at a level of slightly less than 2% of global GDP, indicating that the average tourist today spends less than average tourist two decades ago (see Figure 2.7).

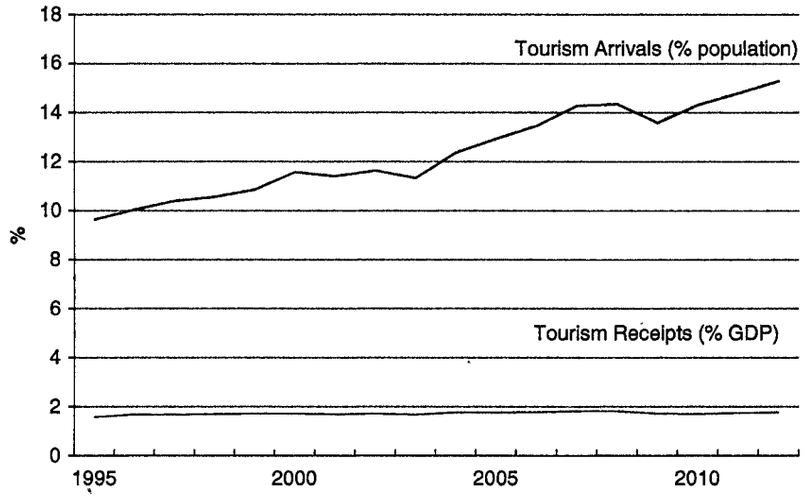


Figure 2.7. Indicators of Tourism, 1995–2012

Source of the data: World Development Indicators.

[1] See Center for Systemic Peace, http://www.systemicpeace.org/conflicttrends.html, accessed June 28, 2014.

Increasing migration and tourism over the last three decades has caused a shift in people's daily lives, expectations, and models of reference to encompass experiences transcending national borders. Every migrant and tourist generates cross-border flows of information and economic resources, and provides new frames of awareness and meaning for his or her own experience, as well as for related others such as family or friends, thus expanding the array of interrelationships in the world (Robertson 1992:8; Albrow 1997:88; Waters 1995:63). It is in this sense that people movements exacerbate network complexity in the global system. Whether this complexity leads to stability through a better understanding of differences in the world or to panic when shocks or crises occur is a difficult issue to tackle, on which there is virtually no research.

Information Flows

Our last, and perhaps most debated, indicator of network complexity has to do with information flows. The rise of the Internet—a medium that did not exist 30 years ago—has greatly expanded within cross-border information exchanges. International telephone traffic has also grown rapidly. According to Telegeography, in 1993 about 50 billion minutes worth of international calls took place. By the end of 2014, the figure had risen to over 320 billion. In addition, calls using Voice over the Internet Protocol (VoIP) have skyrocketed since the turn of the twenty-first century. In 2014, people around the world made VoIP calls worth about 250 billion minutes. Thus, people around the world made that year 570 billion minutes worth of phone calls, up from 50 billion in 1993.[2] Data traffic around the world has grown by nearly a factor of seven, from 29 million to 201 million Mbps in the five years to the end of 2013 (McKinsey Global Institute 2014:13).

The phenomenal increase in cross-border information flows over the last two or three decades has contributed to a much higher degree of network complexity in the global system. The impact of information flows on the rearrangement of economic activity around the world, making possible new forms of economic organization and collaboration

[2] See http://www.telegeography.com/research-services/telegeography-report-database/, accessed February 3, 2015.

on a planetary scale, is well documented (Castells 1996; UNCTAD 2013). Political and social change has also taken place in massive proportions. During the 1990s mobile phones and the Internet took global society by storm. The effects on politics of information and telecommunication technologies driven by the marriage of mobility and connectivity at decreasing costs are perhaps as far-reaching as those on business and the economy, and they were felt primarily at the turn of the twenty-first century. For example, mobile phones and the Internet played a key role in the disruptions at the joint IMF–World Bank meetings in Prague in 2000, the demonstrations at the G-8 summit in Genoa in 2001, the anti-government popular uprising leading to the removal from office of the President of the Philippines also in 2001, the cover-up of the SARS epidemic in China during 2003, the Ukrainian Orange Revolution of 2004, the 2004 3/11 terrorist attacks in Madrid, the protests at the Republican convention in New York City in 2004, the anti-Syrian demonstrations in Lebanon in 2005, the anti-Japanese demonstrations in China over the issue of school textbooks also in 2005, the election of Barack Obama in 2008, Iran's "Twitter Revolution" in the wake of the disputed 2009 presidential election, and the posting on the Wikileaks website of documents pertaining to the wars in Iraq and Afghanistan (Bremmer 2010b). In early 2011, popular protests spread like wildfire from Tunisia to Egypt, Bahrain, Yemen, Libya, Morocco, Syria, and other Arab countries. As of the time of writing, several presidents had been removed from power or were on the verge of being ousted, though it was still unclear if the final outcome of the revolts would be a transition to democracy or not.

Rather than changing minds about key political issues or altering votes at elections, the evidence is that information technologies help mobilize people to act politically, which may or may not result in significant political change. It seems as if the twenty-first century will be quite different from the point of view of political mobilization and its effects. Just before the 2004 general election in Spain, text messaging through mobile phones enabled flash demonstrations and the mobilization of young people, who turned out at the polls in great numbers three days after the 3/11 terrorist bombings. The election removed the conservative party from power and ushered in the opposition socialists, who received three million more votes than in the previous election, even

though surveys predicted an entirely different outcome, and post-election surveys established that only 0.3% of eligible voters changed their vote in response to the attacks (Suárez 2006, 2011).

As in the case of migration and tourism, the complexity generated by ever higher information flows can be shock-diffusing, as recent financial crises or the spread of the Arab Spring illustrate. The instantaneous availability of information quickened the pace of diffusion in both cases (see chapter 4; Bremmer 2010b). However, improved telecommunications can also foster global stability to the extent that information availability helps individuals and companies adjust to changing circumstances or to disruptions in real time, finding alternative arrangements that enable them to continue operating (Castells 1996).

We thus see that network complexity in the global system has been driven in an upward direction by a battery of economic, political, social, and technological forces. The global system of the early twenty-first century is certainly more complex that the one inherited from the late twentieth century, although there is plenty of room for debate as to whether the present level of complexity is unprecedented in the long-run of history. If we look at node complexity, however, a clearer picture emerges indicating that today's levels are higher than in times past.

Node Complexity

Node complexity has also increased over the last few decades, that is, each individual country in the global system has become internally more complex. The most important indicators of node complexity include the nature of political regimes, the presence of checks and balances on the executive branch of government, the size and capacity of the state apparatus, the problem of state failure, and the degree of industrial diversification (see Figure 2.8).

Democracy and Complexity

The twentieth century witnessed an epic confrontation between dictatorship and democracy, from the start of World War I in 1914 to the end of the Cold War in 1991 (Hobsbawm 1994), and arguably longer. To a certain extent, Francis Fukuyama (1989) was correct in proposing his famous "end of history" thesis in that liberal democracy and free

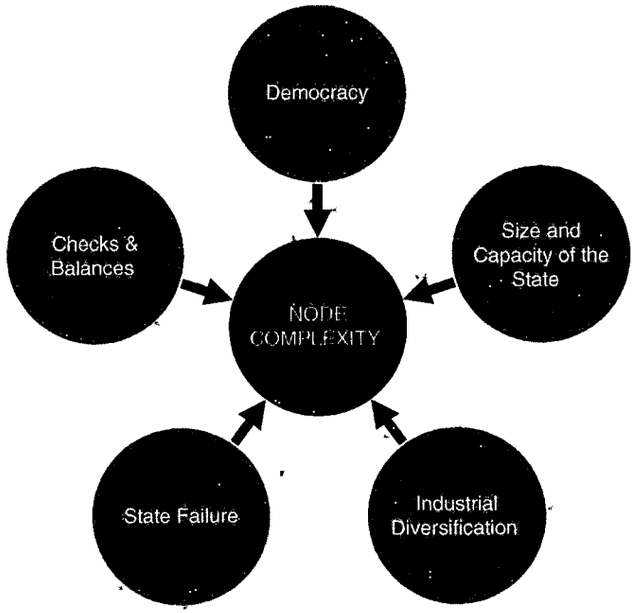


Figure 2.8. Indicators of Node Complexity

markets ultimately won the battle, although many democracies have recently degenerated into failed states or into anocracies, i.e. situations in which elected officials behave in authoritarian ways. I analyze these two types of situations later on. Samuel Huntington's (1993) premonitory analysis of the "clash of civilizations" has also become awfully descriptive of the new politics of identity and conflict in the contemporary global system, in which civil wars are less frequent than during the Cold War period, inter-state wars are even rarer, and the most dangerous and lethal conflict takes the form of ethnic or religious clashes and terrorism.

Democracies are more complex political systems than authoritarian, totalitarian, or sultanistic regimes (those in which members of an extended family control the government). Democracies have multiple points of entry for interest groups to influence the political process (Suárez 2000). As a result, democracies generate more intricate patterns of socio-political organization within each country. Whereas in other types of regimes a single party, individual, or family makes all important decisions, in democracies there are multiple influencers, societal actors such as business and labor are key participants, and public

opinion and the press can have overwhelming impact on political processes and outcomes. Democracies are not only "messy" but also complex, with many moving actors, parts, and interest groups influencing the policymaking process. Thus, democratic countries are more complex nodes in the global system than dictatorships.

As of 1900, only parts of Western Europe, some former British colonies such as the United States, and the oligarchical states of Latin America were democracies, at least in form. In addition, not everyone could vote—women, for instance, enjoyed no political rights of their own until decades later. World War I was highly contradictory in its political effects, triggering revolutions that eventually led to totalitarian states like the Soviet Union, while giving democracy a fugacious chance in Germany and Eastern Europe. The rise of fascism in the 1920s and 30s posed the greatest challenge to democracy, one that would be effectively overcome with World War II. The postwar period was also two-sided. In some parts of the world, most notably Western Europe and some newly independent countries in Africa and Asia, democracy took hold. The cases of Germany, Japan, and India are especially important (Moore 1966). But the Cold War led to the proliferation of both totalitarian communist regimes in Eastern Europe and East Asia, and authoritarian regimes supported by Europe and the United States in an attempt to curb communist takeovers of power in Latin America, Africa, the Middle East, and parts of Asia.

Even before the end of the Cold War, however, a third wave of transitions from dictatorship to democracy took place during the 1970s and 80s in Southern Europe (e.g. Greece, Portugal, Spain), Latin America (Argentina, Brazil, Chile, and other countries), and East Asia (South Korea, Taiwan). In many of these countries the transition to democracy took place after social and economic development had made strides (Lipset 1959; Boix 2011), a new class of business owners or professionals grew influential (Moore 1966), and labor movements gained strength and demanded political freedoms (Rueschemeyer et al. 1992). The fourth wave of democratization started in 1989 with the collapse of the Soviet Union and its satellite regimes, with democracy spreading throughout Eastern Europe, the Caucasus, and Central Asia.

Thus, the twentieth century taken as a whole was characterized by the spread of democracy, albeit with notable setbacks. The year

1989 was a milestone, perhaps a culmination, but not an unprecedented turning point. As a result of the four waves of democratization, at the beginning of the twenty-first century there were just 20 countries ruled by dictators while more than 90 enjoyed democratic freedoms (see Figure 2.9). The first year since World War II in which there were more democracies than dictatorships in the world was 1991.

