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Globalization

Economies in Collision

Motivation

This chapter provides an overview of globalization. Our intent is to motivate and stimulate the reader to the compound challenges, opportunities, and risks that global finance provides. The economic and financial interdependence that geopolitics, macroeconomics, and finance entail has contributed to both global growth and concerns. Globalization has ushered in a transformation of economics and finance not only by encouraging the freedom to trade, but also through the movement of capital, resources, and money, as well as the migration of people and technology. It has led to major changes in financial institutions and in the practice of finance. This chapter seeks to highlight some of these issues as well as to present a number of trends that demonstrate the evolution of global finance and its current challenges. We provide a list of references for the motivated reader to better appreciate the impact of globalization on finance.

1.1 Introduction

Global finance is derived from and defined by countries' macroeconomic factors, trade, political, geopolitical and social agendas, and the global pursuit of national and individual financial interests. Sovereign states, corporate firms (both national and international), as well as a multitude of investors, traders, intermediaries, networked financial agencies, and globally distributed regulators are the elements that make up global finance; the extraordinary complexity that comprises it makes some of its elements more important than others, as they are able to sway trends, markets, prices, and, indeed, the evolution of global finance itself. Concurrently, global finance has, for better or for worse, introduced a global financial and economic interdependence through the growth of dominating institutions equipped with an extensive array of financial instruments allowing trade, investment, and the management of wealth globally. Currencies, and their derivatives, international investments, and exchange traded funds (ETFs) based on all aspects of the global economy have opened further opportunities for gain and loss. In fact, there are now more indexes than there are stocks (Bloomberg, 2017)! This has also allowed individuals to better define their preferences and identify global market trends.

Global finance is also evolving in a new era of multi-regulatory bodies; these seek to keep abreast of an evolving and complex finance, ensuring compliance with policy and laws, avoiding systemic risks, and maintaining market efficiency. The 2007–2008

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financial crisis particularly contributed to the awareness that finance is truly global and interdependent, and therefore defined a new family of risks that sovereign regulation might not have been ready to deal with. These observations, as well as the economic consequences of globalization, have led to a reassessment of the global freedom that global finance was built on. Regulation and gating, both nationally and internationally, have altered the direction of their evolution, with the goal of better managing sovereign interests.

The global economy, fed by a global productivity growth, has grown unimpeded for decades, and is assuming an even greater importance due to political factors that have led to an economic and political realignment of emerging economies and global A-National corporate entities.¹ At the same time, networking and cyber-financial technologies have augmented the freedom of financial institutions, thus catalyzing a self-sustaining globalization trend into a complex economic development system that resists sovereign gating policies and seeks to protect its self-interest. This has led sovereign states to compete in global economic and financial markets and champion their own corporate entities; for example, the growth of increasing sovereign global corporations in China, Russia, and elsewhere. Global finance has thus contributed to the growth and the scale of financial institutions and to their economic and global outreach.

In 2011, state-owned enterprises (SOEs) accounted for more than 80% of the stock market capitalization in China, over 60% in Russia, and 35% in Brazil (*The Economist*, 2011). These statistics have systematically grown over time, indicating a new economic environment. More than 20 of these companies are listed among the world largest 100 multinational companies, and almost 30 of the top 100 companies are in the emerging markets. These firms are now found everywhere from China and Russia, to the Middle East. In some countries, where national champions are not politically common, the gradual loss of power has assumed other forms; for example, far greater regulatory intervention (as is the case in the USA, which uses the predominance of its currency as a tool to regulate what it can).

Trade is fueled by a global economic de-gating, economic growth, and increasingly competitive foreign firms. Technology, media, and social networking have rendered the world “a village” (Friedman, 2005). In the past, economic theories were based on Ricardo’s theory of comparative advantage and specialization; in the present, trade is based on greater competition due to the global export of technologies and know-how, and will be more so in the future. Thus, changing patterns of consumption, geopolitical events, eco-political agreements, and corporate economic efficiencies are transforming trade. Industry has also changed based on globally networked supply, assembly, and retailing enterprises that contribute to the growth of trade. In Chapter 4, macroeconomic and financial issues of trade are addressed.

While trade is contributing to enrichment, it has also de-monopolized the power of some countries over their own economies. As a result, in times of crisis, it has led them to institute protectionist policies. This observation is consistent with sovereign states that have since expanded the breadth of the financial and economic policies they use. For example, in 2009 the G20 promised to refrain from protectionist action, yet then applied 122 new restrictions affecting 0.5% of the world imports between October 2010 and April 2011. In addition, the number of new trade restrictions was further

1 A number studies have examined globalization and economic growth. These include Sachs and Warner (1995), Rosenau (1996), Frankel (2000), Sachs (2000), Stiglitz (2006), Friedman (2005, 2012), and Spence (2011).

increased to 145 between October 2015 and May 2016 (see WTO (2016)). These restrictions were dominated by trade remedy measures and an increase in import tariffs (especially the initiation of anti-dumping investigations and duties in the metal industry). For example, the EU slapped anti-dumping duties on Russian and Chinese steel imports. New import tariffs on Chinese steelmakers were also imposed by the USA (266%)² and the EU (up to 13%) in 2016 and 2017. At the same time, a series of anti-dumping duties were imposed by China, especially between 2015 and 2016, on certain products imported from the EU, Japan, and the USA (see Chapter 9). There are many other examples. Egypt raised tariffs on over 300 goods (as much as 60% rate) in December 2016. Brazil increased tariffs on tools and toys, and imposed a 30% tax increase on cars with less than 65% local content in December 2011. Imported cars were taxed up to 55% on top of import tariffs (*The Economist*, 2012). Such taxes were imposed on the pretext of foreign imports fostering a deindustrialization of the Brazilian economy. In some cases, the EU was concerned with discriminatory taxes imposed by countries such as Brazil providing unfair advantages to its local manufacturers. At the same time, the USA has dampened the migration of professionals and others into the USA, imposing on foreign banks (with interests in the USA) to control bank accounts that belong to any US or foreign national who pays (also) taxes in the USA. Trade repression, seeking to gate and maintain corporate affiliations and safeguard jobs and capital, has also been revived and applied either directly or indirectly. Malaysia and Saudi Arabia, in the case of a firm's downsizing, have made it a priority to lay off foreign workers first. Such information, although reflected on the aggregate in globalization indexes and sovereign states' trade data, is explored on websites (either truthfully or partly truthfully) that report deviations in foreign trade practices.

Globalization and global finance are thus subject to push–pull forces. A “push” for open frontiers and a gating “pull.” These have also unleashed two fundamental processes that have entered the political courses of sovereign states: *an equalization among countries, which we will allude to as a growth of entropy, combined with a growth of intranational economic inequality*, as well as a loss of jobs in the rich Western countries subject to growing internal economic inequality. These two trends are creating a new environment that challenges national policies as well as basic academic macroeconomic theories that, in fact, are embedded in political dogma; thus, traditionally, this is called political economics. Equalization is further challenging Ricardo's principle of trade (comparative advantage); since in a maximum entropy-equalized world all have the same capacities and the same needs, whether financial or otherwise, “comparative advantage” might be irrelevant when there are no boundaries.

Globalization and global finance have thus articulated a complex system of worldwide networks of strategic partners. This has become a two-edged sword: on the one hand, it contributes to a global economic growth and creates greater mobility for ideas, technologies, labor, the transformation of social systems, and opportunities for a global economic equalization and growth; on the other hand, it changes traditional advantages for some and puts global competition on an equal footing for others.³ Conventional finance, consisting of financial markets, credit risk and derivatives, corporate financial

² See more in WSJ (2016a).

³ For further discussion on globalization, its management, and conflicting issues such as inequalities, poverty, resource curse, debt burden, and other problems, see Wood (1998), Sen (2001), The World Bank (2001), Stiglitz (2002, 2006), and Schneider *et al.* (2002).

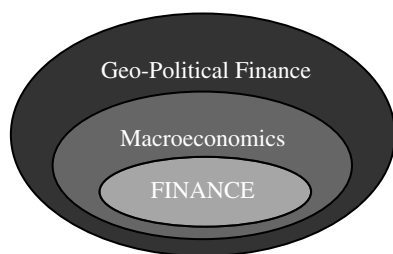


Figure 1.1 Global finance: geopolitical, economic, and financial.

management, asset pricing, and other areas, has thus become far more complex in its global context, which is also defined by geopolitics, macroeconomics, and the complexity of an unruly world, as shown in Figure 1.1 and Figure 0.1, and outlined in this book's motivation.

Foreign exchange (FX) markets have evolved over many centuries to reflect the transformation of exchange rate regimes, the power of creditor states, and the international agreements which have sustained the stability of economic, business, and industrial exchanges, and so on. For example, prior to the Bretton Woods Agreement, currencies were fixed. On the one hand, it rendered speculative bets on exchange rates impossible; on the other hand, it contributed to economic dislocations due to mispricing and therefore to arbitrage opportunities that allowed currency traders to profit immensely. Financial arbitrage practiced by macro-hedge funds has allowed for windfall profits arising from economic imbalances, forcing sovereign states to revalue their currencies at great cost. Current financial currency markets have, to some extent, mitigated arbitrage opportunities, which resulted from economies in disequilibrium. In some cases, through strategic interventions by central banks, sovereign states may contribute to, and by their actions cause, FX markets to become more efficient. In the past decade, with the strong growth of globalization, FX markets have been freed in responding to macroeconomic policies and the market forces of supply and demand; these keep currencies in tune with global finance. For example, in 2016, China's economic and financial vows led it to accept a more flexible FX policy by letting the yuan fall freely and rendering it more sensitive to the market forces of supply and demand. As a result, we may surmise that in an era of economic openness, gating policies, in this case the control of FX currency, may be self-defeating.

In practice, however, we witness a broad number of cases where sovereign states intervene in FX markets explicitly and implicitly (with some costly interventions). Many emerging commodity exporting countries have aggressively intervened to support their weakened currencies following the contagious oil price decline between 2014 and 2016. These interventions were motivated by both economic and political agendas and by the need to stimulate employment through exports, to attract foreign funding (or investments) to domestic development programs, and so on. In particular, geopolitical agreements with Iran allowing it to free its oil exports as well as the political conflict underlying the supply of oil between Saudi Arabia and Iran and other countries led to a political (rather than just economic) price "war." The IMF (2016b), in its annual review of currency regimes, found that only one-third of member countries let their currencies float and that less than half of them rarely intervened—rarely enough to be classified as free floating. Both a country's economy and its multinational and A-National

corporations' cash flows and returns are affected by fluctuations in FX prices and by the strategic interventions of sovereign states and their direct and indirect policies.

In recent years, the growth of back and front offices, along with financial technology, has contributed to the cross-border financial transactions underlying global financial markets. Such an evolution has grown and changed in tandem with A-National firms, international supply chains, and the evolution of political and economic agreements to regulate and streamline financial trades and international exchanges. At the same time, this has increasingly reduced the ability of sovereign states to gate and to regulate their financial markets and their associated complex financial transactions. Electronic markets (e.g., EURONEXT) and the proliferation of specialized financial markets have also bypassed and downgraded the capacities of sovereign states to regulate their own financial markets. In this environment, financial markets and FX have grown more independent, creating unique and global markets.

1.2 Trend and Challenges in Global Finance

1.2.1 Global Finance and the 2007–2008 Financial Crisis

The 2007–2008 financial crisis has awakened global finance to its global dependence and thus to its global risks. Nowadays, a trade on Wall Street can affect pensions in Norway, and where what was considered safe was in fact risky and therefore mispriced and without recourse. Global, systemic, and contagious events were proven, during the period from 2007 to 2008, to lead to disastrous financial phenomena (e.g., the loss of pensions, homes, jobs, and industries at national on an international scale).⁴ Traditional finance, based on the assumptions of markets' rationality, independent of sovereign states, the predictability of future economic preferences, the uniqueness of prices, complete markets, and no arbitrage, may thus have been wrong or at least misleading. As a result, sovereign states reassess the globalization process, its costs and benefits, and their own position within such a world. Consequences of such assessment may have led some sovereign states to conclude that an unhindered global finance may lead to a financial jungle. To tame it, policies such as gating, multi-agent strategies, and the pursuit of complex agendas were enacted. However, this current state of affairs engenders its own risks.

Current questions frequently raised are: Is globalization sustainable? Is globalization contributing to growth and development? Is globalization increasing or decreasing national and global economic inequality? Is globalization irreversible? Does globalization cause a disappearance of middle-class jobs in the USA? Is globalization leading to the pursuit of greater profits or to the increased well-being of the planet? In a global setting, can we value and price international assets and their exchanges with simple financial models? Can there be a dominant US dollar (USD), or are there challenges to the dominance of the USD as an exchange and trade currency? Are multipolar financial markets and conflicts avoidable? Are digital (crypto) currencies an alternative to national currency markets? Can they be regulated, and by whom? What are the consequences of multipolar FX markets? Are

⁴ For causes and consequences of the global financial crisis and its global recovery, see Reinhart and Rogoff (2009), Stiglitz (2010), and Blanchard (2010) for example.

currency wars unavoidable?⁵ These and many other questions are raised daily in the media, highlighting ongoing concerns and an awareness of the transformation of financial practice as taught and academically understood in classrooms. These are crucial and timely issues the world of business and finance are confronted by.

New facts are pointing to a greater role for emerging countries and to a global equalization; that is, to competition on an equal footing with developed countries. Equalization grows in many ways. On the one hand, historical trend of globalization shown by the KOF globalization index and illustrated in Figure 1.2⁶ indicates that the USA had

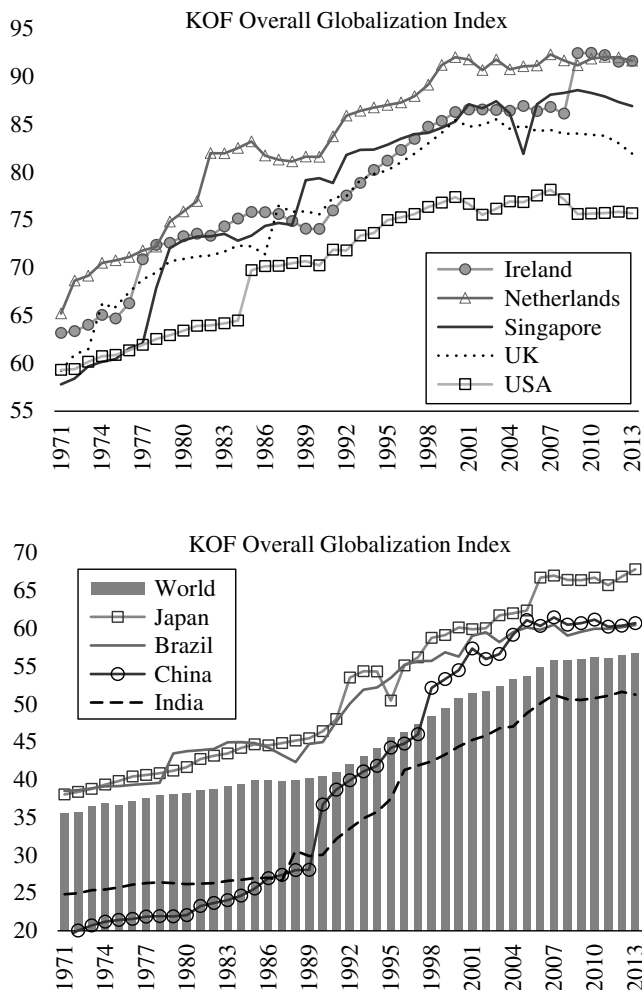


Figure 1.2 Globalization trend (KOF overall globalization index). Source: Data from KOF 2016.

