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CHANGES IN THE ECONOMIC STRUCTURE OF THE WORLD ECONOMY

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Changes in the Economic Structure of the World Economy

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ABSTRACT

In a neglected work of 1964, Kuznets summarized some of the emerging results of his monumental work on Modern Economic Growth (MEG) and used them to speculate on diversity, interdependence, war, conflict, and cooperation among nations. It was an unusual Kuznets study - speculative rather than precise and quantitative.

The tone and the approach clearly reflect the deep impact that must have left on Kuznets the horrors of the Second World War and the palpable threats of oppression and aggression of communist totalitarianism. No one was more appreciative than Kuznets of the benefits brought about by MEG but he was also keenly aware of its potential for destruction. In these essays he appears cautiously pessimistic reflecting on communism threat to world peace and stability and on the limited spread of the process of Modern Economic Growth with the resulting increased divide among rich and poor nations.

In this paper I summarize some of Kuznets' arguments in his 1964 lectures highlighting the political and economic environment at the time he was writing and how it had evolved. I then try to update the analysis taking into account the changes in the geopolitical environment over the last 50 years, primarily the end of the Cold War, the spread of globalization, and the rise of China and other Asian economies.

In a final section I review various projections of expected changes in the global economy to 2050 and the main challenges such changes pose for conflict and cooperation.

Prepared for a book of essays in honor of Alberto Quadrio Curzio, *Resources, Production and Structural Dynamics* edited by M. Baranzini, C. Rotondi and R. Scazzieri. I acknowledge the useful comments of Carlo Beretta and Claudia Rotondi as well as those of Pavel Chalupníček and other participants in a seminar at the University of Economics in Prague.

Changes in the Economic Structure of the World Economy[1]

In the neglected Haynes Foundation Lectures of 1964 (published as *Postwar Economic Growth: Four Lectures*), Simon Kuznets summarized some of the emerging results of his monumental work on Modern Economic Growth (MEG) and used them to speculate on diversity, interdependence, war, conflict, and cooperation among nations. It was an unusual Kuznets study - speculative rather than precise and quantitative.

The tone and the approach clearly reflect the deep impact that must have left on Kuznets the horrors of the Second World War and the palpable threats of oppression and aggression of communist totalitarianism. No one was more appreciative than Kuznets of the benefits brought about by MEG but he was also keenly aware of its potential for destruction. In these essays he appears cautiously pessimistic reflecting on communism threat to world peace and stability and on the limited spread of the process of Modern Economic Growth with the resulting increased divide among rich and poor nations.

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A flavor, and more, of the Kuznets study can be obtained from the following extensive quotation from Moses Abramovitz' glowing review of the work in the American Economic Review (1966):

> "A recurrent objective, …, runs through the book. This is to trace the consequences of heightened interdependence among people and nations in a world rendered increasingly diverse by economic growth and by the forms of organization adopted to achieve it. The potentialities of both cooperative interchange and violent conflict have been dramatically enlarged by progress in the means of transportation and communication. …, the incidence of growth has been very uneven, and the distribution of people with respect to levels of living and productive power has tended to widen rather than to narrow. To this important element of diversity, one must add another. The systems of social and political organization through which nations seek growth have also become more diverse. The question Kuznets appears to pose, therefore, is this: are there in the growth process, with its concomitant tendencies to interdependence and diversity, the potent seeds of domestic and international strain and conflict? Kuznets' answer is yes."

HIGHLIGHTS FROM THE 1964 STUDY

Diversity

Excluding the very small countries (Andorra, Monaco, etc.) there were more than 100 nation-states in the early 1960s. Kuznets began by pointing out the wide diversity among these countries with respect to size, natural endowments, performance (income per capita or labor productivity), economic structure, political organization, and other aspects of their historical heritage (social institutions, conceptions of their role in the world, notions about relations of man to man and man to nature). These diversity underlies the potential for conflict among the countries, a potential still painfully vivid in the recent experiences of only a few years before.

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[1] My aim in this paper is to present some reflections on themes elaborated by my two mentors/teachers in the economics of growth and development, Simon Kuznets and Hollis Chenery. The evolution of economic diversity and interdependence and the resulting patterns of cooperation, competition and conflict in the global economy is a theme that has also preoccupied Alberto Quadrio Curzio for a long time. Alberto has not always agreed with my positions but has unfailingly considered them with scholarly openness and fairness.

Modern Economic Growth, the epoch characterized by a widespread application of science based technology to production dating back to the late 18th century, resulted in a sustained increase in income, population and productivity and in widespread structural changes. However, it was also the case that most of mankind had not yet tapped the potential of economic growth provided by modern technology – even though the per capita product of most was probably higher already than it had been in the 19th and early 20th centuries.