The popular uprisings in North Africa and the Middle East that started in early 2011 represent another step towards democratization, although a complex and complicated one at that. "The revolutions unfolding across the Middle East represent the breakdown of increasingly corrupt sultanistic regimes," Jack Goldstone, a key expert on political revolutions, has argued. "Although economies across the region have grown in recent years, the gains have bypassed the majority of the population, being amassed instead by a wealthy few. [Former Egyptian President Hosni] Mubarak and his family reportedly built up a fortune of between $40 billion and $70 billion, and 39 officials and businessmen close to Mubarak's son Gamal are alleged to have made fortunes averaging more than $1 billion each.... Fast-growing and urbanizing populations in the Middle East have been hurt by low

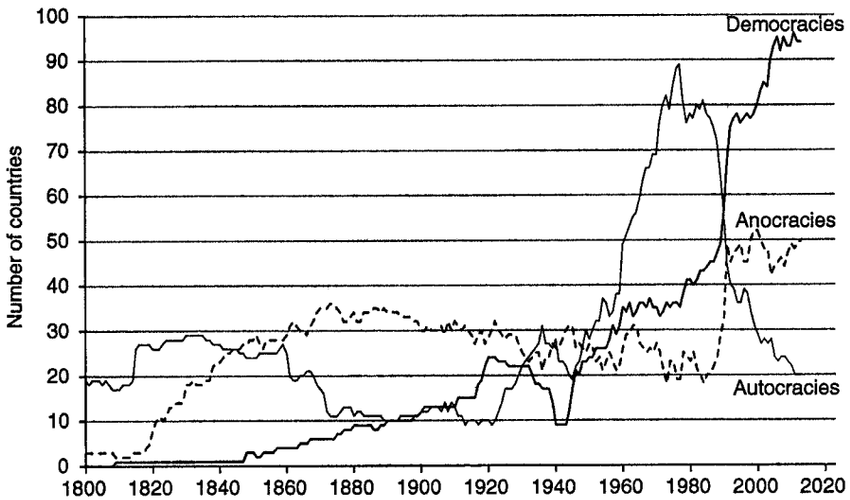


Figure 2.9. Prevalence of Political Regimes (number of countries), 1800–2013

Source of the data: Marshall (2013).

wages and by food prices that rose by 32 percent in the last year alone" (Goldstone 2011:11).

The third type of political regime in Figure 2.9—anocracies—refers to incoherent polities in which a mix of autocratic and democratic authority patterns coexist (Epstein and Converse 2008).[3] Elected officials, especially those in the executive branch, behave in authoritarian ways after assuming office, and tend to perpetuate themselves in power. There are 50 countries presently classified as anocracies, up from fewer than 20 in 1970. Examples include Algeria, Angola, Armenia, Bhutan, Cambodia, Chad, Guinea, Madagascar, Mauritania, Morocco, and Zimbabwe. Perhaps the two that most frequently make the headlines are Russia and Venezuela. Anocracies are also complex political systems, even more so than democracies, with unresolved underlying socio-political conflicts, and unpredictable policies. Thus, the proliferation of democracies and anocracies at the expense of dictatorships has tended to increase node complexity in the global system from a political point of view.

The question of whether the complexities of democratic government are shock-diffusing or shock-absorbing is not straightforward to answer. Consolidated democracies tend to have stable governments, but new democracies tend not to (Haggard and Kaufman 1995). Thus, the external economic and financial shocks that rocked Latin America in 1995-6, East Asia in 1997 or Eastern Europe during the late 1990s spread like wildfire throughout each region at a time when democratic regimes were still young and political actors inexperienced. Western European countries suffered from similar external shocks during the 1970s and 80s, but the economies in that part of the world did not suffer as much. Thus, consolidated democracies tend to be shock-absorbing, while young democracies tend to be shock-diffusing. Given this argument, it is not surprising to see that economic, financial, and political turmoil escalated during the 1980s and 90s (see Figure 1.1; Reinhardt and Rogoff 2009), precisely at a time when the number of democratic countries in the world doubled from 41 in 1980 to 80 in 2000 (see Figure 2.9).

[3] See the data on anocracies at http://www.systemicpeace.org/conflicttrends.html, accessed June 28, 2014.

The Witty Idea of Checks and Balances

One of the most distinctive characteristics of democracy as a political regime is the presence of checks and balances on the decision-making power of the executive branch of government. Political checks and balances represent veto points, and tend to provide the political system with more stability and predictability (Henisz 2000). The idea of checks and balances, which dates back to Montesquieu and the American revolutionaries, is a witty constitutional solution to the problem of tyranny. Not only may the different branches of government be controlled by different parties, but the legislative branch can be more or less fractionalized. As the argument goes, the more veto points in the political system, the more stable it is.

Not all democracies, though, have the same level of checks and balances built into their law-making and policymaking procedures, and those levels have changed over time. Figure 2.10 shows that the average degree of checks and balances in the world's political systems has grown quite rapidly since the 1970s. The measure depicted in the

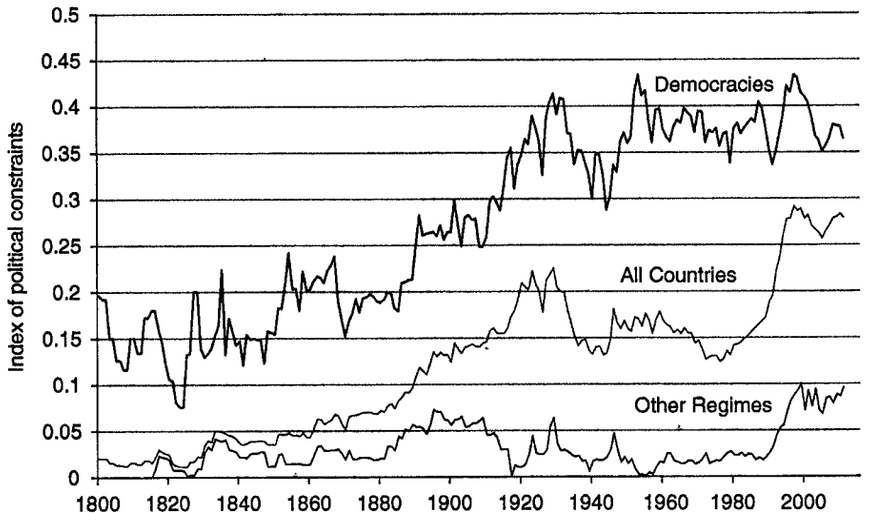


Figure 2.10. Average Indicators of Political Checks and Balances, 1800–2011

Notes:
Based on Witold Henisz's polconiii measure.
Democracies are defined as countries scoring 6–10 on the Polity scale (Marshall 2013).
Source of the data: Henisz (2014).

chart is based on Henisz's (2000) concept of political constraints. Two important messages stem from this chart. The first is that democracies tend to have more political checks and balances in place, hence their higher degree of complexity. The second is that other types of regimes—especially anocracies—have also adopted more checks and balances over the last two or three decades. As a result, the global system has seen a generalized increase in node complexity from this point of view.

Checks and balances contribute to the stability of the political system, making unpredictable changes more difficult. As a consequence, a country with more checks and balances is likely able to sustain the harmful effects of an external shock better than others. Thus, checks and balances are for the most part shock-absorbing. The counterargument, however, is that under conditions of duress veto points can lead to political paralysis given that every interest group may attempt to shift the burden of adjusting to the shock to another interest group. If checks and balances result in gridlock, then they can become shock-diffusing. It is interesting to note that, during the Great Recession, the U.S. political system did not act as swiftly as the Federal Reserve, which is shielded from political pressure (see chapter 4).

The Size and Capacity of the State Apparatus, and the Specter of Indebtedness

In addition to the nature of the political regime and the presence of checks and balances, larger state bureaucracies and government activity also contribute to node complexity. The sociology of organizations has long established that larger organizations tend to have more complex internal structures, higher degrees of specialization and differentiation, and more characteristics commonly associated with the bureaucratic model (Perrow 1986; Blau and Scott 1962; Blau and Schoenherr 1971). For its part, the field of political economy has argued that a bigger role of the state through taxation and spending provides economies with protection against changes in the business cycle and external shocks (Katzenstein 1985; Rodrik 1998).

Figure 2.11 displays two indicators of state size, namely, taxation and spending. Over the last 30 years tax revenue as a percentage of GDP has increased in many countries around the world while in others it has

tended to decline (see the upper panel). The largest increases have taken place in low-and middle-income countries, especially China. In Europe and the United States, taxation has grown less rapidly than the economy, although with several ups and downs, especially in the U.S. This has resulted in a similar level of taxation nowadays when compared to 30 years ago. Public spending, as measured by general government consumption, has tended to increase (see the lower panel in Figure 2.11), from about 13.5% of global GDP in 1960 to nearly 18% in 2013. The increase has been most acute in high-income countries, especially the Euro Zone (see chapter 6).

It is important to note that the relative magnitude of fiscal revenue compared to fiscal spending has implications not only for complexity but also for coupling. The fact that spending has grown faster than taxation has resulted in higher levels of indebtedness, a factor that reduces the government's ability to act (Lauder Global TrendLab 2014). The size of the state—as captured by taxation and spending—contributes to node complexity in the global system, while the level of government debt, as I will argue in the next chapter, increases coupling.

An even more important contributor to node complexity is state *capacity*, or the administrative and organizational ability of the state to identify, evaluate, formulate, and implement policies, which requires competent officials with decision-making authority who can insulate themselves from undue political pressures and are in a position to align interest groups in support of their policies (Guillén and Capron 2016). It is important to distinguish between state capacity and state goals or policy priorities (Levi 1988; North 1981). State capacity is "the ability of state institutions to effectively implement official goals" (Hanson and Sigman 2013:2), or "the institutional capacity of a central state, despotic or not, to penetrate its territories and logistically implement decisions" (Mann 1993:59). In other words, state capacity is the administrative infrastructure that enables states to pursue certain goals or priorities, to implement policy, to get things done (Mann 1984; Tilly 1990). As Skocpol (1985:17) put it in an influential essay, states have "capacities" related to their "territorial integrity, financial means, and staffing," and these capacities enable them to incorporate new models or practices. State capacities can also be conceptualized in terms of the extent to which state structures exhibit the characteristics of the Weberian

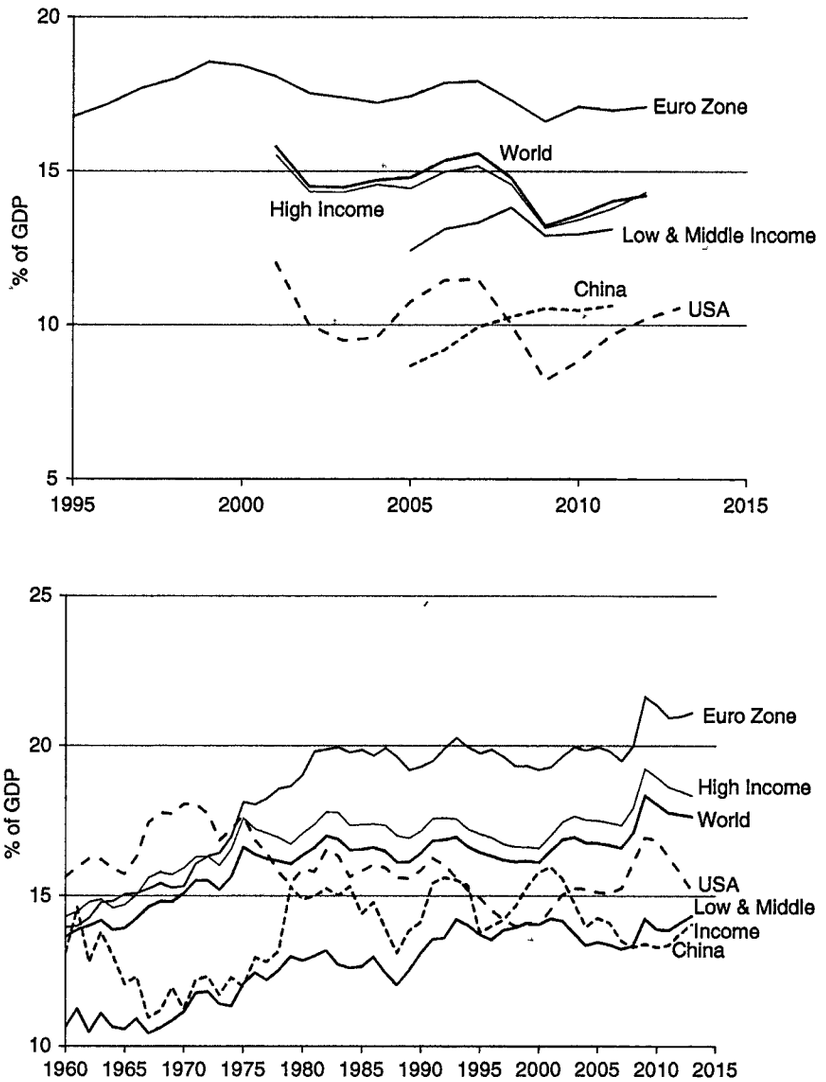


Figure 2.11. Tax Revenue (top panel) and General Government Final Consumption (bottom panel), as a Percentage of GDP

Note: General government consumption excludes investment.