⁵ For relevant discussions on some of these questions pertaining to globalization, financial markets, and instability, see papers by Lewis (1995, 1996), Krugman (2000), Stiglitz (2000), Rosenberg (2003), Blinder (2007), Boele (2002), Bruno and McLeavy (2003), Henry (2000, 2007), and Froot and Dabora (1999) for example.

⁶ For measurement of globalization, see papers by Lockwood (2001) and Kearney (2001) for example.

a gradual rise in globalization, but at a slower pace compared with other countries. Further, it has not shown much of an increase since 2000. On the other hand, countries that were less globalized in the 1970s and 1980s have increasingly become highly globalized. The migration of technologies, people, and industrial capacity, as well as the growth of financial markets and finance everywhere, is contributing to a global equalization process. Money, space, and time have become increasingly gateless, thereby maintaining an unhindered financial freedom and a preponderance and strengthening of A-National enterprises (whether large or small) trading across international and stealthy electronic networks. The pursuit of freedom and money thus leads to a transfer of know-how, jobs, and capital to access ever greater profits and, at the same time, to seek an independence of sovereign taxes, compliance, or collective responsibility.

These trends contribute to assertive corporate and national champions who expand their agendas and might globally. The Organization for Economic Co-operation and Development (OECD, 2014) provides a dataset on SOE sectors for 34 countries at the end of 2012. There are around 6 million employees working for the SOEs in these countries with a total enterprise value of over \$2 trillion. The number of employees of the SOEs in most countries has increased from the previous survey period; in particular, French SOEs' employees doubled, increasing from 0.8 million in 2009 to 1.6 million in 2012, with almost half of the employees in transportation, followed by the electricity and gas industries. Major sectors of SOEs by company value in OECD countries are in electricity and gas, finance, transportation, manufacturing, and primary sectors. For example, SOEs in the financial sector dominate in Japan, the UK, and the USA, as shown in Figure 1.3. Note that the listed entities are majority-owned. The OECD database does not cover China. We emphasize the importance of China's SOEs and analyze this in Chapter 6.

1.2.2 Geopolitics and Finance or Geo-Finance

Geopolitics has several definitions, but all involve relating politics, power, and geography. Its aim is to provide tools for political action and define a strategic framework within which sovereign policies can be articulated. Thus, it is the art of political possibility. In a restricted and financial context, it defines the framework under which foreign (and global) financial policies are formulated. It determines the strategic alternatives that commit financial resources based on geographic access to economic and physical resources (such as oil), profit centers, and the geo-risks they entail. Geo-finance, a relatively unstructured financial discipline, is then important both due to its complexity and for the globalization processes it underlies. Among others, these include political, collaborative, and gating policies.⁷

The premise that financial markets define unique asset prices (in their theoretical sense and across national boundaries through the assumption of parity among equivalent or similar assets and products) is increasingly seen to be imprecise. A research report compiled by the Royal Bank of Canada points to the growing complexity and the multiplicity of financial markets, driven by computer-based trades, and each pursuing its own agenda to augment its profitability (NYT, 2016). Currently, there are 12 official exchanges making transactions through intermediaries; each one contributes to the layering of financial trades that lead to multiple prices and to a stealthy environment where prices need not be

7 For further discussions, refer to research by Walras (1954), Rabin (1993), Henderson (1999), Alberto *et al.* (1997), and Nunnenkamp (2002) for example.

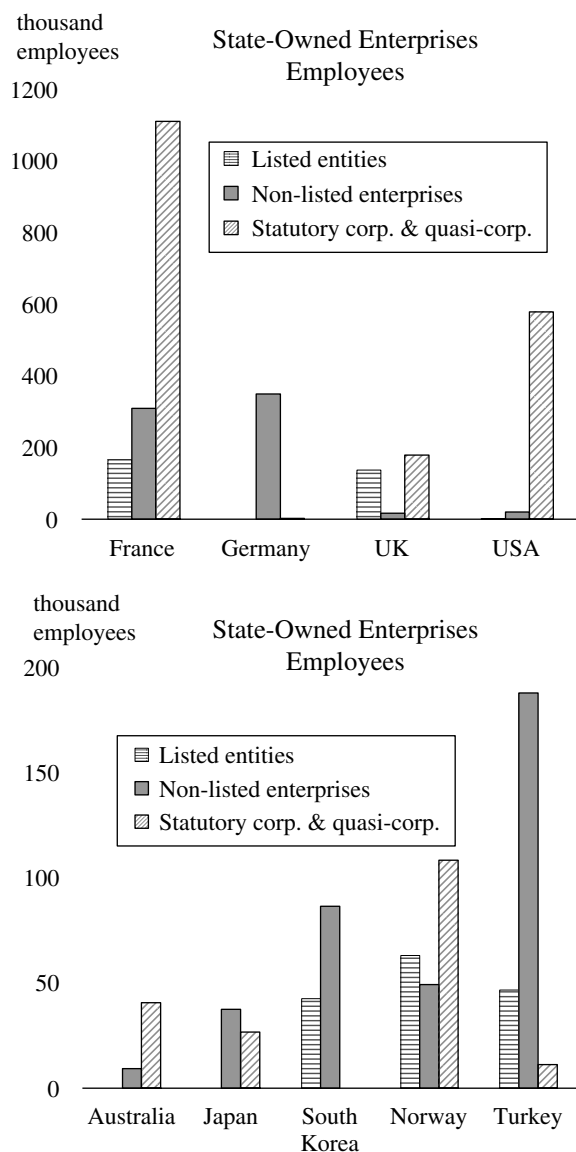


Figure 1.3 SOE employees as of 2012. *Source:* Data from OECD 2014.

the same for all traders. According to the Royal Bank of Canada, there are 800 pricing possibilities that generate profits mostly for a number of selected trading houses, determined by the volume of their trades and their exchange profits. The advantages of such trade houses are varied, and not limited to price only. Another advantage is the access to information and trading flexibility. On a global scale, these trading inefficiencies are augmented further by an increasing intractability of trades and the dominant role of large financial and global institutions. These elements raise risks that transcend the basic pricing of an asset in a specific financial market. In global finance, these inefficiencies are self-reinforcing and revealed only when financial crises erupt.

1.2.3 Population Growth

World population, currently over 7 billion, is predicted to reach 10 billion by 2050; this is also contributing to economic and socio-political transformations and migration. For example, countries endowed with large populations, such as China, have future prospects that will require large and long-term investments to meet local needs. At the same time, large populations provide economic opportunities for capital investors seeking returns. Symptoms of economic growth and economic equalization in emerging states are abundant, leading to a gradual departure of capital and well-paying jobs from the West to the East. At the same time, internal political challenges arise through the assumption of greater debt. Economic well-being is increasingly dependent on consumption at lower prices financed by increasing imports and maintaining lower domestic wages (and thus leading to a fall in domestic jobs with wages they cannot compete with). Economic and financial policies are, in their wake, becoming far more strategic and thus with colliding agendas. In this environment, financial reasoning based on ideals of rational expectations (i.e., based on an intertemporal financial equilibrium of demand and supply) is more difficult to justify. The axiomatic foundations of a complete market may not hold, and therefore economic markets may turn out to be less self-sustaining, more difficult to predict, and require financial and risk management to be far more in tune with real finance and its financial intents.

1.2.4 Geo-Finance and Gating

Geo-finance is defined by the growth of competing geopolitical groups that seek financial opportunities based on equal access to investors, traders, and financial markets. For example, the Eurogroup of countries was created for both political and economic reasons by first creating a common currency (to facilitate exchanges) to cement financial integration supplemented through political and fiscal integration (although a lack of fiscal integration has always been its Achilles' heel). On the one hand, its integration seeks to remove the risk of fratricidal wars with a political solution; on the other hand, it seeks to stimulate internal growth through an economic and political expansion of the euro. By the same token, trans-Atlantic market negotiations between Europe and the USA are not devoid of political concerns, encompassing the retreat of the USA as the sole dominant power (both politically and economically). The growth of Asian economies (e.g., China and India)⁸ and their economic clout and expansion led to intensive discussion that finally led to a tentative trans-Pacific trade agreement between the USA and a number of productive and economically significant Asian countries (under President Trump, the USA withdrew from this partnership in January 2017). Questions regarding these agreements, political or economic or both, have been raised and point to the interdependence of finance and politics. In such contexts, trade agreements, financial regulation, and tariff/non-tariff barriers are part of the macroeconomic and financial policies applied within political agendas. These relationships and interconnected financial-economic-geopolitical events are shown in Figure 1.4. The rise of Donald Trump as president of the USA has introduced economic agendas which underlie his political policies.

⁸ For further information, see articles such as by Neftci and Xu (2007) and Keller and Rawski (2007).

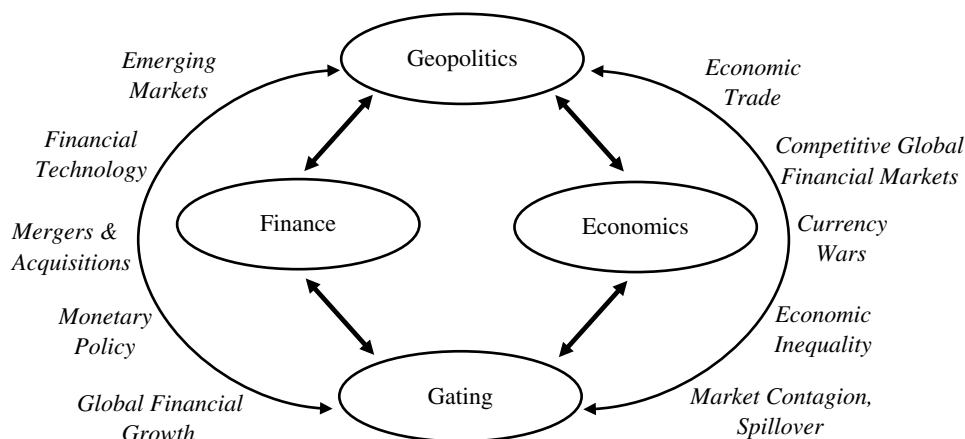


Figure 1.4 Interconnected financial–economic–geopolitical system under globalization and gating.

1.2.5 Culture and Social Norms

Culture and social norms are important elements that underlie globalization. For example, while the USA is sensitive to corruption and morality, as embedded in its constitution, it seeks to apply and export its moral arguments globally; that is, through US political means and global financial regulation. These cultural and social elements may alter markets with far-reaching economic and financial implications. At the same time, as discussed previously, sovereign states gradually lose the means to manage their own affairs by granting investors the freedom and the rights that would attract their interest to invest. Economic trends including the reduction of tariffs on trade (from a tax of 45% in 1947 to 3.7% in 1993) and the removal of non-tariff barriers are such examples. According to the World Trade Organization (WTO) Statistics Database on Tariffs (WTO, n.d.a), the current average tariff rate on imported agricultural products is 5% in the USA, but are 14% in Japan, with higher tariffs on sensitive products such as rice, dairy (32%), beef (38.5%), pork (8.5%), and wheat (25%) in 2015 (see Table 1.1). Other countries

Table 1.1 Import tariffs on agricultural products (%).

	Japan	USA	EU	China	India	Brazil
Meat of bovine animals	38.5	16.1	—	14.7	30	10.7
Frozen domestic ducks	9.6	—	—	20	30	10
Meat of swine	8.5	—	15.4	25	30	10
Milk and cream in solid forms	32.5	17.5	—	10	30	24
Wheat starch	25	—	—	20	30	10
Sweetcorn	10.6	14	—	10	30	10
Cocoa powder	22.4	7.5	8	10	30	18
Birds' eggs	10.5	—	7.7	12	30	4.8

Source: Data from WTO Statistics.

(e.g., India) have high tariffs, whereas the USA, the EU, China, and Brazil have much lower tariffs or no tariffs on many of these products. Japan has concluded several free trade agreements with countries, including Australia, India, and Mexico.

1.2.6 Emerging Economies, Equalization, and Risks

Emerging economies are striving toward equalization in their abilities to compete globally. Gating by sovereign states that seeks to counter global exchanges through regulatory and discriminatory policies and directional incentives have set the stage for strategic credit risks (see Chapter 4), thus pitting globalization and sovereign gating policy against those programs that seek to safeguard national advantages and pursue economic and political agendas. Such a process has underlain the evolution of globalization ever since the launch of the Industrial Revolution, fueled by the diffusion of sectorial technologies, with A-National firms and investors seeking greater economic freedom, greater access to global markets (through foreign intermediaries), higher yields, and less controls in expanding their might globally, regardless of their national origins. Equalization of means and capacities across nations and globalization is thus a self-reinforcing mechanism that reduces comparative advantages—both in technology and know-how. Financial technology is assuming a greater role in increasing the efficiency of global finance, but is also introducing new risks. For example, internet technology makes it possible to spread false information, contributing to contagion, and causing investor losses. Using the same technology, big data weakens those who do not wield it. Additionally, transparent and open information is easy prey to trolls who sell it to those who can use it. These provide, then, opportunities and information asymmetries that, in some contexts, may be equated with insider trading. In this environment, finance is inefficient.

These developments are reflected in the financial indexes of emerging economies. For equities' performances, we refer to the MSCI Emerging Markets (MSCI EM) index. This index covers 23 emerging markets with country weights of 28% China, 15% South Korea, 12% Taiwan, 9% India, 7% Brazil, and others, according to MSCI (2017). MSCI EM index's volatile movements correspond to both domestic and international macroeconomic factors. Sharp drops in these indexes occurred during the global financial crisis of 2007–2008 as well as the Asian financial crisis of 1997–1998, reflecting the increased global interdependence of economic activities around the world.⁹ For example, weak currencies, slow economic growth, fiscal deterioration in some emerging countries (e.g., Russia and Brazil), and the plummeting of oil prices in 2014–2016 have contributed to the drop in the MSCI EM index with a sell-off of emerging market equities. These drops resulted from global economic, political, and financial patterns in commodity prices, and from political realignments in the Middle East rather than local economic issues.

Indexes' risks and returns can be calculated using MSCI data for overall emerging markets, as well as emerging regions of Asia, Europe, and Latin America. Latin American emerging markets are very volatile with very high risks and a standard deviation of returns in three digits since the early 2000s. During the financial crisis of 2007–2008, returns turned negative for all these regions with extremely high risks (even reaching

⁹ For analysis comparing the Asian financial crisis in 1990s and the global financial crisis in 2000s, see Andrew (2009) for example.

four-digit standard deviations of up to 1200% in Latin America). These statistics, of course, are not static, as they change over time following international and domestic trends and events. In this sense, global economic and financial states are in an off-equilibrium state, manifested by a continuous change.

1.2.7 Regulation and Politics

Financial institutions are currently affected by the complexity of US regulation and its outreach. For example, suppose that there were 7000 regulations that govern financial and bank compliance. In this case, the probability of being noncompliant would be extremely large, regardless of the efforts and the expenses that the firm undertook in order to be fully compliant (see Chapter 10 for a technical development). Such regulations imposed on banks often invite retaliation by sovereign states, discriminating between customers based both on wealth and deposits, and their origins. As an example, consider the preventive measures by retreating from businesses and markets—a preemptive strategy in the face of US regulation (*The Economist*, 2014). For example, the Red Cross transfers funds to help the displaced and alleviate tragedies in places such as Syria and other countries that are violating US financial regulation and thus became noncompliant, and running the risk of extremely large penalties. Further, the \$110 billion collected as penalties pertaining to the mortgage bailout has, in fact, been used mostly for self-government and intractable expenses (WSJ, 2016b).