Reflecting on the diversity of political systems and on their stability Kuznets finds (around 1960) that the political regimes of many of the less developed countries had been established quite recently, often after decades of colonial status. By contrast the developed non-Communist countries had been stable or, as in the case of Germany, Italy, Japan, and France where there had been recent violent changes, had an antecedent period of stability and continuity. Latin America and Spain in contrast, had been independent for a long time but not really stable. Hence, Kuznets writes,

> "… it is difficult to escape the conclusion that only a small fraction of world population resides in the countries that have had, for any substantial length of time, continuous stable governments responsive in democratic fashion to the diverse and changing interests of their inhabitants." (p. 14)

Interdependence: Accessibility (transaction costs) and Interest

Looking back at the tumultuous previous half century Kuznets saw a widening diversity among countries but also a higher degree of interdependence. This he considered to be a function of the ease of material *and* spiritual flows among nations (*accessibility*) and of the realization by members of a nation that contact with other nations could yield a positive reward (*interest*). Today we could recast the discussion of *accessibility* in terms of a fall in transaction costs due primarily to the fall of the costs of international transport and communications, while *interest* could manifest itself in greater openness to interactions with foreigners and less reliance on protectionist policies to hamper the flow of goods, factors, and technology. Thus, *accessibility* and *interest* are a good description of the sources of globalization during the its first wave, which came to a halt roughly with the First World War, and of its second wave which was accelerating at the time Kuznets wrote but was not widely acknowledged yet. Export pessimism and a renewed belief in a secular fall in the share of trade (see below) were then widespread.

Three 'levels of interdependence'

Interdependence manifests itself in three ways: First in the form of trade relations arising because of the division of labor based on comparative advantage which also involves competition. Kuznets also mentions migrants but significantly not capital flows. Second, through Global Public Goods, in particular scientific and technological knowledge including social innovations. The third level considered is different; it is the case of an imposed forcible interdependence - a country threatening aggression to hurt the economic performance of another.

Kuznets' assessment is that these three levels of interdependence coupled with the large diversity among countries carry with them the seeds of continuous strains and turmoil. It is a situation pregnant with great dangers but also great opportunities as evidenced by the vast progress made possible by MEG.

Preconditions for MEG and the sources of MEG

The relatively very recent epoch of Modern Economic Growth has, as documented by Kuznets and others, allowed huge increases in production and standards of living unimaginable even to those that were witnessing its unleashing (even Adam Smith). But it was not an automatic reaction to an exogenous determinant. While critical of mechanistic theories of 'stages of growth' (see the trenchant critique of Rostow in Kuznets, 1963), Kuznets nevertheless argued that the initiation of MEG required

institutional and ideological adjustments, changes in attitudes that he considered as important as the technological and social innovations for sustained growth. He summarized those attitudes as: secularism – material attainment in this world; egalitarianism – denial of inborn differences among human beings; and nationalism – capacity of the state to provide stability and a historically community of feeling with an elite dedicated to modernization

Nations differ in social institutions, conceptions of their role in the world, notions about relations of man to man and man to nature. These produce different patterns of social and economic behavior. This complex of social institutions and beliefs has a life of its own and is a product of the long history when the common links that bind the members of a nation and provide it with the bases of common action were forged.

The major source of MEG has been the vast increase in the stock of useful knowledge. Much of this is connected with

> "widespread changes in the attitudes of human beings to material welfare and in their capacity to exploit the world around them to useful ends. … [T]he intensification of nationalism … [was] the price paid for the potential ability to channel the energies of societies … to the task of exploiting the promise of modern economic growth … on the basis of a consensus stemming from some common bonds that sustain the society despite the disruptiveness of modern economic change." (Kuznets, 1964 pp. 27-8).

Role of the Nation-State and of its government

The disruptiveness of structural shifts intensified the role of the nation-state and of its government and this affected international relations. For Kuznets a main function of the modern state was to establish the conditions for the promotion of long-term growth; a key reason for the formation of many of the new nation-states during the 1950s and 1960s.

Structural changes are disruptive and that helps to turn the nation-state into an essential element by means of its dominant power grounded in a social consensus that tolerates the decline of some groups and the advance of others. Thus, the increased role of the nation-state is in part a function of the greater *potential* for growth and of the uneven spread of the *utilization* of the potential which widens gaps and leads to an increased strain of backwardness. This contrast between *potential* and *realization* appeared often in Kuznets' writings and was later picked-up by his collaborator Abramovitz who made it a central point in his work on Social Capabilities (see, Abramovitz, 1986).