Source of the data: World Development Indicators.

ideal-type of legal-rational, or bureaucratic, rule (Evans and Rauch 1999). In this vein, "sheer sovereign integrity and the stable administrative-military control of a given territory are preconditions for any state's ability to implement policies. [...] Loyal and skilled officials and

plentiful financial resources are basic to state effectiveness in attaining all sorts of goals" (Skocpol 1979:16). State capacity ultimately involves "the ability of the permanent machinery of government to implement policies, deliver services and provide policy advice to decision-makers" (Polidano 2000: 805). The state needs to "allocate resources in an optimal manner," in order to "guarantee an effective implementation of policies" (Weaver and Rockman 1993).

Figure 2.12 shows the evolution of state capacity between 1960 and 2009, using the index calculated by Hanson and Sigman (2013), which focuses on "core functions of the state" underpinned by "plentiful resources, administrative-military control of a territory, and loyal and skilled officials," and reflects the state's ability to "reach their populations, collect and manage information," "preserve its borders, protect against external threats, maintain internal order," "develop policy, produce and deliver public goods and services," "enforce policy," and

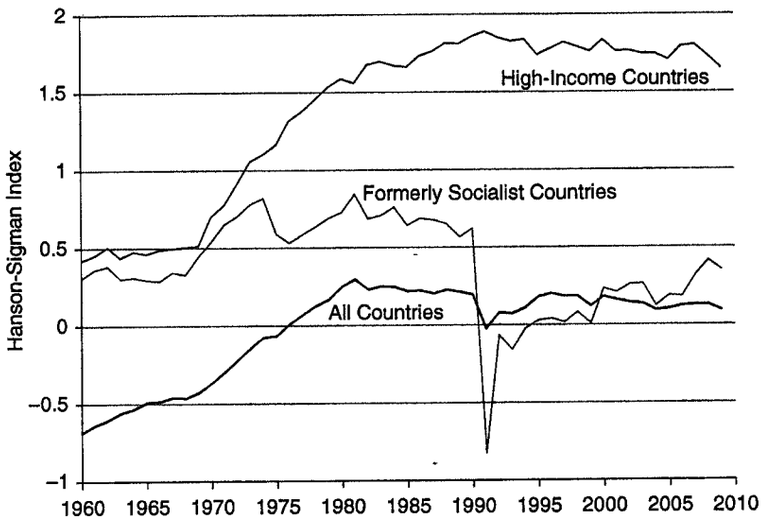


Figure 2.12. Hanson-Sigman State Capacity Index, 1960–2009

Note: Calculated by Hanson and Sigman (2013) as the "capacity1" measure, which is the result of latent-variable analysis on 24 indicators: administration and civil service count, administrative efficiency, anocracy, bureaucratic quality, census frequency, civil service confidence, contract-intensive money, effective implementation of government decisions, efficiency of revenue mobilization, fractal borders, military personnel, military spending, monopoly on the use of force, mountainous terrain, political terror scale, quality of budgetary and financial management, quality of public administration, relative political capacity, statistical capacity, tax evasion, taxes on income, taxes on international trade, total tax revenue, and index of "Weberianness."

Source of the data: State Capacity Dataset version 0.9 (Hanson and Sigman 2013).

"regulate commercial activity" (Hanson and Sigman 2013:2–9). In the world as a whole, one observes an increase in state capacity until the year 1981, with a gradual decline since then. However, in the case of the high-income countries, the peak occurred in 1992, and the overall level of capacity is much higher throughout the period. Finally, the formerly socialist countries are a special category in that they appeared to have levels of state capacity comparable to those among the high-income countries until the mid-1970s. The transition to the market and the creation of new states in Eastern Europe, the Caucasus, and Central Asia during the early 1990s led to a decline in average levels of state capacity, which have only recovered slightly over the past two decades.

The node complexity associated with greater state size and with greater state capacity is clearly shock-absorbing as opposed to shock-diffusing. As I will analyze in chapters 4 and 5, the U.S., Japan, several European countries, and China resorted to fiscal spending in order to buffer themselves from some of the ill effects of the Great Recession. As noted above, government spending is an effective tool when it comes to shielding the economy from the vagaries of downturns and external shocks, especially when the country is heavily interconnected with the rest of the world (Katzenstein 1985; Rodrik 1998). Financial resources, however, are only a necessary condition to smooth out the business cycle through fiscal policy. State capacity is needed to identify the best ways of spending the money, and to avoid mismanagement and corruption. More generally, state capacity is fundamental to dealing with disruptions of all sorts, including natural catastrophes and humanitarian disasters as well as economic or financial crises. Unfortunately, both the fiscal capacity of the state and average levels of state capacity have dropped in most parts of the world over the last two decades, reducing the complexity and resilience of nodes, and thus imperiling the overall global system.

State Failure and Complexity

Another way of looking at the phenomenon of node complexity in the contemporary world is to examine the phenomenon of state failure, which involves the breakdown of centralized state authority, resulting in anarchy, chaos, and lawlessness, i.e. an extremely low level of state

capacity. While well-established and internally differentiated states increase node complexity, failed states exhibit little complexity in the sense that they lack an elaborate state apparatus. The number of failed states in the world has declined from 78 in 1995 to 49 in 2013 (see Figure 2.13). This is a welcome trend, and it means that node complexity is increasing. The geography of state failure is relatively straightforward, and can be summarized in terms of the so-called long arc of geopolitical instability. It starts at relatively mild levels of state failure in some parts of Latin America, becomes more prevalent and intense in Sub-Saharan Africa, the Middle East, and sections of South Asia, and then starts to vanish as one reaches the Asia-Pacific region (Marshall 2013).

It could be argued that state failure contributes to coupling and not to complexity. However, that is only true if the affected country is connected to the global economy or occupies an important geostrategic location. For instance, state failure in central Africa does not increase coupling in the world as much as state failure in Somalia does. This is due to the fact that Somalia is strategically located at the cross-roads of several key shipping routes. In 1977 war broke out between Somalia and Ethiopia after Somali dictator Mohamed Siad Barre invaded a Somali-populated area in Ethiopia. Cuban and Soviet

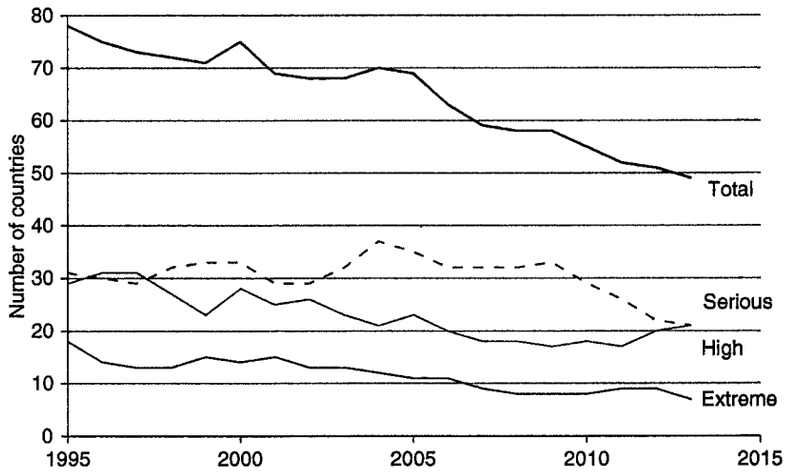


Figure 2.13. Number of Failed States at Different Levels of State Fragility, 1995–2013
Source of the data: Marshall (2013).

support for Ethiopia tilted the military balance against Barre, who had to turn to the U.S. for help. His regime finally collapsed in 1991, and Somalia plunged into chaotic internal conflict. As is often the case, political dislocation led to widespread deprivation and poverty, with more than 25% of children under the age of five being underweight, and more than 75% of the population below the poverty line. Unemployment was reported to be above 50%.

Meanwhile, fishermen became vigilantes in an attempt to defend Somali territorial waters from European and Asian ships, which were dumping toxic waste or illegally harvesting fish, a practice that threatened their livelihoods. In the midst of civil war, they had no trouble securing pistols, automatic weapons, and even rocket-propelled grenades. Eventually, they discovered the lucrative potential of piracy and hostage taking. Gradually, piracy became a way of life. By 2010, over 50 vessels and 1,000 hostages were being held. That year 44 ransoms were paid worth $176 million dollars, according to Oceans Beyond Piracy. Piracy around the Horn of Africa declined thereafter due to massive patrolling efforts by a coalition of countries, which are spending in excess of $5 billion annually to contain the problem. At the present time, the Somali piracy threat to global shipping has subsided, while attacks in other locations like the Gulf of Guinea are on the increase. The global attention paid to piracy clearly indicates that it contributes to coupling, forcing governments to react and shipping companies to re-route ships.

In sum, the recent decline in state failure around the world has increased node complexity. This trend helps countries absorb external shocks and contain them because, as noted above, stronger states act as buffers in the global system. Both the size of the state and the reduction in the degree of state fragility foster stability on a global scale.

Industrial Diversification and Complexity

The last indicator of node complexity has to do with the degree of industrial diversification. As nodes in the global system, countries like Chile or Venezuela are less complex from economic and political points of view because very large proportions of their economies and their external trade are accounted for by one single commodity, copper and oil, respectively. Countries with a more diversified industrial structure

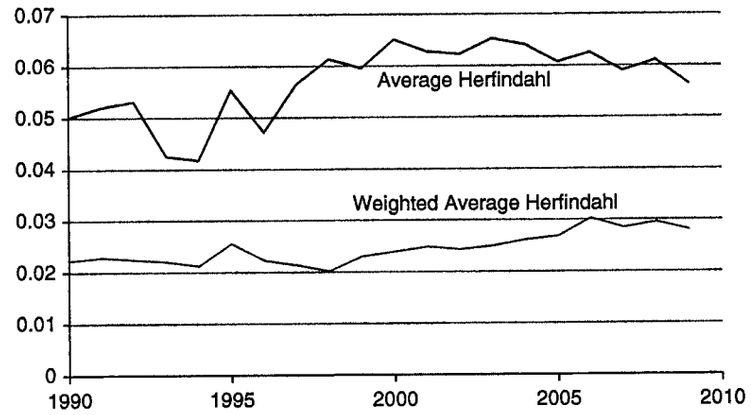


Figure 2.14. Herfindahl Index of Industrial Diversification, 1990–2009

Note: At the four-digit level of the UNIDO industrial classification. Weighted index calculated using size of industrial sector in each country.

Source of the data: UNIDO Industrial Statistics.

like Argentina or Brazil are more complex, let alone the United States, China, or Germany, to name but a few examples.

Figure 2.14 shows two indicators of industrial diversification. Both are based on the Herfindahl-Hirschmann index, which increases as diversification grows. The top line uses information about production at the four-digit level in the international industrial classification, without taking into consideration the size of each economy. The bottom line calculates the index similarly, except that it is weighted by the size of different economies. This indicator displays an upward trend between 1990 and 2006, and a slight decline thereafter, while the unweighted indicator starts to decline around the year 2000, mainly because of the proliferation of new small countries during the previous decade. Over the last three decades, the general trend is towards greater node complexity due to industrial diversification.