1.3 Global Finance and Trade in the Media and News

Media are filled with pronouncements and problems regarding global finance. A number of examples are presented in the following sections.

1.3.1 Taxing Foreign Returns When They Are Repatriated

US firms have acquired profits internationally; this has caused them to turn to foreign M&A (mergers and acquisition) to avoid tax liabilities in the USA. For example, the acquisition of Skype by Microsoft in 2011, for \$8.5 billion, was paid from Microsoft's foreign cash reserves. Repatriating these profits to the USA would have entailed a tax rate of 35% they would have preferred to avoid. Many US firms with billions of dollars of earnings in foreign countries have contributed to global reinvestment and global growth of A-National firms. Are US firms at risk of foreign retaliation? Are such actions leading to the migration of American firms?

1.3.2 Sovereign Gating and Protective Tariffs, Trade Defense

In response to illegal subsidies provided by the Chinese government, the EU announced its decision to raise tariffs on Chinese high-end glossy paper exporters in May 2011 (see FT (2011)). Until then, the EU had imposed tariffs on countries that were dumping their exports (i.e., exporting at unjustifiable low prices). The EU's trade defense action's intent was to provide a signal that the EU would protect its high-end industries while essentially giving in to China's dominance of low-end and labor-intensive industries.

1.3.3 Global Insurance and Dependence

In 2012, Florida's residents were made to pay far greater premiums to be insured against hurricanes. This was not because of potential and costly hurricanes in 2011, but due to the extraordinary earthquake devastation in New Zealand and the deadly tsunami in Japan. In other words, in a global world with global insurance firms, events everywhere affect the overall risk premium we have to contend with. This is the case not only for insurance firms, but also for banks. Both Iceland's and Ireland's economies collapsed in 2009 not because of the domestic situations in these countries, but due to local banks that had become international and operated globally assuming risks in the mortgage-backed securities and engendering financial obligations that they were not able to meet.

1.3.4 Finance and Politics

At the G20 meeting in 2011, questions were raised about the US and Chinese modes of "participation in an international process that will review the risks that major economic powers pose to each other as well as to the global growth and its development" (NYT, 2011a). What are the intentions of such questions? As quoted in the same *New York Times* article, on the one hand, they hoped to "raise international pressure on China to stop increasing exports by keeping its currency artificially underpriced." On the other hand, the world might criticize the USA for its large current account deficits that fund its massive consumption and affect the price of its currency. As a result, each party necessarily has its own political agenda, sometimes resulting in gating, but at other times in collaboration. These events attest to the competitive nature of international and financial markets. They highlight the effects of taxation on capital flows: the strategic actions assumed by countries to maintain or gain competitive advantage. They also point to simple acts and events that can perturb the global business climate. Most governments' actions today, whether explicit or implicit, have global effects. Finance is thus derived from the information that emanates from the evolution of national interests and their consequences on global markets.

1.3.5 EU-US Regulation Risks in a Trans-Atlantic Market

Both the USA and the Eurogroup run risks in settling their differences while participating in a Trans-Atlantic market. For the eurozone, risks pertain to the protection of jobs (much weaker in the USA): a degradation of workers' collective rights and unions and weaker control of technological innovation (in agro-production, etc.). While in the euro world preventive measures are taken ex-ante, in the USA, most of the time, these measures are taken ex-post, after a disastrous event occurs. In the USA, it may result in restrictive immigration policy. A greater concern for sustainability in the eurozone (e.g., animal rights) compared with the USA (e.g., the reduction and protection of social services such as health care and transportation) is that they may become liberalized if the US approach to business is imposed. The trans-Atlantic market, with US firms demanding the opening of these markets, anticipates increased unemployment in Europe (as jobs will no longer be protected), the loss of confidentiality of data, submission to stringent rules and laws on intellectual property (which are weaker in Europe), and finally euro states will submit to a judicial system that may become far more tolerant of A-National enterprises.

For the USA, the challenges are important. For example, current financial and other regulations set by the USA and applied globally may face retaliation globally, and thus choke financial globalization. It may therefore be amended at some future time to account for resistance to being subjugated to the US regulatory rules. These may require a revision of the Volcker rule, of the Dodd–Frank regulations, a reintroduction of the Glass–Steagall Act of 1933 (ended by Congress under Bill Clinton’s administration), other related regulation. Finally, even the USA will have to submit to the legal rules that the eurozone’s A-National enterprises will bring to courts (not necessarily in New York or other US courts). As long as there will be broad differences, globalization will, necessarily, be in turmoil.

Evidently, these elements are to be accounted for by financial advisors and financial traders through their decisions to/not to invest, and in what and where investments are to be pursued.

1.3.6 Rare Earth and Strategic Trades

Supply constraints on strategic input factors have become one of the means to pursue both economic and political agendas. Rare earth minerals have attracted attention owing to their necessity for technological products; their mining in China accounts for over 95% of global production. Rare earth elements are needed, for example, for electronic items (such as tablet devices and wind power) and used in an extensive number of military items (NYT, 2010). However, production and exports of rare earth minerals have contributed to a number of pressing issues due to risk externalities. Explicitly, the extraction costs of rare earths are high and generate much pollution. Given their strategic importance, they can also be used as a political weapon, being supplied to some countries while being withheld from others, thus adopting discriminatory pricing and supply practices. Their extraction costs and related pollution have contributed to some rare-earth-rich countries (e.g., USA and Australia) foregoing their extraction, thus letting China gain a specialized monopoly. This situation has contributed to price discrimination in rare earths trade, with a price increase in dysprosium (a specific rare earth used in electronics) from \$6.50/lb in 2003, to \$132/lb in 2010. With such prices, a black market and illegal mining have set in, bypassing national and environmental controls. This has also led to a crackdown on illegal mining in order to institute both greater environmental controls and obtain a better political and economic control of rare earth exports. Keith Bradsher states (NYT, 2011b):

China has long used access to its giant customer base and cheap labor as bargaining chips to persuade foreign companies to open factories within its borders. Now corporate executives say it is using its near monopoly on certain minerals—in particular, scarce metals vital to products like hybrid cars, cell phones and energy-efficient light bulbs—to make it difficult for foreign manufacturers of high tech materials to build or expand factories anywhere except China.

Companies can continue to expand their factories domestically, but may be subject to both price and supply discrimination that differentiates between domestic and foreign buyers and between foreign countries. Such practices are probably violating global trade rules. It is not clear, however, how they may be enforced due to China’s current political and economic clout. On September 16, 2011, China clearly indicated that it was

assuming full control of its rare earth mining and used its control for geopolitical ends. Since then, alternative sources of supply (e.g., Australia) have been developed to meet the demand for the mineral. At the same time, economies have reduced the demand for rare earth minerals, resulting in falling prices.

1.4 Global Risks

Financial risks are mutating, assuming many forms and becoming less amenable to the common methods we use to measure them. For example, while in a world lacking a basic (safe) and reference currency or a truly acceptable and agreed upon basket of currencies, the stability of currency markets is at risk. Instead of free and transparent markets, sovereign states may intervene through regulations and gating policies to maintain the stability of their currency. However, these actions have consequences. For example, in August 2011, Japanese intervention in its currency markets, in order to weaken their exchange rate against the dollar, eroded profits of its industrial champions (WSJ, 2011). This intervention followed a decision by the Swiss central bank to push down the value of its currency, slowing a spreading global response to a renewed economic weakness in the USA. Further, on October 11, 2011, the US Senate passed a bill that required the Treasury department to impose tariffs on certain Chinese goods if China continued to manipulate its currency—see NYT (2011c). However, as national economic environments have changed, these policies have also changed. Such actions are both political and economic, articulated with economic and financial tools which can be used strategically by trading nations. Similarly, an increase in complex and extensive sovereign regulation applied unilaterally and globally may contribute to greater confusion in the business of finance.

1.4.1 Factors Affecting Global Risks

Global risks are challenging finance theory and economic and financial management. They are compounded by countries' cultural, political, and eco-financial diversities and risks and result in a complex amalgamation of risks, which will be partly addressed in Chapter 10 (on financial compliance and regulation). A summary of factors follows:

- 1) **A multipolar world.** Competing financial markets combined with financial repression (taxation and local regulation, gating trades and other exchanges, applied locally and globally by some sovereign states). An increased transformation of national corporate entities into A-National firms evading national jurisdictions.
- 2) **Volatile and competing currencies areas.** Currencies' volatilities are amplified by USD fragility or resilience as well as national economies' performances, their interest rates, and their policies and politics. Ever since World War II, the USD has been a reference currency used to price assets and commodities globally. The USD dominance has led creditor nations (e.g., China, Japan, UK, and the rest of the world in smaller amounts) to indulge the US debt by holding extensive reserves in US dollars. When foreign nations hold US debt, they then have a strong incentive to see the USA succeed so that their dollar-denominated bonds become valuable. A retreat in the USD has, however, increased the credit risk of dollar creditors, augmenting the fragility of international exchanges. Thus, under an unviable and safe currency, the

global financial system and trade can falter. In this environment, competing currencies areas define FX prices, with potential currency wars (i.e., with a greater currency volatility) as well as augmenting the currencies' risks.

- 3) ***Flight from risk.*** This arises due to weak and uncertain yields in equity markets. It also contributes to a flight from globalization, a lack of financial liquidity, dampening economic growth and innovation. In such an economic environment, global risks might not be diversifiable. Global investments, usually where they are needed the most, are then reduced. In other words, a misunderstanding of global risks can contribute to their being overstated and may, in fact, increase global risk.
- 4) ***Global environmental risk.*** Creeping desertification, global warming and changing weather patterns, water shortages, population growth, and other environmental problems alter the economic, political, and social landscape for global finance. Contagious migrations, grass roots movements, and tyranny of minorities contribute to "re-evolutions" that pit political agendas internally and externally against each other, providing new sources of economic and financial instability.¹⁰ In global finance, these assume a political risk premium.
- 5) ***Statistical and contagious dependence.*** Statistical dependence arises when the events in one country correlate with the events in another. A contagion arises, however, when one event not only correlates with, but triggers a statistical succession of other events. For example, consider the US economic well-being and its debt. A downgrade of the US economy can obviously have an impact on all of its trading partners (the world) and their dollar reserves. A contagious failure in one state is thus a threat inducing failure in another. States intervening to seek advantageous terms in trade through tariff and non-tariff barriers, quotas and taxes on imports, and incentives for exports can also cause contagious retaliations by other countries—with countries locked into costly retaliatory processes. By the same token, downgrading a whole banking sector subject to increased regulation may induce a tightening of its loan standards and anti-cyclical value-at-risk requirements that further dampens their ability to lend and make profit (and thus induce a greater probability of failure).
- 6) ***A persistent transformation of information technology (IT) and cyber-financial risks.*** Technology risks are based on the global leverage that information and misinformation technologies provide in addition to their social global outreach and cyber-risks. IT has contributed not only to instant global networking and distance-free communications and exchanges, but also to an increased complexity through networking; the liberalization of exchanges and stealthy exchanges that are difficult to regulate. In this environment, regulation of rogue financial transactions can be hard to control—increasing globalization, on the one hand, and contributing to sovereign state gating, on the other hand. By the same token, IT has been a social and networking two-edged sword: not only contributing to global social outreach, but also exposing both firms and societies to the scourge of cyber risks.
- 7) ***Information and power asymmetry.*** Moral hazard and adverse selection allow the few informed or powerful to profit at the expense of the many. Global finance requires global information and control on a global scale, and therefore financial agents and insider agents may have advantages that others do not have. For example, IT provides opportunities to powerful A-National firms as well as incentives to evade restraints in

¹⁰ For analysis on financial instability, see, for example, Minsky (1992, 2008).

their pursuit of growth and profitability. These contribute, potentially, to economic inequalities within countries arising from global and stealth profitability.

1.4.2 Global Finance and Risk Theories

Global risks are amplified by multi-agent, political, economic, external, and natural risks. Traditional financial analysis is based on theoretical assumptions that do not hold in a complex and interdependent environment. From a fundamental point of view, pricing is defined by value and opportunity to exchange with no arbitrage. These are translated into three essential assumptions:

- predictable asset's state preferences (future state prices are assumed known);
- a reference measure is used to price assets (such as a risk-free rate or a basket of currencies with a known price with respect to which assets are priced);
- market rationality that defines a unique equilibrium.¹¹

When any of these assumptions is lacking, markets are said to be incomplete and a unique market price for exchange cannot be set. In other words, complete markets' finance is not applicable and is essentially a model of economic–financial parametric equilibrium used by financial engineers to estimate parameters in an implied model based on available price information. Today, financial firms recognize that “no one can fully predict tomorrow's risks. But in today's fundamentally changed investment world, the risks are less foreseeable and more misunderstood than ever—and can cause lasting damage” (NYT, 2012a).

In the case when future events are unknown, and therefore unpredictable, probability distributions defining these events are incomplete. In physics, such situations are referred to as non-extensive systems. The calculus of probabilities requires that we define a mechanism to complete the probability distribution with all its probabilities summing to one. This terminology was coined by Knight (1921) as uncertainty, which he compares to risk when future events have known states and known probabilities associated with these states. In global finance, subject to many interacting economic models, these problems are more difficult to analyze.

Information regarding a reference asset (e.g., a risk free bond) or another related, but derived asset (e.g., various equity options with a common underlying stock and therefore a common source of risk) is needed to define a future price that is consistent with the financial model we use, as well as with all the information available regarding the asset.¹² Again, when such information is insufficient due to markets' complexity and future events and their consequences—ignored or presumed unpredictable—it is then much more difficult to price assets and pursue exchanges that presuppose an efficient global market. A greater understanding of these issues, as amplified in subsequent chapters, will provide a greater awareness and understanding of their consequences, albeit not necessarily providing resolution to that complexity. In Chapter 7, we shall suggest that, lacking a complete FX theory for pricing, we may consider the reciprocal tracking of FX and their baskets that best define and contribute to a sovereign agenda.

¹¹ For a discussion on the rational market, see Fox (2009).

¹² For research on risk theory, risk and uncertainty, international diversification, global stock returns, and other related issues see Knight (1921), Arrow (1965), Heston and Rouwenhorst (1994), Fontela (1998), Jermann (2002), Hoxha *et al.* (2009), and Hou *et al.* (2011).

1.5 Global Finance, Swaps and Financial Products

Swaps are, in principle, extremely simple. They entail an exchange between two parties or entities that have a common interest to engage in an exchange. Swaps are particularly important in global finance due to an increasing number of international and currency transactions, as well as with a large number of off-market transactions. For example, the barter agreement between two countries is, in fact, a swap contract. Another example can be a US firm seeking to sell an aircraft to a Romanian airline, thus engaging in an exchange where payments for the aircraft will assume many forms distributed over specific industrial activities; for example, the sales of agricultural products and/or payments distributed over time in multiple currencies. Similarly, if a party in France has euros but needs dollars to acquire a firm in the USA and it can find another party in the USA that has dollars but needs euros for another transaction in France, it may engage the two parties directly or indirectly. If the engagement entails a direct exchange it may be called an over-the-counter (OTC) exchange. If it is engaged through an intermediary (e.g., a broker that facilitates the exchange at a fee), it is an indirect contract. In such cases, brokers may act as market makers, profiting from both the spread and the trades they are able to engineer. By the same token, the French party buying dollars in the FX market is also involved in an indirect contract, but with a counterparty which is in fact, a financial market for currencies.

Financial swap products are engineered contracts that allow a personal exchange between parties. These products may involve guarantees that the counterparties to the contract will meet their obligations. To assure these obligations, a legal framework is defined that may be or may not be enforceable. Such exchanges may also be controlled by a third party, such as a government that would tax transactions or merely track transactions for other purposes (such as stealth money flow, and terrorism). In a global financial world, both the complexity and the number of purposes for which financial products may be engineered can be extremely large.