The potential requires for its realization 'many social adjustments' and a 'rearrangements of social and political institutions'

> "to generate the necessary capital, to permit adequate investment in the education and training of human beings, to facilitate the movement of individuals to the places of greatest economic opportunity, and to provide sufficient motivation and return so that growth becomes self-sustaining rather than self-limiting, because of … resistance … to the necessary transition." (Kuznets, 1964, p. 27).

THE SCENE AROUND 1960

Kuznets was writing in the early 1960 referring to data that went up to the late 1950s. To place his lectures in the right perspective and to later evaluate them in light of subsequent developments it is useful to first briefly survey the global scene around 1960.

Politics and international relations

The memories of the great depression and of the Second World War were still very real. There was great uncertainty and angst mixed with hope. The United Nations had been established with, apparently, a great consensus among the great powers and with more authority than was the case for the defunct and ineffectual League of Nations. But there was now a new existential threat, namely, nuclear weapons. There were also the renewed power conflicts (this time with Russian and Chinese communism), the invasion of Hungary, Cuba's missiles crisis, and the beginning of the build-up in

Vietnam and the subsequent worldwide turmoil of 1968. Communism was still a muscular and expansionary system even if some de-Stalinization was afoot.

Economics –macro policies and growth

Salient facts include the reconstruction of Europe, the Marshall Plan and Truman's Point Four, and the vigorous recovery of the American economy after the war. At the end of the war, Keynesians predicted an imminent return to the pre-war depression following the impending demobilization and the reduction in government expenditures[2]. For the long run the leading Keynesian economist in America, Alvin Hansen, argued the case that the capitalist system in America faced secular stagnation (Kuznets did not adhere to the thesis). Both predictions were later refuted by events while Keynesian economics came to dominate economic thinking and practice in America.

Trade and finance

After the long hiatus spanned by two world wars and the Great Depression there was a resumption of trade but amidst a strong anti-trade bias reflected in protectionism for import substitution, in the advocacy of planning, in the 'dependency theory', etc.

Even as the EEC was being created and trade was beginning to swell in Europe and East Asia the prevailing view was still that trade would not (could not?) keep pace with output. An example is the revival by Deutsch and Eckstein (1962) of Sombart's law of the "declining importance of international trade"[3] which had some echoes from writings of very prominent British economist in the interwar years. Robertson (1938) expected that with the spread of industrialization to agricultural countries the gap of comparative advantage would narrow and this, he predicted, was "...likely to be associated with a further shrinkage due to policy " (p. 506). Earlier, Keynes (1933) had argued that due to the large income elasticity of nontradables trade could be expected to become less important. Regarding commercial policy he went further than Robertson and advocated a greater measure of self-sufficiency which, in his words, "may tend to serve the cause of peace" (p.758). Kuznets rejected the 'declining share of trade' thesis in his paper on "Level and Structure of Foreign Trade: Long-Term Trends" (1967) written about the same time as the 1964 lectures.

One of the few studies directly related to interdependence and potential conflict was Hirschman's 1945 book [*National Power and the Structure of International Trade*] in which he presents a very bleak view of trade, expecting that the misuse of it made by Nazi Germany was henceforth going to become the rule. The review of the book in the *American Economic Review* (Stinebower, 1946) mentions potential abuses by large countries of 'free trade' but argues that it was Hirschman that misuses the term; rather it was the violation of free uncoerced trade which was the problem: with trade "highly manipulated and closely controlled … political considerations are almost certain to enter into … decisions of the controllers." (p. 420).

TRENDS UP TO THE EARLY 1960S

Looking back half a century Kuznets observed that diversity had widened while ties of interdependence strengthened hence intensifying the potential for strain. As supporting evidence he offered the widening of the income gap among nations, a decline in the number of huge political entities together with an increase in the number of small formally independent units, and a widening in the diversity in political organization, at least as far as the impact on economic structure. Notwithstanding the greater diversity there was also a significant intensification of interdependence as seen in an

[2] The share of material procurement in GNP had gone up from 4% to 48% during the war years (Kapuria-Foreman and Perlman, 1995).

[3] Cited in Deutsch and Eckstein (1961).

increase in accessibility (fall in transport costs), an increase in the dependence of underdeveloped on the developed countries, and the intense hostility of communism that increased the (negative) interdependence between the US and the USSR.

CHANGES SINCE KUZNETS WROTE

Much has changed since Kuznets wrote. The main source of diversity and conflict disappeared or was drastically reduced with the end of the Cold War, even if the 'end of history' moment was to be a brief one. Some of the most salient events and changes in the international environment since 1960 are listed below.