The complexity generated by industrial diversification is unambiguously shock-absorbing. External shocks of an economic, political, or technological nature, tend to have a greater impact on countries whose industry structure is not diversified. If the shock is beneficial to the specific industry that dominates the country's economy, a boom follows. If the opposite is true, it can have devastating consequences. The classic example of this dynamic involves the fortunes of commodity-producing

countries, which tend to be at the mercy of global economic forces. Another important angle to this argument is that more diversified economies rely on broader and more heterogeneous knowledge foundations, which tend to benefit economic performance over the long run (Hausman et al. 2014).

The Implications of Network and Node Complexity

With only a couple of exceptions (tourism receipts and tax revenue), the indicators shown in this chapter unequivocally point in the direction of increasing complexity in the global system at the level of both the node and the network over the last three decades. It is important to keep in mind that complexity is not by itself conducive to disruption, crises, and their spread around the world. In fact, many manifestations of complexity tend to be shock-absorbing.

Node complexity makes the country more impervious to global isomorphic forces, thus reducing the potential for contagion in the system as a whole. Previous research proposed that practices and disruptions diffuse more easily within, as opposed to across, national boundaries. The "impermeability" of national borders has the effect of slowing down diffusion across countries (Kogut 1991). Shock-absorbing imperviousness is a broader concept than the impermeability of borders because it operates both within and across national borders. For instance, the size and capacity of the state apparatus shields the country from both external and internal coercive influences.

Node complexity also has implications for coercive effects in the global system. Powerful external actors, such as the IMF, do not simply force governments to enact new policies. Rather, they manage to influence countries because their intervention tilts the domestic political balance among interest groups in favor of their preferred policies or reforms (Henisz et al. 2005). In this context, state size places limits on the extent to which external actors exerting their influence through domestic interest groups can coercively impose new models and practices. State size reduces the probability of state capture by special interest groups, and shields the country from external pressure (Evans and Rauch 1999; Rodrik 1998).

Unlike node complexity, network complexity can lead to shock-diffusing dynamics, depending on the specific pattern of trade, foreign direct

investment, migration or information flows. While it is important to examine in detail those patterns, I will argue in subsequent chapters that it is even more momentous to assess if network complexity interacts with network coupling to produce highly unstable situations. The Great Recession and the crisis in the Euro Zone will help us visualize why the explosive combination of network complexity and network coupling can be particularly problematic (see chapters 4 and 6).

3

Coupling

> The idea and the ideology of free trade and its benefits... have, in effect, been hijacked by the proponents of capital mobility. They have been used to bamboozle us into celebrating the new world of trillions of dollars moving about daily in a borderless world, creating gigantic economic gains, rewarding virtue and punishing profligacy. The pretty face presented to us is, in fact, a mask that hides the warts and wrinkles underneath.
>
> —Jagdish Bhagwati, "The Capital Myth." *Foreign Affairs* (1998)

Coupling is a very different concept than complexity, and it creates a vastly different reality frequently characterized by risk, disruption, and even catastrophe. It involves the extent to which the nodes (countries) in the global system are internally structured with few degrees of freedom, and the extent to which relationships between pairs of nodes reduce or even eliminate buffers or cushions. In most situations, coupling becomes tighter as individuals, companies, and governments seek to increase efficiency or to multiply the opportunities for profit-making. Unfortunately, it is often the case in today's global system that more profitable or more competitive also means more risky. This is true of financial assets, banks, and even manufacturing firms, as the examples in this chapter illustrate. As in the case of complexity, I propose five indicators of network coupling and five indicators of node coupling to demonstrate that the trend towards a more tightly-coupled global system is robust to the choice of indicator. Moreover, the fact that so many indicators of coupling are trending upwards adds to the problem by creating even more intricate patterns of exposure to risk.

Network Coupling

The most obvious manifestations of coupling in the global system have to do with the nature and structure of relationships between of pairs of countries. Most of the literature on international political economy (Gilpin 1987, 2000), the world-system (Wallerstein 1974), and the world-society (Meyer et al. 1997; Guler et al. 2002; Henisz et al. 2005; Polillo and Guillén 2005) emphasizes the increasing density and tightness of cross-national relationships as a hallmark of the contemporary world.

As shown in Figure 3.1, I will focus the attention on five canonical indicators of network coupling. The first, current account imbalances, captures the consequences of economic exchange among countries in terms of the mutually interdependent and tightly coupled relationship between surplus and deficit countries. The second, trade in intermediates, speaks to the breaking down of the value chain of productive activities by location, a phenomenon that has gathered speed over the last two or three decades. The third indicator deals with the classic topic of foreign portfolio investment, which differs

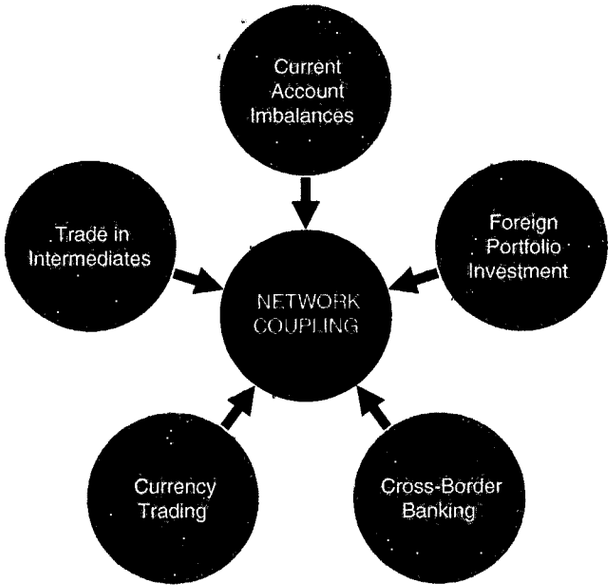


Figure 3.1. Indicators of Network Coupling

from FDI in that it contributes to coupling rather than complexity. The fourth is currency trading, one of the largest markets in the world in terms of volume. Lastly, the fifth indicator is cross-border banking, another phenomenon that has increased markedly in recent decades.

Growing Current Account Imbalances

The global economy is fundamentally one in which countries engage in economic exchange with one another (Gilpin 1987). One of the most important outcomes of that exchange is that some countries end up being in deficit, largely because they import more than what they export, while others end up being in surplus, mainly for the opposite reason. One important corollary of global economic exchange is that if there is a country in the world that enjoys a surplus, it must necessarily be the case that at least one other country is running a deficit, assuming that there is no inter-planetary trade. In other words, global economic exchange is a zero-sum game.[1]

Countries engage in different types of transactions with one another. They trade in goods and services, their capital and labor earn income in foreign locations, and their households and governments transfer funds to other countries. These three types of transactions are part of the so-called "current account." When a country runs a deficit in the current account, it must secure capital from abroad in order to bridge the gap. This may happen either in the form of investments made by foreign households, companies or governments in any type of financial asset, or in the equity of domestic companies. These transactions are registered in each country's "capital account." Conversely, when a country runs a surplus in the current account, it can fund deficit countries, and those transactions get recorded in its capital account. The combined balance of the current and capital accounts for any given country, known as the "balance of payments," is typically zero for a sufficiently long period of time, i.e. one year. Simply put, deficit and surplus countries are mirror images of each other, and they need each other for the global economy to work.

[1] In a creative piece, Paul Krugman (1978) considered the consequences of interstellar trade, i.e. when goods travel at nearly the speed of light.

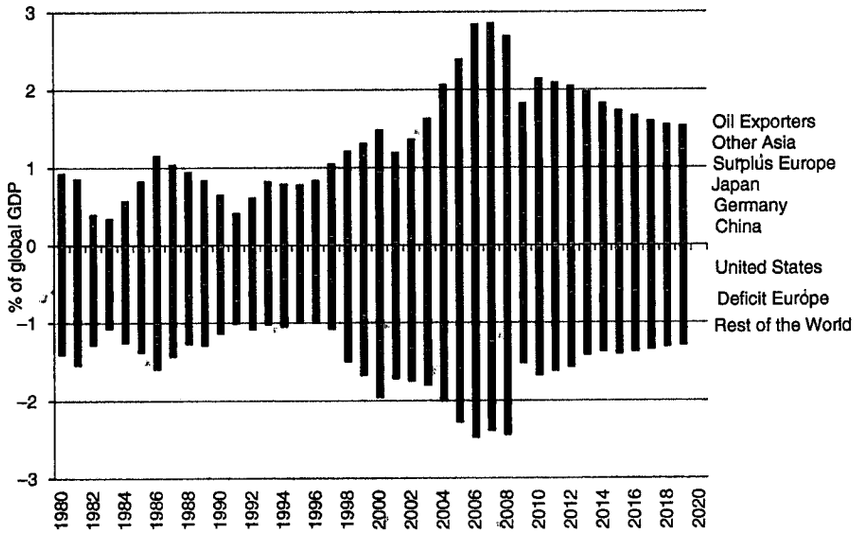


Figure 3.2. Current Account Imbalances (% of Global GDP), 1980–2019

Note: Actual data until 2013; projections starting in 2014.

Source of the data: IMF, *Global Economic Outlook.*

Figure 3.2 shows the evolution of current account surpluses and deficits in the global economy, with actual data running from 1980 until 2013, and projections thereafter. The source of the data is the IMF. The IMF has a keen interest in tracking current account imbalances because it must intervene if a deficit country runs into trouble for failing to secure enough capital to cover a current account deficit, i.e. it faces a balance-of-payments crisis. The vertical scale in Figure 3.2 is percentage points of global GDP, meaning that the numbers involved are quite large. Above the zero horizontal line we find the surplus countries, including Germany, Japan, China, several other economies in East and Southeast Asia like South Korea or Taiwan, and the oil exporters. Below that line, we see the deficit countries, including most of Western Europe, Canada, Australia, Brazil, and, most notably, the United States.

It is important to note that the aggregate current account surpluses in the world do not exactly match the aggregate deficits in magnitude. This is due to the so-called "statistical discrepancy," i.e. errors and omissions in global trade statistics, and differences in valuation methods. Save for the discrepancy, the deficits and the surpluses must be equal in size.

The main message of Figure 3.2 is not that there are surplus countries and deficit countries. That has always been the case since the dawn of the age of trade between national economies. What is truly striking about the recent evolution of current account surpluses and deficits is that their magnitude has increased considerably over the last two decades. While during the 1980s and 90s the size of the imbalances very rarely exceeded one percentage point of global GDP, and it remained lower than half a percentage point during several years, by the mid-2000s the magnitude had grown to a level of more than two percent. The global financial crisis of 2008 had a large negative impact on trade, and thus the imbalances dropped, but to a level still larger than 20 or 30 years ago.

There are two key implications stemming from larger current account imbalances, and both of them increase coupling in the global system. The first consequence is that deficit countries need ever bigger amounts of capital in order to continue operating. Conversely, the surplus countries are increasing their net-asset positions very rapidly. For instance, China went from just a few hundred million to nearly four trillion dollars in net assets vis-à-vis other countries over a period of just 15 years. These net-asset positions are also referred to as foreign reserves, which are usually managed by the central bank or by a sovereign wealth fund.

The second implication is that the world has more of a need for a reserve currency today than 20 or 30 years ago, simply because the size of the imbalances has grown so much. When countries run a current account surplus, they tend to buy assets denominated in the world's safest currencies, such as the dollar, the euro, the yen, pound sterling, or the Swiss franc. The greater the imbalances, the greater the amount of assets denominated in reserve currencies that are needed to keep the global economy in business.