For convenience, we may categorize these products and their functions as follows:

- bilateral contracts or OTC;
- administered bilateral contracts (such as those handled by a broker, a dealer, or a regulator);
- freely market-traded products, albeit we may consider a regulator as an associate to the contract that makes no money but is assumed to maintain the legality of the contract.

For example, in real estate, when a transaction is assisted by a broker/agent, a fee is paid to the real estate agent—the intermediary. Homes may also be sold at an auction with buyers submitting bids to an auctioneer following specific rules or packaged as a portfolio which is then sold freely through a financial market and its property shared by the buyers of denominated shares in such a portfolio. Similarly, swaps underlie an extremely large variety of financial products exchanged between domestic and foreign partners or exchanged globally through financial markets. Such markets may further define derivatives such as options and swaptions (options on swap contracts). Credit products, including foreign debt, may be treated similarly, just as currency can be interpreted as a credit granted by the holder of the currency to the sovereign state issuing such a currency. Swaps, debt, credit, stocks, bonds, and so on thus underlie

an extremely large number of tailored swaps. Swaps might therefore be exchanged for the following reasons:

- each party of the transaction has a perceived need or advantage;
- some of the parties may be better informed or able to assess value and therefore have an exchange advantage;
- markets are complete and therefore each exchange is fair to all, and reflects aggregate values.

Historically, a financial swap was created first in 1970 in the UK to circumvent FX controls and taxation that sought to prevent an outflow of capital. Previously, this was done by pairing two firms in different countries. One would agree to borrow locally and have the funds transferred to another, and vice versa. In this manner, none had any FX transactions. The evolution of such transactions to be administered by banks and other financial firms as intermediaries led to what we now call cross-currency swaps and interest rate swaps. These institutions, in fact, acted for a fee as brokers, while in other cases they became dealers—namely, market makers, helping to satisfy demand for such transactions.

The first currency swap was written in 1979 between the World Bank and IBM with Solomon Brothers as their intermediary. Their development led to commoditized (or standardized) transactions which, unlike OTC transactions, do not involve only a bilateral contract in which two parties (or their brokers or bankers as intermediaries) agree on how a particular trade or agreement is to be settled in the future. OTC markets are sometimes referred to as the “dark market” because OTC prices are neither published nor regulated. OTC derivatives, however, unlike traded swap contracts, may be used to construct a perfect hedge since traded standardized contracts are one-size-fits-all instruments that do not have as much flexibility as OTC contracts have. With OTC derivatives, though, a firm can tailor the contract specifications to best suit its risk exposure. OTC derivatives have counterparty risk; that is, the “other side” may default prior to expiration of the OTC trade. This is not the same as credit risk, where default is explicit in the contract. Thus, OTC products naturally incur liquidity risk not seen in standardized products. By definition, the OTC market does not have a formal “market maker.”

In fact, swaps and OTC contracts can be structured and be extremely complex due to the multitude of wants and needs that parties have, as well as the logistical problems they encounter in engaging counterparties. As a result, a multitude of swaps and OTC contracts are tailored to meet markets, brokers, dealerships (intermediaries), and individual demand. The Bank for International Settlements (BIS, 2016a) provides detailed semi-annual data on outstanding global OTC derivatives for the 6 months ending each June 1 as the first half (H1) and at the end of December as the second half (H2) for each year. These contracts’ gross market value surged from only a few trillion dollars in the early 2000s to a peak of \$35 trillion (H2) and \$20 trillion (H1) in 2008, but declined to \$15 trillion (H2) and \$21 trillion (H1) according to BIS (2016a, 2017). Popular derivatives include interest rate contracts, accounting for around 70% of total contracts, and FX contracts, which represent around 16% of such transactions (see Figure 1.5).

A brief list of variables defining such contracts may assume to include:

- currency, interest rates, commodities, financial commoditization, securitization;
- broker, dealer (market maker), and institutionalized and engineered financial markets portfolios, ETFs (firms such as BlackRock and many others have created these for a plethora of financial instruments and markets);

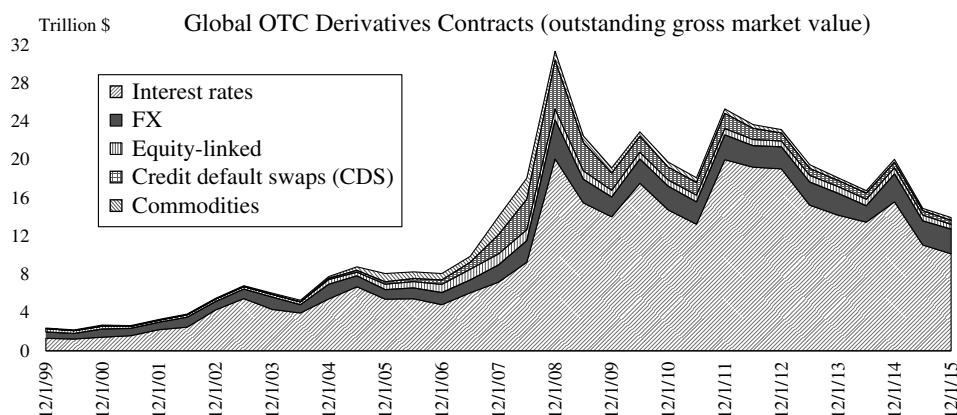


Figure 1.5 Global OTC derivatives contracts (semiannual outstanding gross market value). *Source:* Data from BIS 2016.

- time and money (debt, future returns);
- contracts, options (swaptions) as well as spreads and exotic options.

Subsequently, in Chapters 7 and 8 we will consider approaches to their valuation and pricing.

1.6 Currencies and Liquidity

An exchange rate is a relative price between two currencies that facilitates the exchange of one currency into the other. In antiquity, bronze coins were used as a medium of exchange, and therefore the legal tender of a currency was the metal minted. Subsequently, silver and gold were used and have since assumed a far greater importance. These coins provided the liquidity needed for economic exchange and development. Following the discovery and conquest of the Americas by Spain, silver and gold provided the liquidity to both its economic development and financing of their wars of conquests. Wars pursued by Spain strained its economy, leading to a growing indebtedness that contributed to the waning of its power. The silver and gold it held could no longer provide the liquidity needed to maintain its dominance (note the similarity with the financing of wars by the USA and its ability to sustain the price of the dollar and its global dominance). Today, money is liquidity, and therefore a sovereign state printing money increases its domestic liquidity. When its currency is recognized as a legitimate reference or safe exchange currency it may also contribute to a global liquidity. However, holding a denominated currency also entails FX risk, especially when such a currency is devalued due to political or inflationary forces. It can also be a speculative investment when the currency becomes stronger in value. Thus, currency is a *financial asset*.

The demand for liquidity has been an ever-present fact. Historically, it led to the rise of the Bankers Dynasty in Florence (the Medicis) and in Milan (the Sforza), both developing IOUs as legal tender, which were paper obligations. It has created paper money as an expanding medium of exchange. Paper money could then be redeemed by the Dukes

of Venice, Sforza, and Venice. The paper created credit. Holding on to these paper obligations incurred necessarily credit risks, since dukes and their banks might not, in certain circumstances, meet the obligations paper money entitled its holders. Subsequently, Dutch and British banking dominance strengthened due to a financial innovation: reserves deposited in banks and financial markets to engineer and expand credit liquidity. This has led to the monetary system still currently in place and represented by the central banking system. Namely, a paper-based financial system arose based on the implicit fiduciary trust in the banking system. This trust has provided the required liquidity and the guarantees to holders of paper money. These guarantees assume many forms; for example, certificates of deposit that may or may not be safe, Federal Deposit Insurance Corporation insurance, which in some banks insures deposits up to \$250 000, and so on. All of these are “money” and are priced to determine the currency of the country. The FX rate, therefore, expresses the relative trust one bestows on one country compared with another. As in past centuries, currencies used as paper money were priced by the relative trust in the value of the paper their creditors held. The FX price associating one currency with another therefore represents the relative and mutual trust of both the creditors and the debtors (countries) in a currency, reflecting the sustenance of its value and its risks.

Increasingly, attention is given to digital currencies providing an alternative denomination to the USD, thus evading its stringent regulation. Bitcoin and its technology have attracted some interest (mostly in the media). For example, British Barclays PLC together with Circle Internet Financial Ltd, is offering a free mobile app for receiving and sending British pounds. Through this digital currency exchange, US dollars and British pounds are exchanged to bitcoins and converted back to these currencies for the recipient. At the same time, big US banks are testing block chain, which is a bitcoin technology for swaps (e.g., credit default swap). It still has technical drawbacks that render it far from being accepted as a virtual currency or money that can be exchanged for currencies backed by sovereign states.

Paper money and FX prices are closely related to trade, terms of exchange, and their derived prices for credit and globalization. The FX rate is the price we ascribe to another country’s paper money (as determined by financial markets). A stable FX rate is, thus, important as it allows lending and borrowing across nations with different currencies and trade. What happens when a country’s debt increases beyond its ability to service debt? It increases its obligations and reduces its freedom to manage its own affairs and leads investors to invest in other countries. This contributes to a currency run and therefore to the currency’s devaluation. In such cases, when a nation overprints paper money, it squanders its resources and becomes politically irresponsible; thus, its currency becomes risky. In other words, FX risk arises due to the lack of trust by global parties in the sovereign policies of the debtor currency, among other causes.

Currency and FX involve risks, including essentially:

- **Market-related risks:** When FX markets are unable to settle at a particular price for a currency, they become volatile and potentially extremely risky. For example, when Argentina could not reach a price for the FX rate, it simply resorted to pegging its currency to the dollar, with immense economic consequences. Similarly, Switzerland, faced with a flight from the dollar in September 2011, pegged its currency to the euro to stem the Swiss franc’s appreciation and salvage its export industries.

- **Currencies and credit risks:** Under the Bretton Woods agreements (which we will summarize in the following), dollar holdings could be redeemed at the US Federal Reserve Bank in gold, with a price set to \$35 for an ounce of gold. Since 1933, gold has been removed in the USA as legal tender. Instead, the currency debtor obligations are backed by the country's goods and services that can be met by buying or exchanging the currency held. When a country's price level changes (e.g., due to inflationary pressures), its exchanges are increasingly regulated, and/or the safety of its obligations is affected (e.g., the downgrading of sovereign bonds), and so there is FX risk due to holding of the weakening currency. Thus, for all countries, the strength of a currency or its weakness is relative to both global and alternative opportunities and to other countries' economic states. Economic growth, inflationary pressures, financial regulation and repression in FX, employment levels, balance of trade and payments, capital flows, import and export trends, interest rates, political stability, political clout, and other indicators are then part of a multitude of factors that intervene in determining a currency's exchange rate and its credit risk. Chapter 8 will provide a technical approach to pricing credit risk.
- **Counterparty-related risks:** These risks result, for example, from financial repression applied to trade, a power asymmetry that a sovereign state has over others, a concerted manipulation of FX prices, and so on. It may happen when a country is economically irresponsible or untrustworthy. In such cases, expropriation of assets, moral hazard, and adverse selection risks arise and trades make currencies to be inherently risky.
- **Latent and external risks:** Such risks may be rare events, such as the tsunami and nuclear meltdown that occurred in Japan in 2011, or latent and stagnating macroeconomic factors that take time to be detected; when they occur they have a particularly strong impact (such as the mortgage-backed securities crisis and the liquidity financial and contagious crisis that emanated from the USA).¹³ These events have affected currency holders (such as China, Japan, and other countries with extremely large reserves of USD). These are particular risks, since when they occur they also affect a country's economic health and thereby the pricing of its assets. Such risks, however, are not easily defined or predictable, and are not therefore diversifiable.
- **Default model risks:** Such risks arise from misconstrued currency pricing models that are mostly based on few economic factors, giving only a partial assessment of the extent and the depth of dependency in a globalized financial and economic world. Furthermore, while the law of one price (LOOP) is a convenience we use to derive theoretical prediction of FX, in practice it might not reflect the real behavior of FX prices. In Chapter 7 we shall consider both application of the LOOP and departures from some of its assumptions.

Questions and Problems 1

Discuss the reasons that led to euro risks due to excessive indebtedness by some countries in the eurozone area (e.g., Greece). What are the repercussions for the euro FX rate and what are the consequences for other countries in the eurozone (e.g., France and Germany)? In particular, discuss what happens to capital flows and investment in

¹³ For analysis on financial contagion, see, for example, Allen and Gale (2000) and Soros (2008).

each country involved and why. What is the price of a loan one ought to assume to meet the obligations? What are the economic and political alternatives to the leading economies in the eurozone?

1.7 Foreign Exchange Regime and Markets, Global Payment, and Reserve Currency

FX markets are used as a platform to trade, invest, speculate, and exchange currencies and their derivatives. Thereby, they contribute to the determination of FX rates. As of 2016, these are huge financial markets with over \$5 trillion being traded every day, providing both profit opportunities and risks for exporters and importers, international investors and speculators, and all economic agents affected directly or indirectly by globalization. FX rates have become a derived asset class which is difficult to manipulate by any specific agent, and is a function of different factors that contribute to the demand and supply of a currency. A country's macroeconomic fundamentals, such as GDP, debt and its fiscal policy, political environment, international and hazard risk events and attitudes toward globalization, are some of the factors that are used to explain and predict movements in these prices. FX rates, as a derived asset class, also allow investors and speculators to bet on the future states of world economies and, therefore, the economic parties to globalization. Financial bets can assume many forms; for example, buying long or short certain currencies, importing or exporting materials, commodities, or finished products, investing in foreign firms or international projects, as well as speculating on sovereign debt through buying and/or selling sovereign bonds. As we can see, these are an extremely diverse set of asset classes traded in continuously growing financial markets. Spot FX, treasury bonds, and their derivatives (such as forwards, futures, and options on bonds) are traded on exchanges in London, New York, Tokyo, Frankfurt, Zurich, Hong Kong, and all over the world. These financial markets, their trades, and prices reflect:

- the underlying geopolitical, real, and financial macroeconomic fundamentals of a country;
- the degree to which a currency is accepted and used as a reference asset in trades;
- belief and acceptance of a currency based on its issuing state's economic and political clout and reliability;
- the underlying financial credit and investment risks (and consequent ratings) associated with a country's currency.

Disparities between macroeconomic, microeconomic, and financial approaches can lead to different prices. Keynes (1972) pointed out that macroeconomic factors are based on demand for money and its supply in aggregate price determination, while in microeconomics it is based on marginal values (to buyers) and marginal costs (to sellers). Unlike these two approaches, in fundamental finance, prices are both relative and implied. They are relative to risk-free assets (or other assets), and implied in current trades about future state preferences (e.g., trading in forward and future options). These three approaches are used whenever they are needed. Chapters 4, 5, and 6 are focused on macroeconomic and financial approaches, and Chapters 7 and 8 consider the fundamental finance (complete markets) approach.

The exchange rate is based on the concept of purchasing power parity and determined by the prices in two countries. Furthermore, there are several exchange rates, including spot rate, real rate, effective rate, and forward exchange rates. The spot rate is quoted daily and continuously used in financial FX markets, while the real FX rate is defined in terms of the ratio of the consumer price index of countries. It may also be based on the ratio of domestic relative prices of tradable and nontradable goods between countries. Such a ratio, or its inverse, points to the balance of trade between countries. It is also used to indicate a country's competitiveness. Other real factors used to measure the real FX rate include unit (wages) labor costs within the domestic and foreign countries. Some of these elements will be treated subsequently in Chapters 3, 4, 5, and 9. An effective exchange rate is a measure relative to the rest of the world; namely, a weighted basket of exchange rates.