As the so-called net-asset economies continue to grow their stockpiles of reserves, the global economy is becoming more tightly coupled. This is because the imbalances increase the interdependency between surplus and deficit countries. Let me illustrate this important point. During 2013 Germany ran the largest current account surplus, equivalent to 18.4% of the aggregate surpluses in the world, and China ran the second-largest at 13.2%, followed by Saudi Arabia's 9.6% and

Switzerland's 7.0% (in part the result of the ceiling on the value of the franc imposed by the central bank, which ended in January 2015). These countries are the largest accumulators of reserve assets, and their economies have become addicted to exports, i.e. they create jobs for their populations primarily by selling goods and services to other countries. Essentially, their economic model could not possibly work without massive amounts of exports. But for these countries to enjoy current account surpluses, there must be other countries that are running deficits: every exporter needs an importer, and vice versa. In the year 2013, the United States was by far the biggest deficit country, accounting for 28.8% of aggregate deficits in the world (down from 40.4% in 2012, largely due to increased exports), followed at a large distance by the UK (8.2), Brazil (5.8), Turkey (4.7), and Canada (4.2), all of them large economies that import more than what they export.

Increasingly big current account imbalances pose a serious threat to the global economy. They make countries more interdependent, creating jobs in certain parts of the world while destroying employment in others. They exacerbate the need for ever larger quantities of assets denominated in reserve currencies. They have the potential to generate economic and political tensions as countries succumb to the temptation of manipulating their currencies in order to redress the imbalances, as China, the U.S., Japan, Switzerland, and Brazil did between 2011 and 2014. Most importantly, when imbalances are very large, a disturbance in trade or in the capital markets needed to support trade deficits spells trouble for the entire global system. This is a sign of tight coupling, which is a shock-diffusing phenomenon.

The role that reserve currencies play in the global system is of utmost importance, given that surplus countries tend to use them in order to help deficit countries keep going. I will analyze in chapter 5 the role that the dollar plays in the global economy in general, and especially in the context of the dyadic relationship between China and the United States, the world's two largest economies and traders. In chapter 6, I will turn to the euro, noting that the European Union of 28 countries is a complex arrangement while the Euro Zone of 19 countries (a subset of the former) is a tightly-coupled scheme, with momentous consequences for its internal stability and effects on the rest of the global economy.

Trade in Intermediates

In addition to the aggregate patterns of trade discussed in the preceding chapter, the composition of trade also has the potential for increasing coupling. In particular, the phenomenon of trade in intermediates creates new opportunities and also some important challenges. The concept of an intermediate good is closely related to that of the value chain. In order to produce a final good or service ready for consumption or investment, companies must either buy or make intermediate goods and services such as different parts or components. A global value chain is one that involves production of intermediate goods and services in different parts of the world in order to arrive at a final good (Gereffi and Sturgeon 2005; UNCTAD 2013). New transportation and telecommunications technologies such as container shipping and the Internet have greatly expanded the universe of global value chains, leading economists to write about "trade in tasks" (Grossman and Rossi-Hansberg 2006). Today's global trade landscape cannot be understood without taking intermediate goods and services into account.

Figure 3.3 shows, however, that the increase in total trade in intermediates has been relatively modest since the turn of the twenty-first century, from about 8% of GDP in 2002 to 11% in 2012. Most importantly, trade in intermediates has grown at a slower pace than trade in

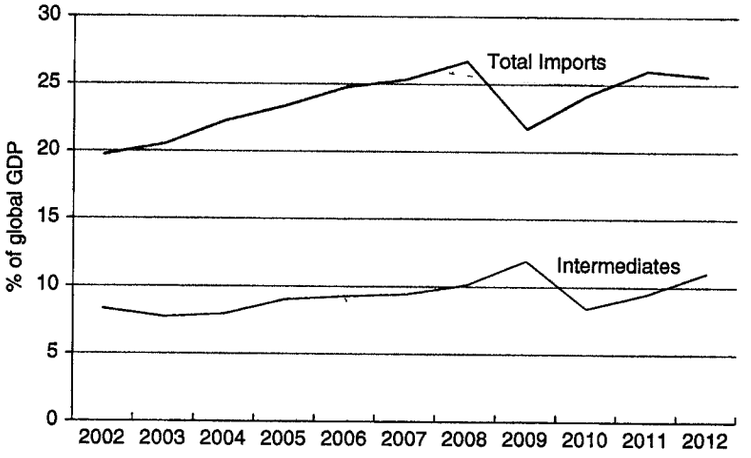


Figure 3.3. Trade in Intermediates (% of Global GDP), 2002–12

Source of the data: WTO.

final consumer and capital goods. However, in the case of emerging economies and developing countries, trade in intermediates has expanded faster than total trade. This is especially true of trade in electronics and automobiles. In the case of countries such as China, Mexico, Malaysia, Thailand, and Vietnam, trade in intermediates has grown at double-digit rates (Sturgeon and Memedovic 2010).

The importance of trade in intermediates can be readily illustrated with the case of the iPhone. The company asserts that this product is "designed by Apple in California, assembled in China." This phrase, inscribed on the back of all iPhones, must be taken literally, i.e. the product is *assembled* in China, not made in China. Of the total value added to an iPhone before it reaches U.S. shores, about 4% originates from China and the rest from South Korea, Taiwan, Germany, and other countries, although some of the parts inside the components sourced from these countries may have originated from China (Maurer n.d.; OECD-WTO 2013; Sposi and Koech 2013; UNCTAD 2013). The iPhone is far from being unique in terms of the trade in intermediates that it generates. The final assembly of most electronic devices and automobiles exhibits a similar pattern of trade in intermediate components (Timmer et al. 2014; Dedrick et al. 2010).

In spite of assembled products like the iPhone, it would be a mistake to assume that an economy such as China's contributes little domestic value to its exports. In fact, about 70% of the value of China's exports is added domestically. Among the top 25 exporters, only India (90%), the U.S. (89%), Australia (87%), Brazil (87%), Japan (82%), Italy (73%), Spain (72%), Switzerland (71%), and Taiwan (71%) surpass China, with Canada also at 70%. Australia and Brazil have high ratios because they export primary or semi-transformed commodities. Germany (63%) and South Korea (56%) have lower ratios (UNCTAD 2013:129).

Global value chains and trade in intermediates are efficient to the extent that they produce each component in the lowest-cost location, adjusting for coordination and transportation costs. They are a clear manifestation of the coordinated global economy described by Manuel Castells (2000). They are, however, vulnerable to disruptions to the extent that they push the principle of specialization by location to the extreme of relying on just a few global sources for each component.

If there is a production problem, a strike or a natural disaster in one or several of them, global supplies would be interrupted.

This negative effect of tight coupling is exacerbated by the practice of just-in-time supply, whereby components are produced and shipped just as they are needed for final assembly in order to reduce the costs associated with holding inventory, including storage, working capital, and obsolescence. Under this system, pioneered by Japanese firms in the 1950s, assembly plants hold very small or no backup inventories of parts and components (Goldin and Mariathasan 2014:70–99). When a powerful earthquake and tsunami struck Japan in 2011, global supplies for a number of important components where temporarily disrupted, idling factories several thousand miles away (Matsuo 2014; Simchi-Levi et al. 2014). For instance, the U.S. affiliates of Japanese multinationals suffered losses in output of as much as 60% in the wake of the tsunami relative to other firms with similar characteristics that did not rely as much on imported inputs from Japan. These declines were commensurate with the proportion of inputs sourced from Japan and the ability of the firms to find alternative sources of supply (Boehm et al. 2015:65). The researchers further noted that "global supply chains are sufficiently rigid to play an important role in the cross-country transmission of shocks," and that "such rigid production networks will also play a substantial role in aggregate volatility, productivity growth and dispersion, and the international ownership structure of production" (Boehm et al. 2015:1, 34). Under the older "just-in-case" system,[2] manufacturing value chains had many buffers and cushions in the form of stockpiles of parts and components. This was an inefficient practice for sure, but it provided the overall system with protection against unforeseen circumstances.

Another interesting instance of tight coupling in intermediates has to do with the global food supply chain. Fertilizers, animal feed, and food ingredients are increasingly produced in different parts of the world and shipped to far-flung destinations in order to produce food for final human consumption. A disruption in this chain could be especially catastrophic given the seasonal lags in food production. If the required

[2] Unfortunately, this term of mine has not caught on.

inputs are not available when needed, one cycle of food production might be lost.

Tight coupling in global value chains can be managed, but it still produces a qualitative change in the structure and interconnectedness of the global system, creating multiple shock-diffusing dynamics. It is also possible that new technological breakthroughs might lessen the system's exposure to the consequences of this type of tight coupling. For instance, 3D printing technologies have the potential of freeing assemblers, as well as consumers, from the shackles of global supply chains (De Jong and de Bruijn 2013).

The Uncontrolled Growth of Foreign Portfolio Investment

In chapter 2 I analyzed the growth of FDI, i.e. cross-border flows of capital aimed at managerially controlling the invested company located in a foreign country. FDI increases network complexity in the global system, but does not contribute to coupling because it offers both the receiving country and the investing firm more degrees of freedom and real options.

Foreign portfolio investment, which lacks that goal of control and typically involves owning less than 10% of the equity of the invested firm, is an entirely different matter. Here we are not dealing with a capital flow intended to support some kind of production, distribution, or sale activity. It is purely an investment, a money flow in search of a return. I will argue that it is a phenomenon associated with an increasing degree of tight coupling in the global system. For instance, countries that rely on foreign portfolio investment to compensate for a large current account deficit often find themselves in a vulnerable situation because those inflows of portfolio capital could be reversed in a moment's notice if financial conditions change and/or if investors lose trust in the country. Many balance-of-payments and external debt crises have been precipitated by swift reversals in foreign portfolio investment flows, as illustrated by the episodes of crisis throughout the emerging world during the 1990s (Reinhardt and Rogoff 2009).

Perhaps nobody has grasped the potential impact of free portfolio flows on network coupling across countries better than the Columbia University economist Jagdish Bhagwati. In the wake of the Asian

Flu crisis of 1997, during which several East and Southeast Asian economies suffered from the effects of the withdrawal of portfolio investment, he cogently argued:

> When we penetrate the fog of implausible assertions that surrounds the case for free capital mobility, we realize that the idea and the ideology of free trade and its benefits [...] have, in effect, been hijacked by the proponents of capital mobility. They have been used to bamboozle us into celebrating the new world of trillions of dollars moving about daily in a borderless world, creating gigantic economic gains, rewarding virtue and punishing profligacy. The pretty face presented to us is, in fact, a mask that hides the warts and wrinkles underneath. (Bhagwati 1998)

Reinhardt and Rogoff (2009) have also argued that cross-border capital flows make it more likely for domestic banks to go bust when portfolio investment suddenly deserts the country in anticipation of a currency realignment, changes in monetary policies, or simply poor economic conditions. Using data on 66 countries since 1800, they show that banking crises were rare during periods of low cross-border capital mobility (1800–80 and 1945–80), while they were quite frequent during periods of high capital mobility (1880–1940 and 1980 to the present time). During the latter periods, up to one-third of all countries experienced systemic banking crises with a significant number of defaults (see Figure 1.1). Thus, unlike foreign direct investment, foreign portfolio investment is shock-diffusing.