1.7.1 Foreign Exchange Markets and Global Trade Currency

In financial markets, the price of currencies is determined by the market forces of demand and supply of the currency, as well as the ability of sovereign and central banks' policies to sway, through their actions, the FX rates. The LOOP is then used to compound their mutual effects into an economic and traded FX price to convert one currency into another. Currencies are mostly priced relative to a reference currency, such as the USD, although, increasingly, several currencies can be used as a reference currency. For example, the IMF (2016a) has set up a basket of currencies consisting essentially of the USD, the euro (EUR), the pound sterling (GBP), the yen (JPY), and the yuan (CNY). Figure 1.6 summarizes the composition of the IMF basket of currencies during different periods. In the IMF basket (2011–2015), the USD is the dominant currency, albeit declining with an increase in EUR and GBP components. Starting in October of 2016, CNY was added to the SDR basket with a weight of 10.92%, resulting in smaller weights for other currencies (see Figure 1.6).

The IMF's inclusion of the CNY in its basket of foreign currencies recognized the growing role of China in global markets. For example, in August 2015, the CNY moved

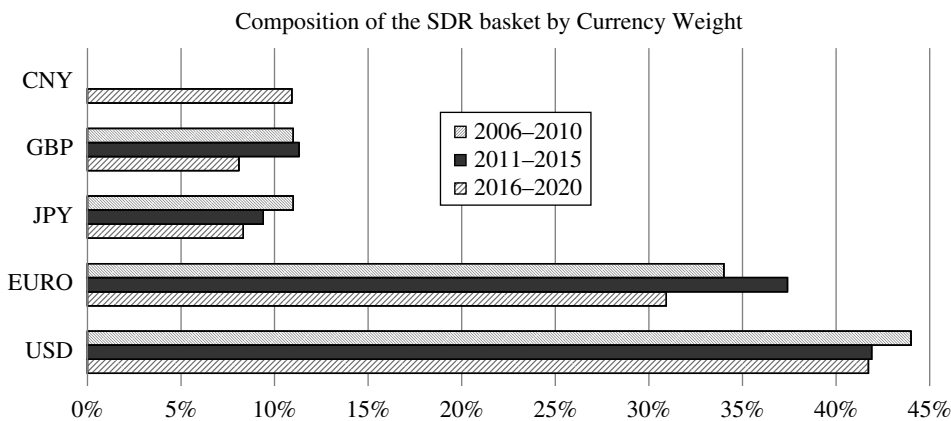


Figure 1.6 The IMF basket of currencies (composition of the special drawing right (SDR) basket by currency weight). Source: Data from IMF 2016.

to fourth place, accounting for 2.8% (from only 0.3% in 2012), in international payments. In order to promote and facilitate use of the CNY in trades and investments, the People's Bank of China signed currency swap agreements with over 30 central banks, including the European Central Bank, Brazil, Canada, Russia, South Africa, Switzerland, and the UK. It has also established official clearing banks in more than 15 cities, such as London, Frankfurt, Paris, Seoul, Singapore, and Zurich, since the end of 2008. Additionally, CNY is the third most widely used currency in trade financing (e.g., for letters of credit) after the USD and the EUR. The increased use of CNY and its role are being further enhanced by FX markets' platforms and a global network trading in CNY, pointing to the increased assertiveness of the Chinese currency and to the economic might of China.

These developments serve as signals pointing to changes in the roles of the USD and the EUR. In summary, we observe:

- a decline in the usage of major currencies such as the EUR and the USD;
- a rise in the use of Asian currencies;
- economic and political moves by China to make the CNY an exchange and global reserve currency.

Practically, currencies are bought and sold in FX markets with an average daily turnover of over 5 trillion USD. Market participants include individuals, firms, and private and public organizations. Their volumes not only indicate the relative dominance of their sovereign currencies, but also point to the global credit these currencies represent; that is, the safety, trustworthiness, and storage value of these currencies. The strength of these currencies allows for the issuance of treasury obligations and the printing of money. In other words, borrowing a strong currency globally is possible at prices that are less costly than would be the case for weaker currencies. For example, the dominant role of the USD as a prime currency is used by the USA to finance some of its activities by printing money without a consequential drop in the price of the dollar. The strength of the USD also contributes to the political clout and geopolitical primacy of the USA, allowing it to globally regulate firms trading in USD. Explicitly, it gives the legal right to US regulatory agencies to oversee USD trades and transactions. This regulatory power has both economic and political repercussions. For example, appreciably penalizing a European corporate entity due to a transaction done in USD in Argentina may be interpreted by the EU as anti-competitive. These transactions are particularly criticized when, in fact, both European and US firms may have been competing in Argentina. Whether justified or not, the legal status of the USD and its role, or any other reference currency, raise economic and political questions and motivate current efforts by other sovereign states to redefine or expand the definition of exchange currencies that would challenge the dominance of the USD.

The current trend to create alternative currencies to the USD as a means of exchange, such as the CNY, is partly due to the fact that major economies are, on the one hand, refusing to be regulated and penalized by US regulators and, on the other hand, it is an attempt to have their currency recognized as a reference trade currency. The growth of the CNY and the EUR, or a basket of currencies as reference currencies may provide an opportunity to print more money and issue more debt in these currencies. Currencies of choice and their many derivatives would then expand their economic opportunities and would also become global creditors, augmenting the liquidity of their currency. Figure 1.7 summarizes the development of FX markets that drive the extraordinary growth of both financial and global economic activities.

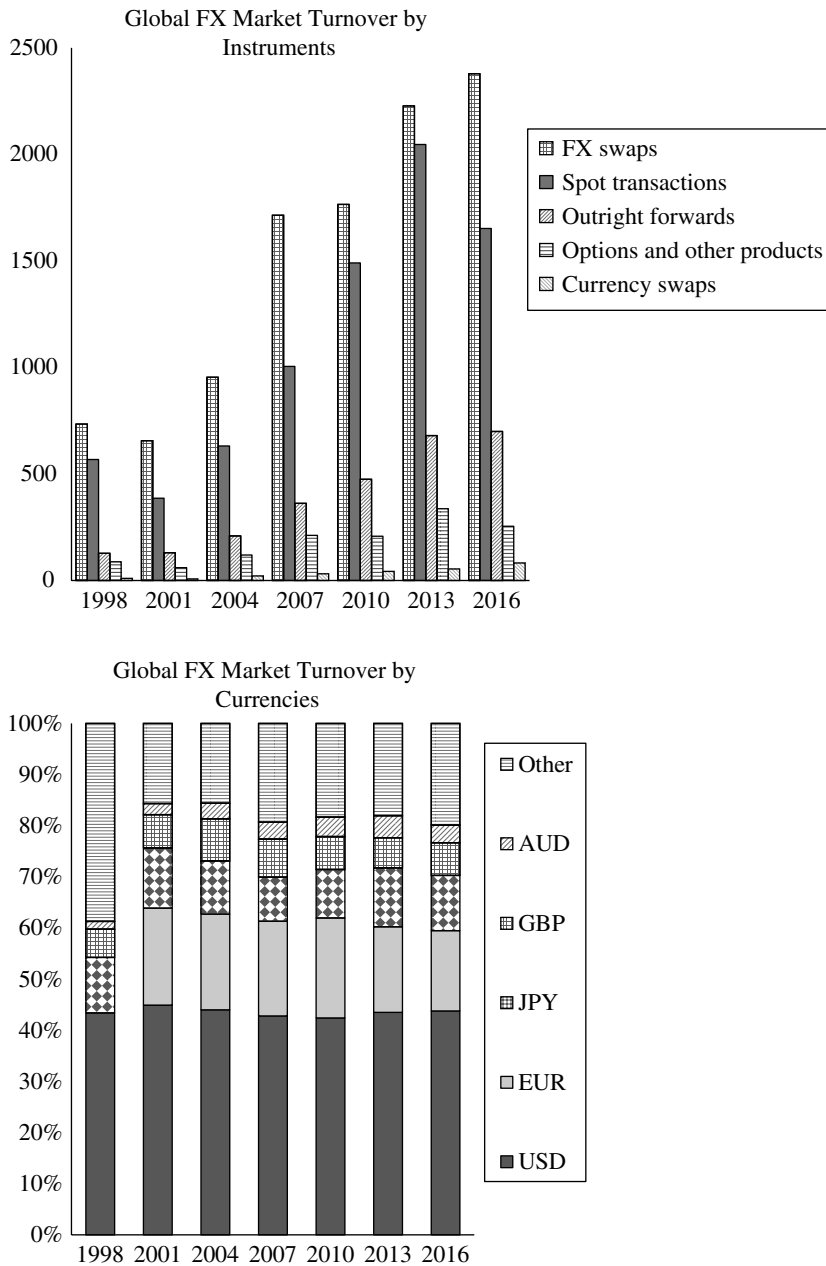


Figure 1.7 Global FX market turnover by instruments and by currencies (1998–2016). Note: top traded currencies include the USD, EUR, JPY, GBP, Australian dollar (AUD), and others including the Swiss franc (CHF), the Canadian dollar (CAD), the Mexican peso (MXN), and the CNY. Turnovers are expressed in billions of USD. Source: Data from BIS 2016.

According to the Bank for International Settlements (BIS, 2016b), the average daily turnover of FX trading that has fueled globalization is estimated to range from \$1.5 trillion in 1998 and \$4 trillion in 2010 to \$5.4 trillion in 2013 and \$5.1 trillion in 2016. Such growth has political and social implications for countries believing that globalization has short-changed their development. Financial engineering has, of course, contributed to these developments through numerous financial and option-based exchange products, thus facilitating these exchanges. However, most FX instruments were and remain FX swaps,¹⁴ accounting for 47% of the total turnover in 2016, followed by spot transactions (33%), as Figure 1.7 indicates.

Furthermore, declining trends in the shares of the USD and the EUR in the global trade are also signaling greater assertiveness in other currencies; for example, the JPY and the CNY, as well as currencies of emerging economies. In particular, the share of CNY traded has increased fourfold from 2007, to 2% in 2016. This trend points to the weakening of the store-of-value function of the traditional leading currencies and, consequently, to a more complex environment for financial currencies, both competitive and strategic. As stated previously, these economic developments have occurred due to macroeconomic policies, the geopolitical posturing of emerging economies (Asia in particular), and regulatory sovereign assertiveness. Some examples include the surge of US public debt and the consequent credit rating downgrade a few years ago, presidential elections and the increased uncertainty regarding the future of US policy, the increasing assertiveness of regulatory agencies, and an increased number of technology-intensive global financial markets; all are contributing to a multipolar finance that besets the evolution of global finance with its gating by sovereign states.

The internationalization of the CNY, its introduction into a basket of currencies by the IMF (as stated earlier), the launch of an alternative (and Asia-based) World Bank (i.e., Asian Infrastructure Investment Bank (AIIB)), and The New Development Bank (established by the BRICS: Brazil, Russia, India, China, and South Africa) located in China and issuing large amounts of yuan-denominated bonds are elements used to position the CNY as an alternative currency for trade and financial exchanges. These are added to trends indicating an increase in the global demand for deposits denominated in CNY as well as in the rise of offshore investments in the yuan-denominated dim sum bond market (first opened in 2007 in Hong Kong). A number of international sources, such as the BIS and SWIFT,¹⁵ highlight the importance of the CNY in international payment settlements and currency trading (increasing with the growing political and economic clout of China in international financial markets). At the same time, the economic growth of China and its political and economic policies concentrating these trends and contributing to its volatility have hindered the general acceptance of the CNY as a dominant reference currency.

14 According to the BIS (2016c: 17), FX swaps involve “the actual exchange of two currencies (principal amount only) on a specific date at a rate agreed at the time of the conclusion of the contract (the short leg), and a reverse exchange of the same two currencies at a date further in the future at a rate (generally different from the rate applied to the short leg) agreed at the time of the contract (the long leg).”

15 SWIFT stands for Society for Worldwide Interbank Financial Telecommunication (<https://www.swift.com/>).

1.7.2 Exchange Rate Regimes

The current global FX system is a mixture of different regimes ranging from hard and soft pegs to floating free markets. FX arrangements are classified in three broad categories: peg (fixed rate), mixed, and floating (market determined). Constant or fixed exchange rates require a central bank's intervention either through devaluation (reducing the value of the currency) or revaluation (raising the value of the currency) to maintain the exchange rate or bound it within given limits (the snake). Most sovereign states have been shifting toward more flexible FX rate regimes (FX rates determined by market demand and supply of currencies). An increased openness in the current account has also been upended due to improved economic growth, market conditions, and external balance. However, some nations, particularly in emerging and developing economies, have intervened frequently in FX markets to manage currency exposures associated with the volatility of capital flows and with domestic and social conditions. Thus, to gain a greater control of their currency, emerging economies have increasingly moved toward a more managed float regime.

There are geopolitical, economic, and financial reasons to seek a particular exchange rate regime. These include, for example, the size of the country, its geographical position, its openness to the world economy and trade, the diversity of its trading partners, and its macroeconomic indicators (e.g., GDP, inflation rate, money supply, capital flows). Table 1.2 provides a summary of different economies' exchange rate systems.¹⁶ Some sovereign economies gave up the control of their currency due to internal economic reasons (e.g., such as uncontrollable inflationary pressures). One particular approach is adopting the USD as legal tender and using it for all transactions. Under this "dollarization," a sovereign economy foregoes its control, leaving its fiscal and monetary policies subject to volatility and trends in the USD. However, dollarization has led, at worst, to temporary capital flight and at best to a temporary stabilization. At worst, it challenges sovereign states to contend with both economic and social problems without the policy alternatives that a purely floating system would provide.

According to IMF (2016b), as of July 2015, there were 14 countries (e.g., Ecuador and Zimbabwe) which practice a formal dollarization, where the USD or other country's currency (e.g., EUR or AUD) circulates as a legal tender. These countries are classified as "no separate legal tender or currency boards" and do not report any official exchange rates; thus, they are not at risk of any speculative attacks on their currency. The number of sovereign economies turning to dollarization has, however, declined considerably over time. For example, in 2006 there were 41 countries in this classification group, including countries such as Congo, Mali, Niger, and Togo, whose arrangements are now reclassified as conventional peg. In the next arrangement, the currency board covers 11 economies, including Hong Kong. The Hong Kong dollar (HKD) has been exchanged with the USD at a fixed rate of 7.8 HKD/USD since 1983. This fixed exchange rate regime has contributed to the growth of investments in Hong Kong, principally by removing its exchange rate risk, as well as providing an investment channel to Chinese markets. In order to defend its currency peg, Hong Kong monetary authorities have frequently intervened in the FX market; for example, in 2014 and 2015 they sold billions of HKD to relieve a massive capital inflow. Previous pegged systems include, among others, the Mexican peso's (MXN) peg to the USD in 1994 and the CNY's peg to the USD between 1996 and 2005. A substantial reduction in FX market interventions over the years has, in

¹⁶ For the complete list of countries, refer to IMF (2016b) on current *de facto* exchange rate regimes.

Table 1.2 Classification of exchange rate regimes (as of July, 2016).

Arrangement	Description	Example countries
No separate legal tender	Another country's currency as the sole legal tender	Ecuador, Montenegro, Panama, Zimbabwe
Currency board	Monetary arrangement, fixed FX rate, legal obligation	Hong Kong, Brunei Darussalam, Bulgaria
Conventional peg	Formally pegs to another currency or basket of currencies at a fixed rate	Denmark, Morocco, Nepal, Qatar, Saudi Arabia, Turkmenistan, United Arab Emirates, Venezuela
Stabilized arrangement	Stability margin: within 2% for 6 months or more	Lebanon, Singapore, Vietnam
Crawling peg	Small adjustments at a fixed rate	Botswana, Honduras, Nicaragua
Crawl-like arrangement	Margin: within 2% relative to a statistical trend for 6 months or more	Jamaica, Sri Lanka, Tunisia
Pegged FX rate within horizontal bands	Within changes of at least $\pm 1\%$	Tonga
Other managed arrangement		Algeria, China, Egypt, Malaysia, Pakistan
Floating	Market based; intervention to prevent undue fluctuations, pats are not preannounced	Brazil, Colombia, Hungary, Iceland, India, Indonesia, Israel, Korea, Mongolia, South Africa, Thailand, Turkey, Uganda
Free floating	Exceptional interventions for disorderly market conditions to moderate fluctuation	Australia, Austria, Canada, Chile, France, Germany, Italy, Japan, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, UK, USA

Source: Data from IMF 2016.

fact, been recorded. For example, China's regime was classified as a "crawl-like arrangement" in 2015 and then reclassified as "other managed arrangement" in 2016 (see Table 1.2). Following the IMF's decision to include the yuan in the SDR starting October 1, 2016, China's FX regime has become more flexible as its pricing is increasingly subject to market forces. Most countries are now either in soft peg or in a floating regime. Almost one-fourth of all IMF members have a "conventional peg," with a fixed peg of its local currency to a foreign currency or to a basket of currencies (e.g., Morocco and Venezuela). In addition, many countries have a market-based exchange rate: almost one-fifth of countries are practicing the floating regime (e.g., Brazil and Korea), and one-sixth have free floating arrangements (e.g., Japan, the USA, and the UK), with only exceptional interventions.

1.7.3 Foreign Exchange Reserve Currencies

A reserve currency plays an international money role as a store of value, providing a stable future value and purchasing power. The USD is still the dominant reserve currency for all countries for a number of reasons: it facilitates international trade transactions; the large US economy has deep financial markets; loans and deposits are often denominated in USD; it is the most liquid and traded currency in FX markets; many currencies are pegged to the

USD. Trades denominated in USD, however, are cleared through New York and are therefore subject to New York's financial regulators as well as numerous other US regulators. On the one hand, these provide appreciable economic and financial power to the USA. On the other hand, they contribute to the growth of US debt and its dependence on its currency creditors; for example, China, with trillions in USD and its geopolitical financial sway over the USA. Penalties imposed by US regulators on international banks (e.g., BNP, Deutsche Bank, Credit Suisse) for various violations of US laws or regulatory directives have provided US regulators the power to exercise their right globally, acting, in fact, as global regulators. These assumed powers are, as discussed earlier, due to the dominance of the USD and a lack of global and financial regulatory agencies and policies.

Trends and composition of reserve currencies for advanced, emerging, and developing countries were obtained from the Currency Composition of Official Foreign Exchange Reserves (COFER) Database (IMF, 2016c) and the International Financial Statistics (IMF, 2016d) and are shown in Figure 1.8. For example, as of the third quarter of 2016, the USD was the dominant reserve currency, accounting for 63% of total world allocated FX reserves, followed by other major currencies: the EUR (20%), the GBP (4%), and the JPY (4%) (see Figure 1.8a). However, the USD's share has declined from 70% (in 2000) while FX reserves have been growing rapidly in emerging and developing countries. For example, after the Asian financial crisis (1997–1998), Asian countries have accumulated large FX reserves (see Figure 1.8b). FX reserve assets held by the People's Bank of China reached almost \$4 trillion at the end of 2014, reflecting a persistent positive trade balance and China's intervention in currency markets. China's foreign currency assets are mostly USD denominated, with its majority in US government bonds. Upon full liberalization of the capital account in China, FX reserves will account for a lesser part of the total assets held abroad by Chinese nationals. According to the IMF Spillover Report (IMF, 2013), this may lead to a substantial increase in foreign direct investment (FDI) as well as private portfolio investments by Chinese households and firms abroad. However, while FX reserves have grown globally in recent years, we note there is a recent decline in the trend for emerging and developing economies. This decline arose mainly due to important FX market interventions in emerging countries requiring their support to their weak currencies (2014–2015) as discussed earlier. For example, China's FX reserves declined to \$3 trillion (as of December 2016) as a consequence of capital outflow pressures.

1.7.4 Exchange Rate in Emerging Markets

The Economist referred to certain emerging economies with large current account deficits in 2013–2014 as the “fragile five;” these include Brazil, India, Turkey, Indonesia, and South Africa. Ever since the fall of commodity prices in mid-2014, some of these emerging economies have been appreciably downgraded. A series of articles that appeared in *The Economist* (2014b–d) point to a Brazilian finance minister's statement regarding a currency war against the weak USD in 2010. This occurred when the USD depreciated against the currencies of several emerging markets, leading to an increase in demand for US goods and a decrease in goods from emerging economies. This movement was linked to the Fed's unconventional monetary policy, known as quantitative easing (QE),¹⁷ wherein the Fed,

17 To maintain a low long-term interest rate aiming at higher spending, investment, and employment, QE3 was launched in 2012 with monthly bond purchases of \$85 billion. The Fed ended this program in October 2014.

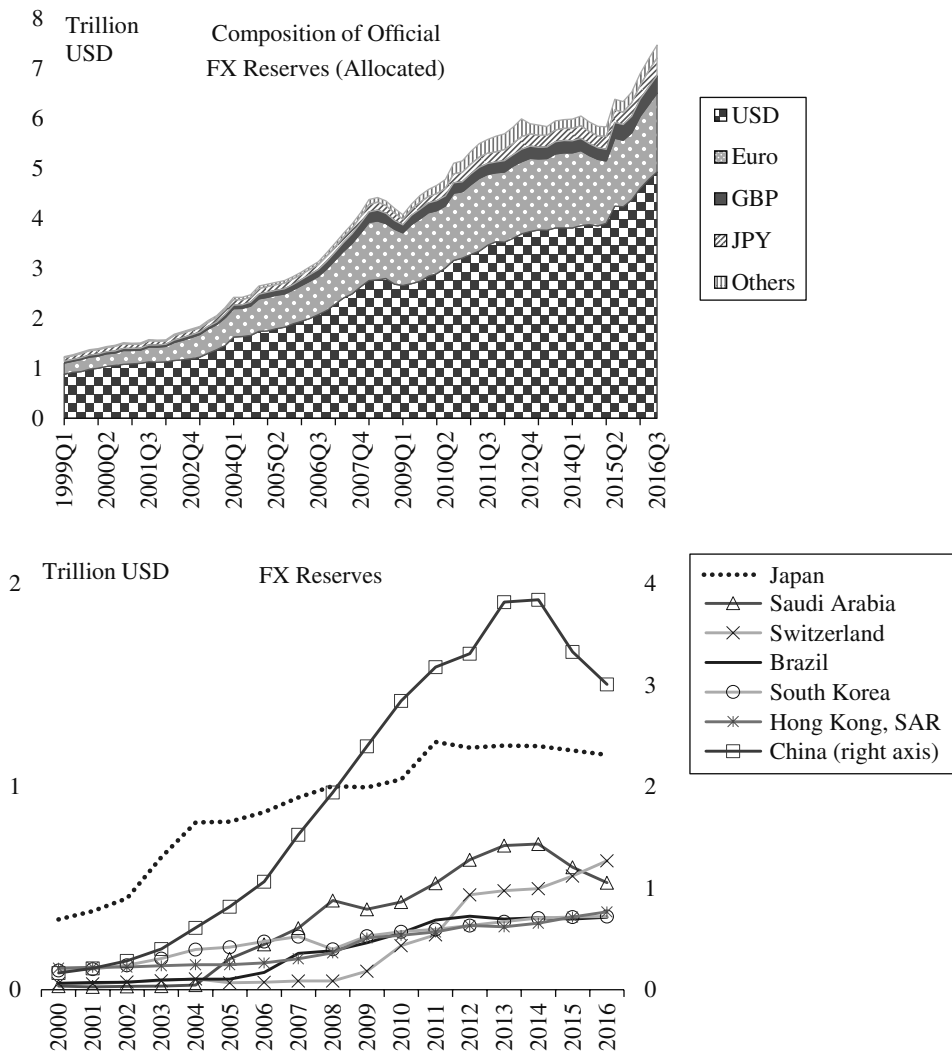


Figure 1.8 Composition and trends in accumulation of official FX reserves. *Source:* Data from IMF 2016.

basically, printed money in order to purchase bonds. Following the Fed's decision to slow down the pace of bond purchases, a reversal occurred in emerging economies' positions as their currencies declined in 2013 against the USD. For example, the value of the Indian rupee fell to a record low (68.8 per USD) in August 2013 following the record high current account deficit of 4.8% of GDP (Reuters, 2014). Similarly, the Turkish lira recorded a historic low (2.34 per USD) in January 2014. Figure 1.9 shows the evolution of exchange rate for Indian rupee, Turkish lira, South African rand, Indonesian rupiah, Brazilian real, and Argentine peso, with an increase indicating an appreciation of USD or depreciation of the domestic currency.

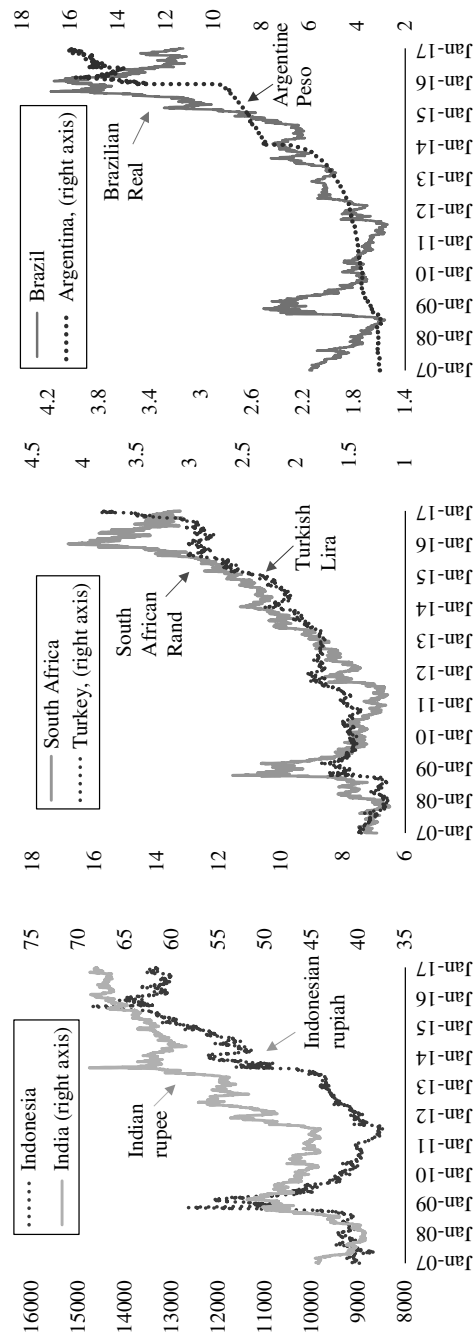


Figure 1.9 Exchange rate of emerging currencies, per USD (January 2007–January 2017). Source: Data from IMF and FRED (Federal Reserve Bank of St. Louis).

According to the Institute for International Finance (2016), flows of both bonds and equities into the emerging markets have declined sharply, indicating lower demand for emerging economies' assets. Some of the emerging markets included in these fragile five and Argentina used large sums of their international reserves to defend the currencies and prevent capital outflows. Other measures include a reduction in the current account deficits and restrictions on imports as in India (e.g., such as to curb gold imports in 2013).

1.8 Trade Incentives and Repression

Regional economic integration—such as the eurozone, North American Free Trade Agreement (NAFTA), and other agreements—is both economically and politically motivated. Lacking such agreements, some countries resort to export support and incentives combined with the gating of imports. These can include export insurance, export price support, tariffs, and levies, as well as controls and regulation.¹⁸ For example, when Japan's electronic industries were emerging, it invaded an important part of French markets. To meet such challenges, the French government instituted a stringent quality control of all electronic items entering France. These were “attended to by *one* inspector in the city of Poitiers,” resulting in a total stoppage of electronic imports from Japan. By the same token, some countries control export and import prices through interventions in the price of their currencies (in FX markets). The EU is taking measures to cope with tax evasion by multinational companies. In April 2015, the UK introduced profits tax, the so called “Google tax,” at 25% especially targeting companies such as Apple, Google, and Amazon. These companies are currently being scrutinized carefully and globally. Similarly, the USA is struggling to define a tax policy that would create an incentive to repatriate foreign profits that are not currently taxed.

These controls have both short- and long-term trade effects. For example, trade incentives and repression through currency manipulations and sovereign states' interventions may have retaliatory consequences, inducing greater uncertainty in terms of trade. Globalization, whose intent is to remove barriers to the free movements of capital, goods, and labor between all countries in order to boost their economic growth, may then be hampered. Globalization leveling competitive advantage is also leading to fiercer competition. Traditional theories of trade support globalization based on the assumption that countries will move the bulk of their economic activity where they have an economic advantage and thereby contribute to global efficiency, and growth is thus dampened by the fact that such migration also leads to a loss of jobs and industrial infrastructure in some sovereign states.¹⁹

Globalization, when it is combined with a growth in income and consumption (thanks to increasing imports due to price reductions in imports), has also appreciably contributed to the growth of trading (export/imports) firms with extensive supply chains consisting of intermediaries directly and indirectly involved in trade. Table 1.3 indicates the ranking of a number of non-financial transnational corporations (TNCs) according to their foreign assets in 2015. Top TNCs from the UK, Japan, USA, France, and Germany

18 For further reading on strategic trade policy, trade theory, and other trade-related issues, see Krugman (1986, 1990), Frankel and Romer (1999), and Helpman and Krugman (1989).

19 For discussion on trade and jobs, refer to Krugman and Lawrence (1994).

Table 1.3 The world's top 10 non-financial TNCs, ranked by foreign assets, 2015.

	Corporation	Country	Foreign assets (billion USD)	Foreign/ total assets (%)	Foreign employment (thousand)	Foreign/total employment (%)
1	Royal Dutch Shell plc	UK	288	85	68	73
2	Toyota Motor Corporation	Japan	273	65	149	43
3	General Electric Co.	USA	258	52	208	62
4	Total SA	France	237	97	66	68
5	BP plc	UK	217	83	47	59
6	Exxon Mobil Corporation	USA	193	57	44	60
7	Chevron Corporation	USA	192	72	32	52
8	Volkswagen Group	Germany	182	44	334	55
9	Vodafone Group Plc	UK	167	87	76	72
10	Apple Computer Inc.	USA	144	49	66	60

Source: Data from UNCTAD 2016.

are mostly involved in mining, petroleum, motor vehicles, and electronics. These companies also have a large share of foreign employees, as shown in Table 1.3. Furthermore, large financial TNCs are mostly from the EU and the USA, but there is a substantial increase in Asian firms as well as other sovereign state corporations. Table 1.3 also outlines the growth of new and international firms with a foreign base. For example, firms such as GE are essentially not paying taxes at all in the USA, with Apple producing the bulk of its products in China. The situation is more pronounced when one observes that, in addition to employers in the US industrial firms, including International Business Machines (378 000 employees, both local and foreign, in 2015), Hewlett-Packard Co. (240 000), General Electric (333 000), GM (215 000), the largest employers are in retail trade (e.g., Walmart with 2.3 million employees)—see UNCTAD (2016).