Figure 3.4 indicates that foreign portfolio assets grew from 25% of global GDP in 1997 to 70% in 2007, declined with the crisis to a low of 50% in 2008, and then recovered to 62% by the end of 2013, a level more than twice as high as that in 1997. This is a remarkable increase over two decades. Figure 3.5 shows the density of dyadic foreign portfolio investments between pairs of countries. The density measure, weighted by the magnitude of each dyadic flow and adjusted for inflation, grew from $189 million in 1997 to $699 million by the end of 2013, after declining during the crisis. This is, again, a phenomenal growth rate. The global system has clearly become more tightly coupled in terms of foreign portfolio investment, to levels three times greater than during the historical peak of the early twentieth century (Taylor

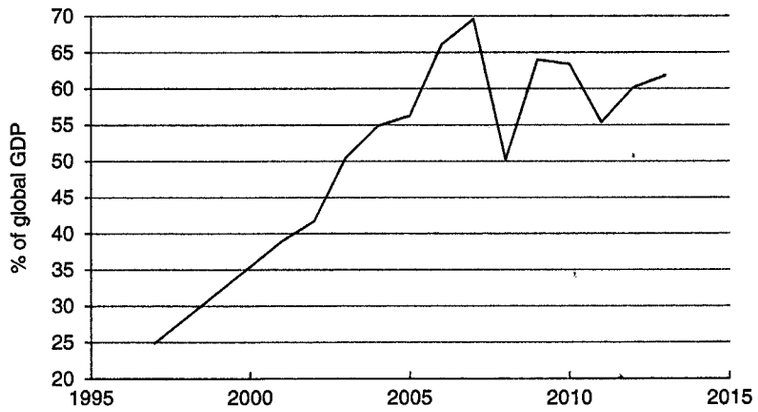


Figure 3.4. Foreign Portfolio Investment Assets (% of Global GDP), 1997–2013

Note: Data for 80 reporting economies.

Source of the data: IMF, Coordinated Portfolio Investment Survey.

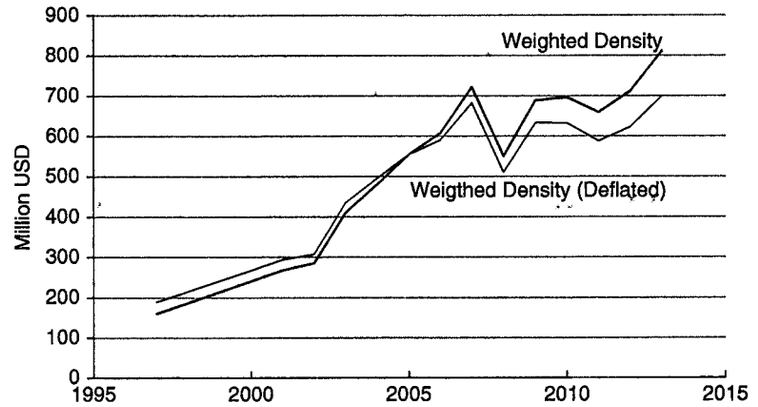


Figure 3.5. Density of Dyadic Foreign Portfolio Investments, 1997–2013

Note: Data for 80 reporting economies.

Source of the data: IMF, Coordinated Portfolio Investment Survey.

2014). I will ascertain in chapter 6 the extent to which this variable played a role during the European sovereign debt crisis.

The Joys and Consequences of Currency Trading

Currency trading is another phenomenon that contributes to network coupling. Currencies are not just money used to make payments. They

are also units of account and stores of value. The different magnitudes in a country's balance of payments are affected by the relative value of currencies, known as exchange rates. Securities are denominated in a specific currency, or possibly in a basket of currencies. Fluctuations in exchange rates may affect flows of trade and investment. Most importantly, countries may experience currency crises when their current account deficits prove unsustainable, which tends to occur episodically, affecting clusters of countries. For instance, there was a spur in the occurrence of currency crises in 1919–22, 1931–3, 1946–50, and most notably since 1975 (Reinhardt and Rogoff 2009). When a country runs a large current account deficit or has accumulated too much debt, or both, the markets exert an enormous amount of downward pressure on the value of the currency.

Examples of this phenomenon abound. Currency crises tend to diffuse regionally, affecting countries that are either very integrated or that compete against one another for exports to third markets, i.e. are role-equivalent. Regional currency crises proliferated during the 1970s and 90s due to the combination of free cross-border capital flows and currency speculation (Glick and Rose 1999). The latter is a prime mechanism through which balance-of-payments difficulties translate into major currency realignments. Thus, the increase in currency exchange trading tends to result in a shock-diffusing dynamic.

Currency markets are easily the largest and most liquid of all financial markets. Each *day* over five million currency transactions take place, totaling over $5.3 trillion in value. Currency markets have become much bigger over the last two decades, and the speed at which a currency can be the subject of speculation and lose value has also increased. Figure 3.6 shows that daily currency exchange turnover in the world has grown from 3% of global GDP in 1989 to nearly 9% by 2013, with a decline between 1998 and 2001 due to the introduction of the single currency in Europe. Currency futures and options have grown by a factor of four over the same time period.

In spite of their rapid growth, currency markets did not melt down in 2008 along with the rest of the financial sector of the rich economies. They are relatively safe thanks to an institution called the Continuous Linked Settlement system (CLS), a bank-owned platform launched in

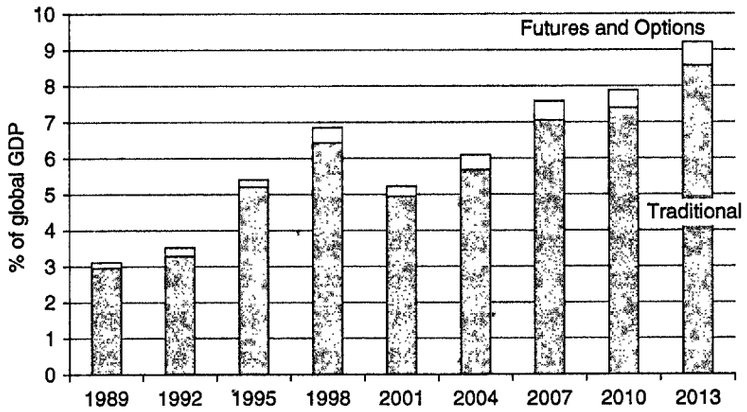


Figure 3.6. Daily Currency Exchange Trading (% of Global GDP), 1989–2013
Source of the data: Triennial Central Bank Survey, Bank for International Settlements.

2002 that settles transactions instantaneously as "payment-versus-payment," thus minimizing counterparty risk. CLS has 63 members. It has some limitations, however. First, it only settles about two-thirds of all currency exchange transactions. Second, it serves 17 currencies accounting for 95% of total transactions,[3] but excluding others likely to play an important role in the near future, namely, the renminbi and the rouble. Third, it is U.S.-centric and regulated by the New York Fed. And fourth, there is a built-in incentive for banks to settle bilaterally in order to avoid fees. In sum, while the CLS system has prevented a systemic failure, problems could occur in the future as economic and financial activity continues to shift towards the emerging world.

Did Cross-Border Banking Contribute to the Spread of the Crisis?

One last indicator of rapidly increasing network coupling in the global system has to do with cross-border banking activity. Banks engage in all sorts of financial activities across borders, and they also create their own subsidiaries in foreign countries. As they do business across borders and in

[3] AUD, CAD, DKK, EUR, HKD, ILS, JPY, MXN, NZD, NOK, SGD, ZAR, KRW, SEK, CHF, GBP, and USD.

many locations, banks accumulate financial positions in different countries and currencies. During the recent financial crisis, it became readily apparent to regulators and policymakers that such cross-border activity created risks that no single national authority could entirely detect and understand (Gorton 2012; Rajan 2010; Roubini and Mihm 2010).

The upper panel of Figure 3.7 shows the staggering tenfold increase in external bank positions from less than $3 trillion in the late 1970s to nearly $27 trillion in 2014, adjusted for inflation (2010=100), after peaking at almost $36 trillion in the first quarter of 2008. According to several analyses, these high levels of external bank positions probably made the global financial crisis more viral, allowing the problem to spread more easily across the Atlantic (Minoiu and Reyes 2011; IMF 2010c). Thus, cross-border banking positions tend to be shock-diffusing. The top panel of Figure 3.7 also shows that cross-banking activity was more important for banks with residence in the Euro Zone. We will explore in chapter 6 the implications of this fact. The lower panel of Figure 3.7, displaying the evolution of consolidated positions since the mid-1980s, shows a similarly fast rate of increase, peaking just before the financial crisis as well. We can also measure the increasing cross-border banking interconnections in terms of density. Figure 3.8 displays the weighted and deflated densities, which exhibit a sharp increase before the crisis and somewhat of a decline after 2008. Thus, different indicators of cross-border banking activity show a strikingly similar pattern over time.

It is no coincidence that, in the presence of such formidable levels of network coupling, the Great Recession triggered by the 2008 financial implosion of U.S. financial markets affected so many countries. In fact, during two quarters in the year 2009 all member economies of the Organization for Economic Cooperation and Development (OECD) were in recession, compared to just 40% of them during the mid-1970s, 30% during the early 1980s, and nearly 40% in 1993 (see figure 2.2 in Guillén and Ontiveros 2012). Emerging economies weathered the perfect storm relatively unscathed by substituting aggressive government spending for some of their exports, although they too started to suffer from reduced growth by 2013.

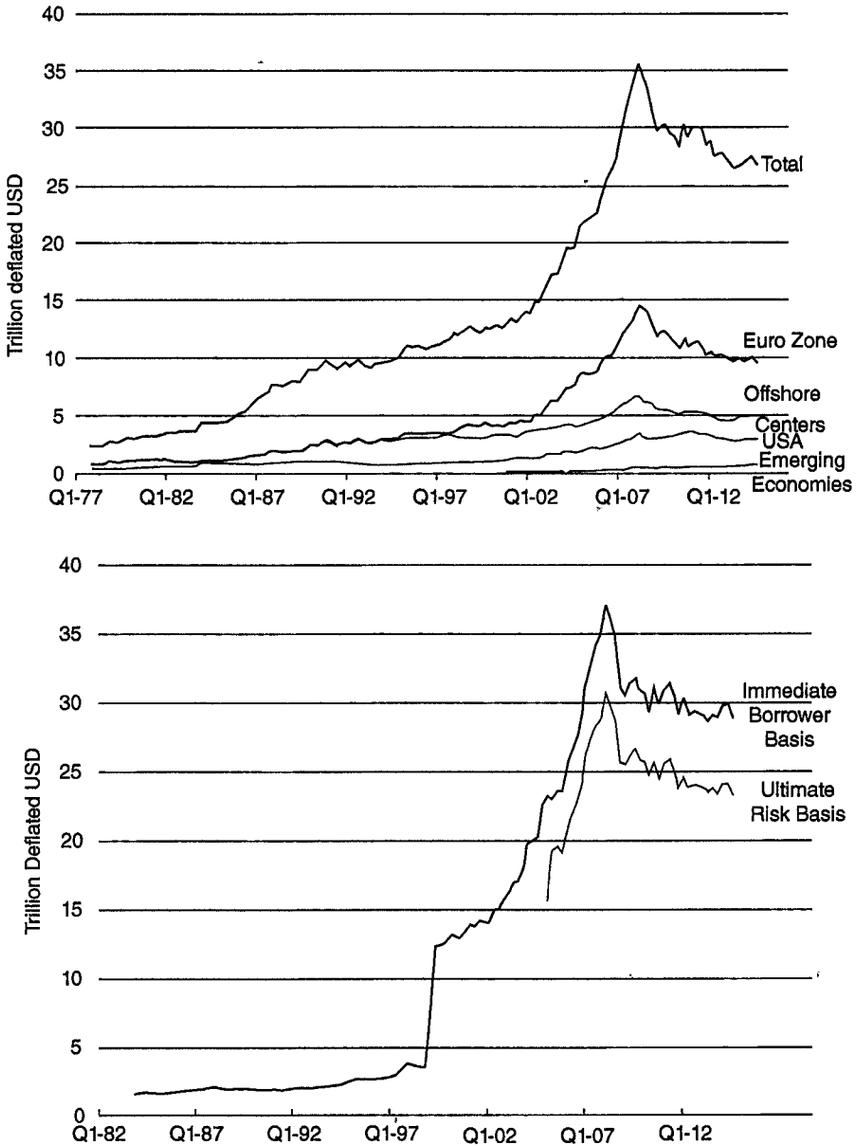


Figure 3.7. External Positions of Banks, Unconsolidated (top panel) and Consolidated (bottom panel)

Notes: Upper panel: Using the residence criterion for banks, i.e. without consolidating at the banking group level. Data range from Q4–1977 to Q3–2014. The Euro Zone includes Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and Sweden. Offshore centers include Bahamas, Bahrain, Bermuda, Cayman Islands, Curacao, Guernsey, Hong Kong, Isle of Man, Jersey, Macao, the Netherlands Antilles, Panama, Singapore, U.S. banks in Panama, U.S. branches in offshore centers, and Switzerland. Emerging economies includes Brazil, Chile, India, Indonesia, Malaysia, Mexico, South Africa, South Korea, Taiwan, and Turkey.
Lower panel: Consolidated basis. Data range from Q4–83 to Q3–14 for immediate borrower basis, and from Q1–05 to Q3–14 for ultimate risk basis.
Deflated figures using CPI index for all times in the United States, 2010=100 (Federal Reserve Bank of St. Louis).
Source of the data: Bank for International Settlements.