While these statistics may be explained by the changing economy, it is a fact that these jobs have moved elsewhere and, in the words of Steve Jobs, they are not returning to the USA. The implications of jobs migration and their replacement in a competing global economy are both a political and economic problem of gargantuan and dire consequences, as jobs in retail have a much smaller economic footprint than jobs derived from industrial activity. Explicitly, for every 1000 jobs created in retail, 240 additional jobs are created; for 1000 computer systems design services, 1190 additional jobs are created; for 1000 motor vehicles manufacturing, 4710 additional jobs are created; and

Table 1.4 The largest 10 banks in the world.

Rank	1995	2001	2013	2014	2015	2016
1	Japan	Germany	USA	China	China	China
2	Japan	France	USA	USA	China	China
3	Japan	Japan	China	USA	USA	USA
4	Germany	Switzerland	UK	UK	China	China
5	Japan	USA	USA	China	USA	China
6	France	Japan	China	USA	China	USA
7	Switzerland	Germany	Japan	Japan	USA	USA
8	UK	Japan	USA	USA	USA	USA
9	Netherlands	Japan	China	China	UK	UK
10	Germany	Japan	China	China	Japan	Japan

Source: Data from *The Banker* 2016.

finally, for 1000 jobs in steel product manufacturing, 11 890 additional jobs are created (NYT, 2012b).

Similarly, in the financial sector, there is a shift in the ranking of the largest banks, as shown in Table 1.4. Prior to 2012, the largest 10 banks were not US or Chinese banks. Rather, since 1995, the largest banks were Japanese (4/10) and German (2/10), with other European countries counting 1/10 or none at all. European international banks became leaders in bank size with a decline of Japanese banks. Then, starting in around 2010, due to the rise of China as an important global economic power combined with financial globalization by the US banking system, we note that banks of the largest domestic economies in the world, China and the USA, assume a global banking size, each with 4/10 largest, while Japan and the UK each has one bank (1/10) in the ranking of the top 10—see *The Banker* (2016). The Industrial Commercial Bank of China (ICBC) has claimed the first position in the world since 2014, with three other Chinese banks (China Construction Bank ranked second, Bank of China fourth, and Agricultural Bank of China fifth) ranked among the top 10 world banks in terms of tier 1 capital. The share of Chinese banks' profits in the world banking sector increased to almost 32% in 2016, up from 4.3% in 2006, whereas US banks' profits account for almost 22%, and for Japan 6%, and the UK at 2.6%. This implies that Asia, China in particular, has assumed an ever greater importance in global finance.

Finally, Figure 1.10 outlines the growth of GDP per capita in the USA, China, EU, Japan and other countries in USD. Note that the GDP per capita is much smaller for China because of its much greater population as well as its economic emergence since the early 2000s. Basic observed trends may be associated with the growth of the eurozone as well as increased economic activity. Japan, however, over a long period of time, has sustained a stagnant economy, as the graph indicates. A relationship between these trends and changes in FX rates suggests some linkage between FX rates and macroeconomic variables. Although per capita GDP is, on average, increasing in countries (e.g., China) with extremely large populations, they have experienced an appreciable GDP growth that is not accounted for by this graph.

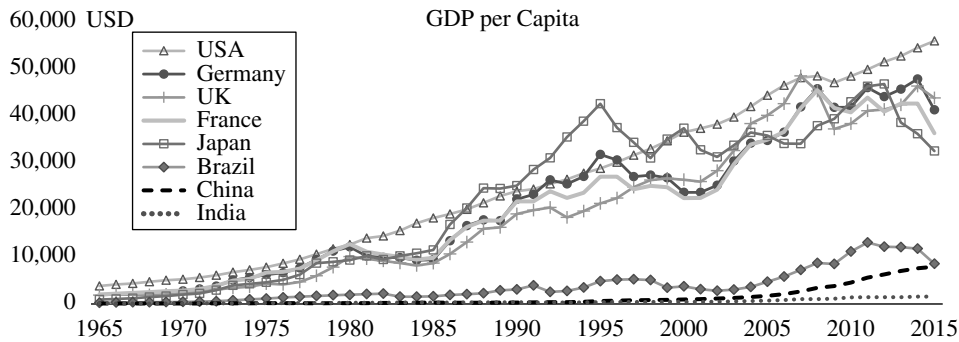


Figure 1.10 The growth of GDP per capita. Source: Data from The World Bank.

The potential of trade and its consequences have become particularly important to sovereign states, who meet regularly to confront their intended and nonintended consequences. The General Agreement on Tariffs and Trade (GATT), for example, was signed in 1947, after World War II, by 23 founding members to promote trade and reduce trade barriers. After the World War II, the average import tariff was very high (around 40%). Thus, to tackle trade restrictions and liberalize international trade, GATT included several rounds of trade negotiations. The “Kennedy” Round (1964–1967) cut the tariffs significantly and introduced an anti-dumping agreement. Then, the “Tokyo” Round (1973–1979) managed to reduce duties by one-third in the major industrial countries; it also focused on non-tariff measures. The last (the eighth round), the “Uruguay” Round (1986–1994), led to the creation of WTO in 1995; for details, see WTO (n.d.b).

Current negotiations at the WTO, IMF, and other organizations of sovereign states are particularly sensitive to the current growth of Asia, especially China and India, and its impact on the rest of the world (mainly the Western developed world). This has led, in some cases, to trade repression or support. These are strategic tools used by interested parties that may be either implicit or explicit. While some Western countries have resisted dumping (i.e., imports at prices that undercut fair competition) in their markets and imposed selective quotas and taxes on some imported items (from cheap labor exporters, in particular), other countries have retaliated against these same countries. A particularly blatant case was highlighted in NYT (2011d), where China conditioned its support for the euro in exchange for Europe’s opening of its markets to Chinese products.

1.9 Historical Evolution

1.9.1 The Gold Standard System

In the gold standard monetary system, central banks maintained a fixed price of gold (thus, there was no exchange rate risk) in terms of their currencies by offering to buy or sell gold at fixed domestic currency prices. Exchange rates were set by relative national prices of gold, however. For example, in 1900, while a dollar was equal to 0.0484 ounces

of gold, a pound sterling was equal to 0.2354 ounces; thus, the US dollar price of a pound was around 4.86 (McCallum, 1996). The UK adopted the gold standard in the early 18th century, and the system operated for a majority of the industrialized countries from 1879 to 1914. Only a few countries rigidly followed the rules of the specie flow system, David Hume's theory on balance of payments equilibrium. The system, however, operated in an approximate sense (Dunn and Mutti, 2004). In order to maintain the official parity between its currency and gold, the central bank needed an adequate stock of gold reserves.

The operative rule of the gold standard was defined as follows: whenever a balance of payment deficit occurred and gold was lost, interest rates were increased sufficiently to stop the gold outflow and attract foreign capital. Selling domestic assets in the face of a deficit and purchasing domestic assets in the face of a surplus. These rules increased the efficiency of the automatic adjustment process and were called the gold standard "rules of the game" (Krugman and Obstfeld, 2002). However, due to a strengthening of capital controls during World War I, the gold standard system could not operate well. Labor unions and oligopolistic industries made goods and labor markets less competitive. Owing to growing protectionist sentiments, free trade declined and tariff rates were increased. The gold standard collapsed in the early and mid-1930s, mainly because surplus countries such as the USA sterilized gold inflows, making the adjustment process too severe for deficit countries (Dunn and Mutti, 2004).

1.9.2 The Bretton Woods Agreement

In order to solve the gold standard's inadequacy problems and avoid competitive devaluation, the Bretton Woods system of fixed exchange rates based on the US dollar to gold was established in July 1944. Over time, fixed FX markets contributed to economic dislocations due to mispricing of currencies and stifling economic inefficiencies. This occurred due to a lack of auto-adjustments in FX rates when economic conditions called for such adjustments. It may have also stifled economic growth and encouraged arbitrage and speculative profits from trade mispricing. In some cases, it led to immense financial arbitrage profits with macro-hedge funds speculating on a country's ability to sustain their FX rates. The Bretton Woods agreement demise occurred when the USA announced a temporary suspension of a fixed conversion in the late 1960s.

Liberalizing FX markets to fluctuate in the early 1970s in order to respond to the market forces of demand and supply of currencies meant that sovereign states could no longer intervene in FX markets to seek an economic advantage for their exports. In practice, however, there were a large number of cases where sovereign states did intervene in FX markets, explicitly and implicitly, with some interventions ending very expensively due to a currency's misalignment. These interventions were motivated by political, domestic, and foreign agendas, and by the need to provide employment, attract foreign funding (or investments) to domestic development programs, and other purposes. These interventions were also intermingled with a decline in countries' economic growth that underlies trends of anti-globalization, seeking protection from risks and inequalities that are presumed to be due to globalization.

Whether FX rates should be fixed is not a simple question. Arguments in favor of free-floating flexible rates have essentially been based on a liberal policy expressing a lack of trust in governments' actions or their incompetence or incapacity to do so. This is particularly the case when several countries are considered at the same time. In practice, in

an increasingly globalized and complex economic and financial world, there is ample evidence that fixed FX rates are not sustainable. On the other hand, fixed rates reduce FX rate volatility, and therefore FX risk can be managed by hedging; but this increases the costs of FX while at the same time it reduces the ability of other markets (e.g., the labor market) or economic growth to adjust to the evolution of the relative economic development of countries—see Jones and Kenen (1988). The imperfections of fixed and flexible FX rates lead some investors to seek stable exchange alternatives; for example, gold or money equivalents (such as barter). But these means can also be unstable with price fluctuations.²⁰

1.9.3 The Yuan Exchange Rate: An Example

In a free market economy, the FX rate, with its strength and stability, plays an important role in the evaluation of a state's health. The basic trend in the FX expresses its long-run tendencies and random variations fueled by short-term speculations, news, expectations, and the many factors that motivate buyers and sellers in currency markets. The prediction of FX rates is therefore challenging and requires an appreciation of both the domestic and the global economy. The evolution of the Chinese yuan is shown in Figure 1.11. In January 1994, as an essential part of the socialist market economy reform, the yuan was devalued officially to 8.7 yuan against the US dollar and subsequently kept stable, as the economy was then managed by a central administration. China joined the WTO in 2001 with a commitment to make its currency more flexible. On July 21, 2005, The People's Bank of China announced a further reform to its exchange rate by adopting a managed floating exchange rate; this was done by determining its FX rate with reference to a basket of currencies. Since 2005, the yuan has gradually eased to adapt to the economic pressures of a mispriced exchange rate and to respond to international concerns that the yuan was undervalued. Such concerns regarding global trade imbalances due to China's massive trade surplus with the USA and other countries have persisted for the past few years. China's State Administration of Foreign Exchange has been reducing trade barriers and modifying its regulations to make the currency fully convertible through greater flexibility and an increased internationalization of the yuan. These measures include widening of the trading band against the US dollar (from 1% to 2% in 2014), trade payments in yuan, and currency swap deals with other countries (e.g., with the European Central Bank in 2013, Russia in 2014, and South Africa in 2015), with an increasing number of yuan clearing centers ranging from Asia to Europe. Direct conversion of euro and yuan is allowed in Frankfurt (November 2014). The yuan's usage in international payments has been accelerating, as discussed previously.

These observations clearly highlight China's economic growth, its gated and competitive FX and trade policy relative to the US dollar, and its export and import policies. China's yuan policy seemed to be, relative to the US dollar, far more volatile for a number of reasons (especially during the period 2015–2016). This can be seen, for example, in the

²⁰ Textbooks, handbooks, research books, and papers provide foundations on international economic and financial market theories with practical issues and historical evolution. These include Jones and Kenen (1988a, b), Grabbe (1991), Grossman and Rogoff (1995), Obstfeld and Rogoff (1996, 2001), and Feenstra and Taylor (2008).

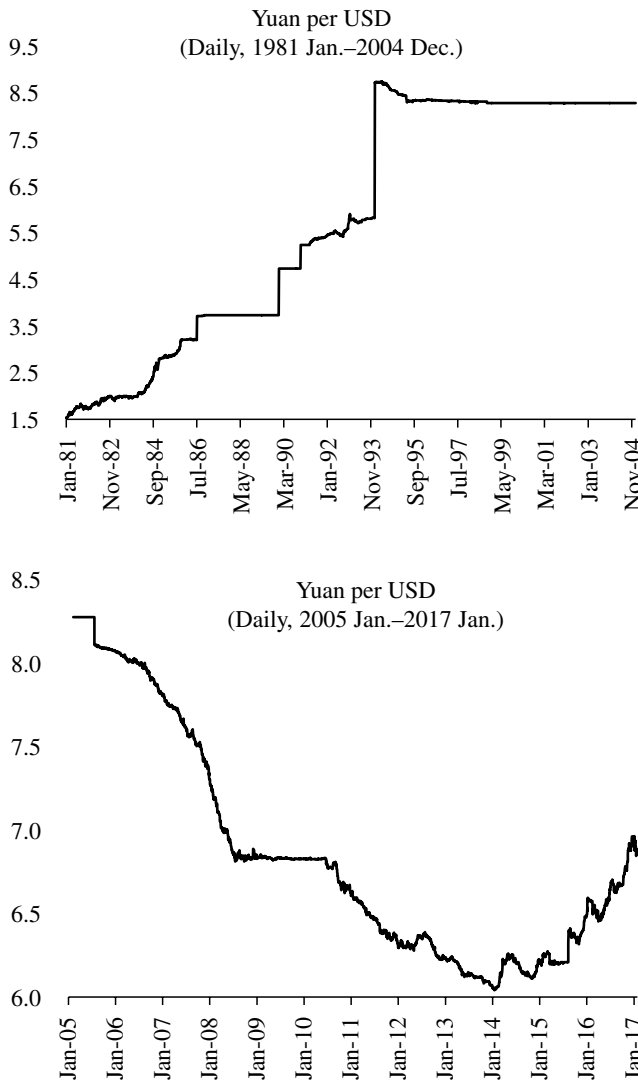


Figure 1.11 The evolution of the Chinese yuan spot exchange rate, per USD (1981–January 2017).
Source: Data from The FRED (Federal Reserve Bank of St. Louis).

continuous depreciation of the yuan since August 2015 and in a drop in the yuan's usage in international payments during the first half of 2016, with a 1.72% share in SWIFT transactions. The US dollar is traded in free markets and is therefore open to the markets' vicissitudes. In addition, the dollar overtrends, compared with the yuan; this can be explained by a relative analysis of Chinese and the US macroeconomic factors. While the Chinese economy has pursued a high growth trajectory, the US economy has grown more slowly. The US dollar remains strong due to the US diversified economy as well as the usage of the dollar as a reference currency in global financial markets (with trade prices in dollars) and as a reserve currency in central banks.

1.10 Archaic and Modern Globalization: A Time Path

• Archaic globalization

- *Roman times.* The foundation of modern global finance was established during Ancient Rome's global expansion. Various contracts were enforced in both domestic and foreign trade, and Roman citizenship was extended widely, which in turn promoted "the mercantile practices of the Greeks and Phoenicians to the entire Mediterranean world and into northwestern Europe" (Calomiris and Neal, 2013: 4).
- *13th century.* Paper money was originally developed in Asia in the form of printed "bark of trees." This was introduced into Europe in the 13th century as a consequence of the Mongol invasion (for further information, see Polo (2015)). The Mongols established cultural and economic exchanges between the East and the West. Thus, globalization as we see it today has its roots in Genghis Khan. The "Silk Road," as it connected continents, linking East and West, was the first piece of infrastructure that directly contributed to globalization as we think of it today. It was the road for travelers and for traders, as well as for armies. Its current expansion by the Chinese revives its importance as both an economic and political tool.