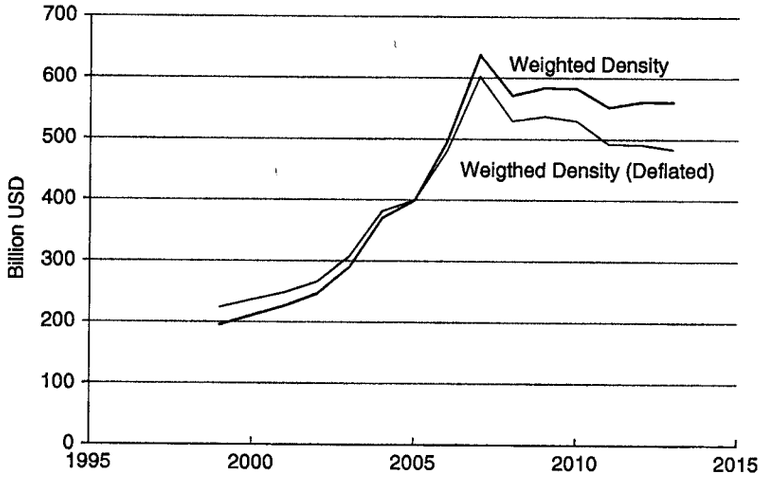


Figure 3.8. Density of Dyadic Cross-Border Banking Activity, 1999–2013

Note: Immediate Borrower Basis.
Source of the data: Bank for International Settlements.

Node Coupling

While network coupling in the global system refers to the absence of buffers in the relationships between pairs of countries, node coupling operates inside countries and entails the extent to which individual countries lack such buffers or cushions. Long-standing trends in population aging, urbanization, public debt, income inequality, and wealth inequality have pushed many societies to the limit, leaving governments with very few degrees of freedom with which to implement policies (Figure 3.9).

More Grandparents than Grandchildren

The decline in fertility rates around the world, from about five children per woman in 1950 to 2.5 in 2012, with projected rates approaching two by the mid-twenty-first century, is bringing about an abrupt process of population aging. In the more developed parts of the world, fertility fell below the standard replacement rate of 2.1 children per woman in the early 1970s. In the emerging economies, fertility has also declined precipitously since the 1970s driven not only by China's one-child policy but also by broader social changes similar to the ones taking

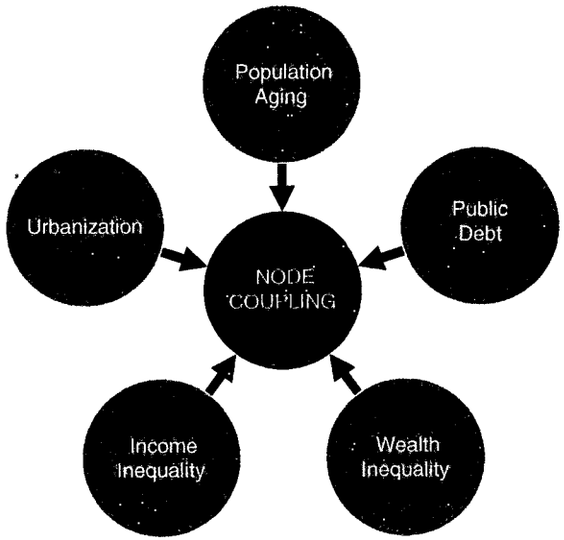


Figure 3.9. Indicators of Node Coupling

place in the richest countries, especially those related to women's increased access to education, job opportunities, and contraception. In the least developed countries, fertility started to decline in the 1970s, driven as well by women's changing roles in society and in the economy.[4]

At the same time, people around the world now live much longer than in previous generations. While in 1950 life expectancy at birth stood at less than 50 years, by 2012 the figure had increased to nearly 70. The increase in life expectancy—mainly driven by improvements in living standards, education, nutrition, disease prevention, and healthcare—is a veritable global phenomenon, with the least developed parts of the world catching up very quickly. While in 1950 life expectancy at birth was 30 years higher in the more developed than in the least developed countries, by 2012 the difference had narrowed to less than 20 years, and the projection was that by the end of the twenty-first century it would fall further to about 10 years.[5]

The simultaneous decline in fertility and increase in life expectancy cannot bring about anything but a greying of the population (Dorius

[4] United Nations Population Division, *World Population Prospects: The 2012 Revision.*
[5] United Nations Population Division, *World Population Prospects: The 2012 Revision.*

2008; Wilson 2011). Rich countries are already entering a phase in which there are more grandparents than grandchildren. As a result, serious doubts are being cast on the viability of not just pay-as-you-go pension systems but the economy as a whole. Consumer and financial markets will also be transformed as spending, saving, and investing patterns shift. Older people do not spend as much on durable goods and housing as younger people, two major drivers of the economy.

Most importantly, population aging puts countries and their governments in a situation in which they have little room to maneuver. Taxes cannot be increased indefinitely on the younger generations to pay for the pensions and healthcare of retirees. Labor scarcity sends wages higher, undermining international competitiveness. And the political landscape is transformed, making policy change to adapt to new circumstances unlikely as retirees seek to protect their hard-won benefits by being the most politically engaged age group in terms of voting and lobbying. Population aging makes nodes in the global system more tightly coupled, unwilling and unable to change course, limited in their options, and ultimately sclerotic.

The Growth of Cities

At the same time that population aging progresses, the distribution of people across space is also undergoing massive change as a result of migration from the countryside to the city. While in 1950 less than 30% of the world's population was urban, by 2010 more than 50% was, and by the end of the twenty-first century nearly 70% will be. In 1960 only two cities had more than 10 million people, New York City and Tokyo. By 2030 as many as 39 cities will exceed that threshold, most of them in India and China. At the present time, the number of urban dwellers swells by 1.5 million each week.[6]

The growth of cities is in many ways a welcome change. Cities are dynamic and vibrant, offering their residents a wide array of economic and cultural opportunities. But cities are also limiting future options for many countries around the world, and placing enormous pressure on resources. The provision of food and water becomes a challenge as millions move away from the sources at which they are abundant.

[6] United Nations Population Division, *World Urbanization Prospects, the 2014 Revision.*

Cities pose a major distribution and logistical problem, one that can only be addressed by massive investments in infrastructure.

Most importantly, rapid urbanization leads to social dislocation, inequality, and duality. There are two different dualities driven by the growth of cities. The first is the gulf that develops between the countryside and the city in terms of income and opportunity. The second has to do with the often extreme economic disparities that tend to develop within cities, especially rapidly-growing cities. Both types of duality put enormous pressure on the economy and on the political system, which has always had a hard time coping with massive change.

Most importantly, urbanization increases tight coupling. Cities require supplies of almost everything, which must be delivered in a timely way. Throughout modern history, food riots in cities have been a major source of instability. From medieval France to the Arab Spring, food shortages have driven political history (Tilly 1997). During the Middle Ages, cities became melting pots and disease pools, with enormous consequences for the extension of European power around the world (McNeill 1978; Diamond 1997). And cities are, above all, fragile ecosystems in which water contamination and air pollution can get out of control, especially in the developing world. Urban societies have been known to collapse more swiftly than traditional societies (Diamond 2005). Simply put, cities are tightly coupled, and they make nodes in the global system more so.

The Indebted State

Historically, governments have had a tendency to spend more than the revenues they raise, especially as a result of inter-state competition and war (Tilly 1992; Mann 1992; Centeno 2003). Government debt can become a binding constraint because, on the one hand, the population's expectations as to services and benefits tend to increase as government spending rises, often leading to a self-reinforcing spiral, and on the other, as governments accumulate debt a larger proportion of the budget needs to be allocated to servicing it. These two forces can become mutually reinforcing, and put enormous political pressure on the state. As a result, its options become more limited.

The global system in the early twenty-first century is characterized by a sharp increase in the level of government indebtedness among the

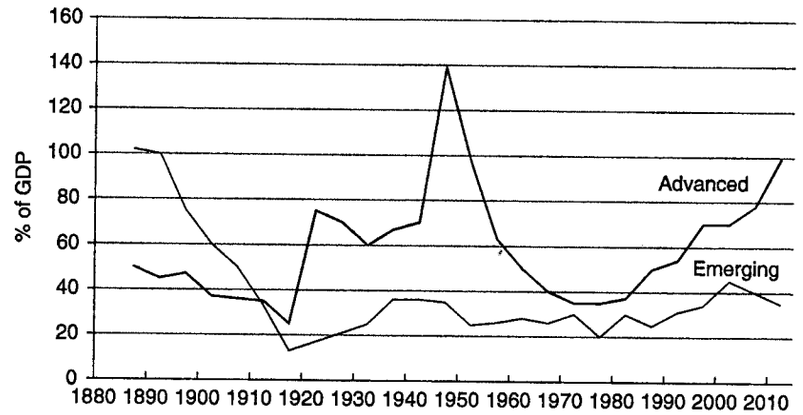


Figure 3.10. Government Debt as % of GDP, 1885–2010
Advanced: Australia, Canada, France, Germany, Italy, Japan, Korea, the United Kingdom, and the United States.
Emerging: Argentina, Brazil, China, India, Indonesia, Mexico, Russia, Saudi Arabia, South Africa, and Turkey.
Source of the data: IMF.

rich countries, accompanied by a decline in the emerging economies. This may sound paradoxical, but it actually is not. Figure 3.10 shows the evolution of government debt as a percentage of GDP from the late nineteenth century to the present time. Emerging economies used to be deeper into debt than the rich countries, but the latter surpassed the former first as a result of the two world wars and more recently as a consequence of certain promises made to rapidly aging populations.

Ultimately, government indebtedness makes nodes in the global system very tightly coupled internally because of the dynamics of taxation and spending. Economically, the state can be a source of stability and help alleviate the negative consequences of downturns in the business cycle. But a heavily-indebted government may end up imposing too much of a burden on the private sector, stifling entrepreneurship and economic dynamism. Politically, an increasing public debt triggers a series of conflicts between savers and borrowers, between the young and the old, and among competing conceptions of policy. Very high levels of public debt make societies and economies more tightly coupled because governments need to operate at the limit of their ability to sustain services for citizens using the base of available resources.

It is important to note that government spending has a very important role to play when it comes to overcoming economic problems such as high unemployment or deflation, although the effectiveness of stop-and-go, Keynesian-style policymaking can be undermined by supply-side rigidities and by free cross-border capital flows, as analyzed in chapter 4. My argument about tight coupling due to high levels of government debt is in no way a diatribe against government intervention in the economy. Quite on the contrary, it is meant to highlight the fact that highly-indebted governments have more limited options at their disposal than those with lower levels of debt. They can no longer borrow aggressively to help out the economy during recessions, and they may not be able to deliver on promises made to specific groups in society. Simply put, a country that is deeply into debt is a more tightly-coupled node in the global system. Nodes characterized by indebted governments can contribute to shock-diffusing dynamics due to their limited ability to react.

Income Inequality Drags Down the Economy

Another feature of contemporary societies that make them more tightly-coupled nodes in the global system has to do with the distribution of income. In *The Great Transformation*, the social scientist Karl Polanyi (1944) famously argued that on the one hand inequality laid the foundations for the dynamism of the market, but on the other it could undermine the "substance of society." Excessive inequality in the distribution of the economy's rewards ultimately undermines the incentives for people to invest in human capital and to work hard (Easterly 2007). Most importantly, high levels of income inequality reduce the ability and degrees of freedom of governments when it comes to raising additional resources in order to overcome recessions or other types of crises. Inequality reduces middle-class consumption, and thus dampens aggregate demand.

Recent trends in inequality over the last three decades are heterogeneous. In most of Europe, the United States, Russia, and China, income inequality is on the increase. Meanwhile, it is on the decline in Brazil, Sweden, and Mexico, to name but a few countries (see Figure 3.11). A wide array of changes are causing inequality to rise, including technological change, the disruptive impact of trade in certain

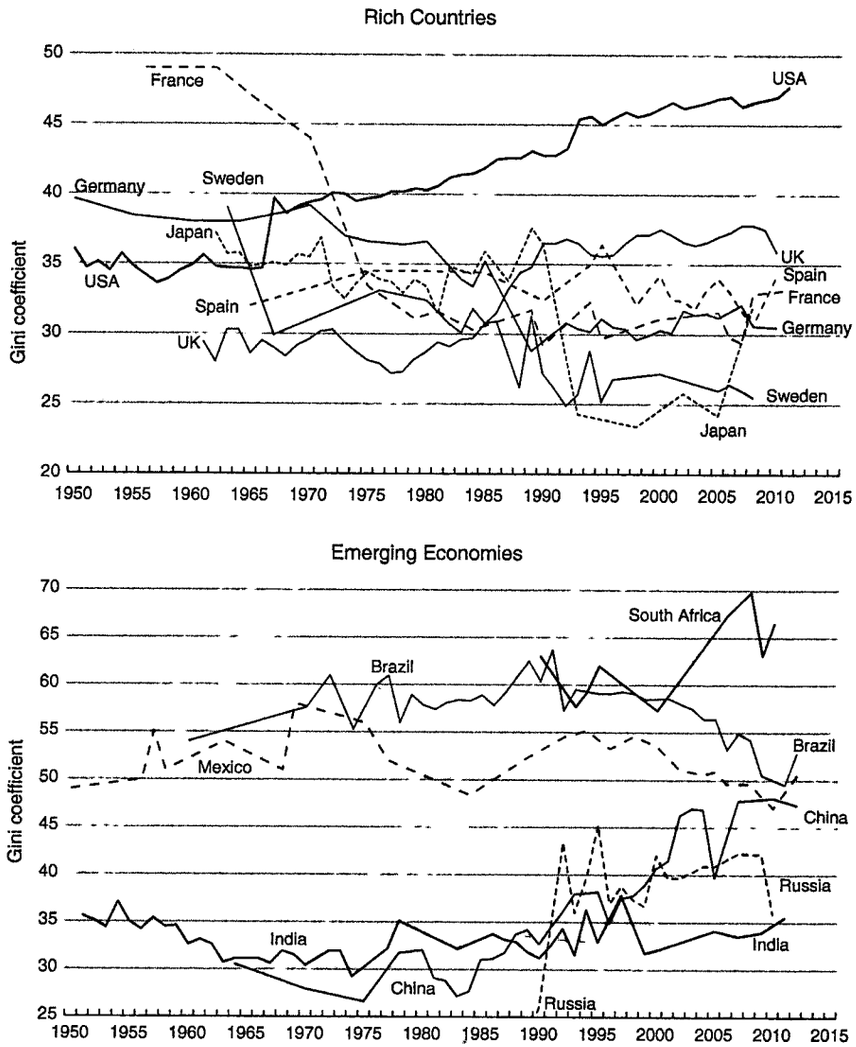


Figure 3.11. Income Inequality within Countries (Gini Coefficients), 1950–2012

Source of the data: All the Ginis Dataset (April 2014 Update), World Bank.

industries and locations to the benefit of others, the growth of the service sector (which employs both highly-skilled and unskilled workers), changes in taxation, and welfare state retrenchment, among others (Milanovic 2009). As MIT economist Paul Osterman has cogently argued, "the migration of manufacturing jobs to other parts of the world has generated a decline in the share of income accounted for

by labor. Meanwhile, jobs created in the service sector have proved to be much more heterogeneous in terms of skill level, stability, and pay than those in manufacturing" (Lauder Global TrendLab 2013).

The growth of emerging economies is also game-changing from the point of view of inequality because hundreds of millions of people are joining the new global middle class. By the year 2022, and for the first time in human history, there will be more middle-class people in the world than poor people, defined as individuals with at least $10 per day to spend but no more than $100. Moreover, the center of gravity of middle-class consumption will shift towards India and China, which combined will represent more than half of the global middle-class market (Kharas 2010). In Africa, the middle class is also expanding, albeit from a very low base (AFD 2011). Interestingly, the rise of the middle class in China and India has so far widened inequality within cities and between the city and the countryside, whereas in Brazil it has led to a large decline in inequality, although starting from very high levels and thanks to a government program involving income redistribution (Chen et al. 2010; Cain et al. 2008). Chinese policymakers, for instance, are much more constrained in terms of what policies they can pursue in the wake of rising inequality because poor people in the cities, and especially, the countryside, are becoming impatient with the pace at which their lot is improving. Thus, China has become a more tightly-coupled node in the global system because of rising income inequality.

One clear negative consequence of rising inequality has to do with the muted role of domestic consumption in economic recoveries. In the U.S., inequality has squeezed the middle class. As a result, the recovery from the Great Recession triggered by the 2008 crisis has been relatively slow, taking the economy more than 20 months to become 5% bigger than it was at the official start date of the economic contraction, compared to an average of eight months for previous recessions. Thus, excessive inequality is constraining to the economy as a whole as well as painful to those suffering from it (Temin and Vines 2013:132).

Wealth Inequality and Its Effects

While the middle class expands in some countries and shrinks in others, the proportion of income going to the top 1% is growing rapidly to levels not seen since the 1920s (see Figure 3.12). In the U.S., the top

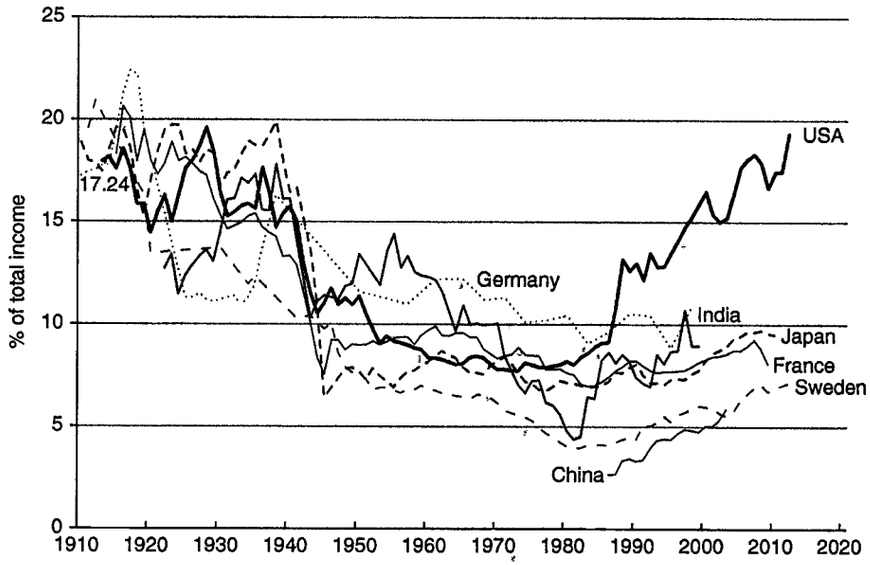


Figure 3.12. Income of the Top 1 Percent (% of Total Income), 1910–2012

Source of the data: World Top Incomes Database (February 2014 Update).

1% accounts for nearly 20% of total income. Wealth concentration at the top has become even more pronounced than income. The world's top 1% will soon own more wealth than the rest combined, i.e. more than 50% of total wealth (Credit Suisse 2014). Lower taxes on capital gains and other munificent conditions for the rich, have resulted in a sharp rise in the number of millionaires during the early years of the twenty-first century (Alvaredo et al. 2014). While the crisis brought about a fugacious decline, the number of millionaires—technically referred to as high-net-worth individuals—has grown to 12 million around the world, who collectively own $46 trillion in investable assets, excluding their primary residence, collectibles, consumables and consumer durables, a truly staggering figure (Capgemini and RBC Wealth Management 2013). The countries topping the ranking of millionaires are the United States, Japan, Germany, China, the UK, France, Canada, Switzerland, Australia, Italy, Brazil, and South Korea.

Wealth inequality tightens coupling in a different way than income inequality. Wealth inequality results in part from income inequality, but acquires a dynamic of its own as individuals and households with wealth accumulate it and invest it, leading to higher rates of social

reproduction. Wealth inequality tends to be more skewed than income inequality, although the dynamics of accumulation are driven by complex forces having to do with the returns to capital and labor. While income inequality has risen to the levels of a century ago, wealth inequality is still below historical levels, especially in Europe (Picketty 2014; Picketty and Saez 2014). The growth in wealth inequality over the last few decades, however, perpetuates the prevailing pattern of social stratification and leads to node coupling in the sense that it ossifies the social structure and makes the political economy more rigid by entrenching powerful interest groups (Olson 1965, 1982). The wealthy have the ability and the resources to shape policymaking, especially in certain countries where spending on lobbying and political campaigns is unrestricted.

The Potentially Devastating Consequences of Network and Node Coupling

The increasing degree of coupling in the global system poses serious threats to the ability of governments to steer their countries out of trouble. Coupling also makes global governance so much more problematic. Under conditions of tight coupling every problem, every deviation from normal circumstances, and every calamitous event becomes difficult to overcome because of the lack of buffers, cushions, and degrees of freedom. Thus, both node and network coupling tend to be shock-diffusing. We will analyze in the next chapters three specific situations to assess whether the increasingly complex and tightly coupled nature of the global system makes the world more prone to disruptions and crises. I begin in the next chapter by assessing if the crisis of 2008 and the resulting Great Recession had anything to do with complexity and coupling. In chapter 5, I examine the effects of the increasingly complex and tightly coupled relationship between China and the United States, the world's two largest economies. In chapter 6, I will compare the European Union and the Euro Zone with a view to assessing their future viability.

4

Complexity, Coupling, and the Great Recession

with Sandra L. Suárez

> For European banks, the American model of minimizing capital and using high levels of leverage was something to be emulated, not scorned. Ultimately, common global tendencies produced a common global crisis.
>
> —Barry Eichengreen, *Exorbitant Privilege* (2011:101)

The global financial and economic crisis that exploded in 2008 brought about the Great Recession, the worst economic crisis since the 1930s. It was triggered by the implosion of the U.S. real-estate market, whose effects were magnified by the securitization of mortgages and other financial assets, and by the high degree of leverage of financial companies, two key indicators of tight coupling at the organization and industry levels of analysis. The crisis spread very quickly to other developed and developing markets through a variety of tightly-coupled channels, including investment, trade, cross-border banking assets, and the breakdown of trust and confidence more generally. Ultimately, the crisis brought about the loss of tens of millions of jobs worldwide, trillions of dollars in financial wealth, and the disappearance of some of the most storied financial institutions.

The swiftness and gravity of the crisis elicited a massive government response in the forms of liquidity injections, bailouts, and economic stimulus efforts on a scale not seen since the 1930s. It was also a crisis that reopened a series of important intellectual debates, especially those