• Early modern globalization

- *15th century: discovery of the "New World."* A global exchange of new crops, plants, and livestock through Columbian Exchange²¹ between Africa–Eurasia and America contributed significantly to the development of the agricultural sector.
- *16th–17th century: a rise of European empires—Portuguese, Spanish, Dutch, and British.* The very first multinational corporations (MNCs), the British East India Company and the Dutch East India Company, were founded in 1600 and 1602 respectively.

• Modern globalization

- *1848: the protectionist Corn Laws repealed in Britain, a landmark.* A victory for free trade and an important foundation for globalization. The rise of David Ricardo's theory of comparative advantage in trade.
- *1870s: the beginning of the first Industrial Revolution.* Replacing artisanal-based manufacturing with systematic processes, expanding the role of specialization, technology and the need to exchange and trade materials and goods between industrialized countries and commodities' suppliers. The power of technological know-how was affirmed as essential to industrial and economic development.
- *19th century.* Britain became the first global superpower and the pound sterling was the primary reserve currency.
- *1914.* World War I forces countries to abandon the gold standard. Exchange rates fluctuated wildly as they lacked an acceptable basis for exchange, to the detriment of world trade.
- *1930s: the Great Depression.* Mass unemployment, failure of thousands of banks, and dramatic slowdown in international trade and globalization cast doubt on free markets. The USA sought a greater and more strategic role for governments in stimulating economies using monetary and fiscal policy; that is, the manipulation of interest rates and money supply, and (deficit) spending and taxation; also, it implemented far greater control of global economic revenues and global firms (notice the

21 For details on consequences of the Columbian Exchange, see Crosby (2003).

similarity to 2011). In 1933, the Roosevelt government in the USA rendered the holding of gold illegal (there are similar suggestions to control US citizens' holdings of assets in general to allow the US government access to their capital holdings). Following the Great Depression, trends in deglobalization set in, a consequence of economic recovery.

- *1944: Bretton Woods.* The Allied powers met at Bretton Woods to devise a system to stabilize exchange rates based on freer exchanges to promote growth and trade. All currencies were tied to the US dollar, and the IMF and the World Bank were created. An immense boost to globalization, the US Marshall Plan for the reconstruction of Europe, and the dominance of the US dollar. Global political realignment following World War II based on economic and ideological paths.
- *1947: the GATT trade agreement.* Intended to reduce international trade barriers, this was signed by 23 nations. The initial construction of today's eurozone in the post-World War II agreement in Europe on coal and energy and Jean Monet's articulation of a United Europe based on its six leading economies.
- *1950s.* American MNCs expanded rapidly in developed and foreign markets, investments, innovation, and inventiveness in business and finance laying the infrastructure for its future global economic dominance.
- *1970s: stagflation (high inflation and unemployment) occurred.* European and Japanese firms grew to become MNCs. Keynesian economic policy (in support of a role for the government economic policies (Keynes, 1935, 1972)) was challenged by the University of Chicago Monetary School. The economy was managed financially, firms outsourced, and infrastructures for the rise of global supply chains were set in place supported by the increased use of computer logistics and accounting management and control software.
- *1971.* The USA abandoned the Bretton Woods system and the dollar became the reference dominant currency. Currencies were allowed to float against each another. It was the beginning of free FX markets and the rise of global financial entities. Large dollar funds accumulated outside the USA, creating a lack of confidence in the dollar/gold value. The US gold reserves were reduced by a third in the first 7 months, and President Nixon suspended official gold transactions. This was, in effect, a unilateral decision to abandon the Bretton Woods system and let the world's currencies "float" in relation to the dollar. By the end of the year, most of the major trading currencies had appreciated against the dollar. A second dollar devaluation occurred in 1973, when it fell to USD 42.22 per ounce, a drop of 10%. By June 1973, it had fallen by another 10%. In the floating exchange rate system, no currency is formally linked to any other, or to gold.
- *1973: the OPEC oil cartel hikes the price of crude oil.* The developed world is thrown into recession. During the oil crises of 1973 and 1979, when OPEC dramatically increased the price of oil, the floating system helped to minimize the chaos as the strain was taken by an adjustment in exchange rates (the OPEC countries' currencies suddenly became much stronger). Trade and exchanges were used as strategic economic and political tools. There was cleavage between commodity-rich and industrialized advanced nations. Politics and regional economics pointed to the limits of globalization.
- *FX policies.* Diverse ways of controlling exchange rates were applied. Some countries allowed their currencies to float freely with the market, while others "pegged" their currency to fluctuate within a fixed range against the dollar. Overall, the

current system is best described as managed floating, with nations' central banks intervening in currency markets occasionally trying to influence their exchange rates.

- *1980s: the rise of developing countries.* A result of greater openness to the global economy through trade and FDI, particularly in Asia and in Latin America. Increased global capital and financial flows as well as seeding A-National corporations emanating from MNCs. These firms become truly global, with no national boundaries and no national controls to respond to.
- *1980s: debt crisis in Latin America.* Countries such as Mexico, Argentina, and Brazil borrowed extensively from international capital markets using their natural resources as collateral. Mexico defaulted on its debt in 1982.
- *Late 1980s–early 1990s.* The collapse of communist and socialist regimes and transition to a market-based economy (from a centrally planned economy). The Berlin Wall fell (1989), and USSR's dissolution (1991) formed 13 independent countries, promoting a market economy and greater openness to trade, investment, and travel.
- *1990s: IT–Internet boom.* It contributed to the expansion of globalization with development of global telecommunication and e-commerce, better and faster access to vast information networks, development of software, social networking, increased cultural exchange, trade, online shopping, and so on.
- *1993: conclusion of Uruguay Round of GATT.* It contributed to streamlining trade and the growth of globalization.
- *1993: the EU.* It was established with 12 countries under the Maastricht Treaty. Member states expanded to 28 countries as of 2015. First formal economic cooperation of European countries started after the foundation of the European Economic Community (EEC) in 1958.
- *1990s: globalization and free markets became a fact and unavoidable.* Barriers to free flows of capital and goods were partially removed (in some cases they were removed completely); globalization defines its own self-globalizing process.
- *1995: GATT succeeded by the WTO with an expanded list of partners.* Provision of a broader and more sustainable foundation for global trade and financial globalization was sought. Global outsourcing becomes a fact, providing the foundation for emerging industries in developing economies.
- *1997–1998: Asian financial crisis.* This showed how increased openness makes affected countries vulnerable to external shocks. Prior to the crisis, Asian countries encouraged trade and large capital inflows (including short-term foreign currency denominated bank loans) by offering higher yields to foreign investors. However, these countries lacked banking and financial regulations. Their capital markets were highly liberalized, and current accounts had large deficits. When the crisis hit, the valuations of the currency fell significantly, countries were exposed to FX risk and experienced a reversal of capital flows, deterioration of banks' balance sheets, a decline in foreign reserves, substantial fall in GDP growth, and flagging confidence of international investors in developing countries.
- *1999: the euro.* It was introduced and adopted by 11 EU member states (currently 19 members). By using a single currency, financial markets can be better coordinated and more efficient. Trade is expanded through reduced exchange costs.
- *2000: preliminary meeting of the WTO to discuss a new trade round.* In Seattle the meeting collapses amid recriminations between developing countries, the USA and the EU, while outside there were violent protests. An anti-globalization movement

gathered strength together with the awareness that globalization creates its own dislocating factors. Globalization is both benign and toxic.

- *2001: dot-com bubble.* Financial crisis with large stock market losses (speculative bubble) exposed the lack of financial regulations.
- *Securitization bubble begins to inflate.* A rapid rise in the use of structured financial products (e.g., mortgage-backed securities, collateralized default obligations) restructures the financial industry. Real estate, fueled by the removal of risk made possible with mortgage-backed securities, grows internationally.
- *2007: globalization has also led to global indebtedness.* A financial crisis emanates from unsustainable growth assumptions and a global financial contagion. The crisis is catalyzed by the rapid dissolution of the securitization bubble as firms divest themselves of structured financial products (e.g., the sub-prime crisis). Lehman Brothers fails. Global firms were both culprits and “too big to fail;” past assumptions were questioned, countries were financially destabilized and required economic recalibration. FX economic systems and FX markets were confronted with risky exchanges, a weaker dollar, the rise of FX alternatives (e.g., barter, gold), multipolar financial markets, a flight from risk, instabilities—greater volatility, greater uncertainty, and a strategic finance with economies in collision. The rise of developing countries to positions of financial and economic strength. Real estate values collapse worldwide.
- *2011: financial repression in FX markets, FX taxation (e.g., the new US regulation of 2010).* The growth of uncertainty in global finance and strategic finance. Globalization was challenged but was unavoidable. International finance in a critical post-crisis world was confronted by a global shift in the relative economic powers of Asian Basin countries assuming a far greater importance while traditional leading economies faced economic and safety challenges, unstable currencies, and the prospects of an Arab awakening potentially leading to a multipolar global and strategic world. At the same time, there are latent deglobalization forces to overcome the uncertainty that globalization and its complex processes induce. Unemployment explodes in Europe, with over 50% of young people without jobs in Spain, Greece, and Italy. Wage shares continue to fall globally.
- *2014: fluctuations in commodity prices.* Oil prices declined sharply from over \$100/barrel in summer of 2014 to around \$50, partly due to overproduction, especially in the USA where the new technology of fracking is used. This plunge in oil price, which at one point hit a low of \$27 (January 2016), and slower demand from emerging economies (especially a slowdown in China’s economy) had a negative impact on export revenues, which led to fiscal deficits in oil-exporting countries.
- *2014–2015: AIIB.* It is led by China with the support of many other founding member countries to finance the growing demand for infrastructure in Asia. Asian countries need investment in electricity, telecommunication, and a transportation system with high-speed rail, extension of railroads, new roads and ports to reduce transportation costs and increase trade. The AIIB was established to overcome challenges faced by the delay of US approval for IMF’s governance reform to allow emerging markets more voting power. The AIIB is seen by the USA as a potential rival to the World Bank.
- *2014: Free Trade Area of Asia-Pacific (FTAAP).* Asia-Pacific Economic Cooperation leaders agreed to launch a regional free trade arrangement of FTAAP to increase trade and promote regional integration.

- 2015: *the Trans-Pacific Partnership (TPP)*. The TPP is a massive free trade agreement proposed by the US President Obama between the USA and 11 other countries (e.g., Australia, Canada, Japan, Mexico, and Singapore) to boost global economic growth through an increase in trade and investment, agricultural sector, creation of employment, innovation, and support of environmental protection. However, a number of US Democrats and Republicans, as well as environmental and labor groups, have opposed the TPP with concerns over issues such as labor standards, environmental regulation, and possible geostrategic implications of the free trade rationale. The USA withdrew from the TPP in January 2017.
- 2016: Brexit. The UK voted to exit the EU because of concerns over sovereignty issues. Brexit (Britain's exit) affected the economic growth of not only the UK, but also the eurozone. Because of rising global uncertainty, global investors' demand for the government long-term bonds increased. Yield on 10-year government bonds plunged and even turned negative in some countries, especially in Germany. Globalization, gating, the growth of intra-nations' economic inequalities, and geopolitical challenges are causing some countries to assess the benefits of globalization and the openness of their borders to trade.
- 2016. The expansion of the WTO's Information Technology Agreement was one of the most significant tariff liberalization deals, covering an enormous trade volume. An elimination of tariffs on 201 IT additional products, with an annual trade value of \$1.3 trillion, acknowledges the massive technological change and a need to lower costs. This deal was described as a critical breakthrough that will lead to expanded technological development and increased trade of more IT products.
- 2017–2018. Uncertainty and the retreat from globalization.

1.11 Discussions on Global Issues

The purpose of these discussions and themes is to stimulate the reader across various topics that are underlying the globalization of finance. Technology, financial regulation, and electronic markets, such as high-frequency trading, are both consequences and factors that contribute to growth and the gating of financial globalization. For brevity, we focus not on their importance, but on their potential manifestations.

- 1) Technology and globalization are changing finance, contributing to a realignment and to the profusion of financial markets, everywhere. How is this changing our conventional understanding of fundamental models of finance?
- 2) Virtu is the largest high-frequency trading firm as of April 2015. This firm is a market maker. It seeks to make arbitrage profits by offering (buy and sell) securities in the hope of capturing a tiny spread between those prices. It does so, however, by trading on an advanced and private technological infrastructure on global markets they have built allowing them to trade at high frequency. Technology and globalization have opened opportunities for them. Is such a firm a competitor or a monopolist in global finance?
- 3) US regulators have expanded their financial controls over global financial firms and banks, penalizing them, employing monitors at their expense, and setting rules in the USA and elsewhere such firms have to comply with. Explain why the US regulators can do this. What are the risks/benefits for the USA in imposing itself as the global finance regulator wherever they can? Discuss the role of the US dollar as the

major currency trades and transactions are made in and how the power of the US dollar as the dominant currency may also be threatened in the long run by unilateral actions.

- 4) Brexit refers to UK's vote to exit from the EU on June 23, 2016. Other countries may follow the UK in breaking away from Europe. What would be the financial consequences and their effects on globalization and gating? Discuss Brexit's potential impact on the UK and EU economies and on global trade and financial markets. Refer to the consequences (including British pound, British bond yields, stock market performance, foreign trade, and FDI) and reaction of the financial world. What are the implications of the downgrade of UK's credit rating? How are the British export/import companies affected in terms of tariff and other costs?
- 5) The state of Malta is currently offering the wealthiest persons in the world (the top 0.1%) the possibility of acquiring a Maltese passport and the freedom to travel freely through Europe and tax breaks they would not get elsewhere. The price tag is \$1.3 million. How do globalization and the A-National growth of wealth contribute to the social make-up of the wealthy in the world? How does it contribute to the complexity of national taxation and regulatory controls? What are the potential future scenarios you believe can be entertained?
- 6) Globalization has ushered in a rush of free trade agreements. These include lower barriers to trade, and free movement of capital, technology, and labor. How has this profited financial banks and investors and how did it affect smaller enterprises (compared with big banks)? Who profits most from such globalization: smaller banks or bigger banks? Smaller countries or bigger countries? Job seekers or investors? Are such agreements reversible? What could be their financial consequences?
- 7) What is the future of financial markets such as Wall Street stock exchanges and electronic global markets? Which one is likely to be the dominant market? What are the regulation challenges for controlling electronic markets in particular high-frequency and ultra-high frequency trading?
- 8) Population growth, employment, and life expectancy have fueled demand all over the world—both in quantity and quality. How does this demand affect economic growth and business opportunities? How does the openness of demand changing the pattern of industries and trade contribute to greater globalization?
- 9) The apparent and systematic growth in trade as a percentage of GDP is pointing to its increased importance in economic development. How does the growth rate contribute to greater economic dependence between countries? How does such dependence affect capital flows? How do such trends affect regulation?
- 10) If we were to price currencies with respect to the dollar, what do such variations indicate relating to countries' macroeconomic indicators, trade, and internal pressures that these countries are confronted with? How can they be used to articulate a trading strategy?
- 11) What are the potential indicators of cross-country opportunities for arbitrage?
- 12) Crises have an impact on both the statistics and the memory of crises that linger on. How do investors use such an observation to profit and how do they use such information to hedge?
- 13) How do global macroeconomic factors affect trade, economic growth, and FX markets? In particular, discuss the effects of industrial specialization, technology, and

the essential macroeconomic factors (GDP, national income, interest rates, national debt, government fiscal policies, inflation, and balance of payments).

- 14) Does accumulation of wealth by poor countries contribute to a greater convergence between rich and poor countries (Landes, 1998; Spence, 2011); global dependence; access to capital markets and financial innovation augmenting liquidity and capital mobility?

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