Politics and international relations

The three decades after 1960 were dominated by intense block rivalry. Under an ever present MAD threat (Mutually Assured Destruction) a major direct clash was avoided mutating instead into various proxy wars and confrontations including the Cuban missile crisis and the Vietnam War. An element in the strategy to contain the USSR, one with determining influence for the current world order, was the US decision to recognize the People's Republic of China beginning with President Nixon's trip to China in 1972.

The cataclysmic fall of Soviet Communism in 1989, an event which Kuznets most likely could not have foreseen at the time of his death only four years earlier, upended the patterns of cooperation and rivalry and gave rise to short-lived utopian mirages of "end of history" and peace dividends. A spillover came in the form of German reunification and a more unified (for a while) European Union with 27 members up from the six original founders in 1958. East - West block rivalry was much diminished (again, for a while) but was soon replaced by anew clash of civilizations, the spread of terrorism and of WMDs.

Economics –macro policies and growth

The golden age of growth in Europe come to a halt with the first OPEC- oil shock in 1973, an event which reestablished the command over natural resources as a crucial geopolitical factor. The subsequent great inflation with high unemployment (stagflation) led to the Volker-Reagan-Thatcher disinflation that send interest rates skyrocketing and helped trigger the Latin America debt crisis of the 1980s – a prelude of things to come in increasingly integrated global financial markets.

Industrialization and rapid growth spread now to new countries that began to be known by a variety of continuously changing acronyms[4] (NICs, SICs, emerging, and BRICs among others). Among the giant economies in Asia Japan as Number 1 becomes an almost obsessive preoccupation in the United States just as Japan was entering a long protracted period of stagnation. China and India enact wide economic reforms and growth takes off, impressively in China and more modestly and with some delay also in India.

Trade and finance

By 1960 most developing countries had adopted some variant of the Import Substitution Industrialization strategy behind high walls of protection and with extensive planning. Yet, the further reduction in transaction cost led to increased interdependence soon to become ubiquitously referred to as globalization. Transport and communication costs declined but increasingly so did tariffs and various NTBs. By the early 1990s following the various successive rounds of tariff reductions under the GATT the WTO was established. Developing countries shifted from import substitution to export promotion,

[4] Amusingly recounted by Alan Beattie in the Financial Times (2011).

liberalization, and privatization a set of policies that become known as the Washington Consensus. However, protectionist sentiments have not vanished especially where income distribution has widened and where the increased competition from low-wage countries is strong.

Other changes

Finally I list some changes only tenuously related to economics or to relations between nation-states but no less central or contentious in today's world.

Compared to 1960 there has been a vast spread of democracy but also of religious fundamentalism, mostly Islamic. The status of women and minorities has been drastically changed in the law books and in daily practice in most (but not all) regions of the world. Nevertheless culture wars rage in all (economically) advanced countries.

Nonstate actors have emerged as significant global players aided by changes in attitudes and technology (social media). NGOs and social activist groups not restricted to national borders have helped raise the profile of issues ranging from human rights and vaccines to animal rights. environmentalism

DIVERSITY

Up to 1989 the proliferation of new countries continues but there are also important secessionist attempts: the break-up of Pakistan leading to the creation of Bangladesh, and the unsuccessful revolt in Biafra. After 1989 former communist countries break up, peacefully in Czechoslovakia but not so in Yugoslavia. There is a sharpening of the ideological divide with the aggregation of nations into blocks, an increase in rivalry, and various proxy wars along the Cold War divide (Middle East, Africa/Angola, Vietnam/Cambodia). Local tensions lead to hostilities in various parts of the globe; a noteworthy example being the Sino-Indian confrontation of 1962.

The nation-state is increasingly contested; with a larger role now for IGOs, NGOs, IFIs, MNCs, etc. They threaten sovereignty but with only limited effective success even if outwardly it does not appear so. (See below).

INTERDEPENDENCE

The world has become more interdependent. This has manifested itself in two main aspects both reflecting the rise of Asia:

1. The shift of the center of gravity of economic activity from West (Europe) to East (China and other Asian countries), and a political shift from the Atlantic to the Pacific. The shifts reflect the vigor of Asia and the decline in Europe with the United States mostly maintaining its weight or even increasing it as the superpower that straddles both oceans.

2. A more connected world with increase participation from an growing number of members. That is, globalization advances not just at the intensive margin where existing links are strengthened but also at the extensive margin whereby new participants are added as well as new areas become open to trade by the advance of technology (pollution rights, radio spectrum) or by shifts in societal norms (pollution rights, human organs in the future?).

The rise of Asia

Figures 1 and 2 depict graphically the rise of Asia over the last 30 years. Figure 1 comes from a recent paper by Danny Quah (2007) that nicely illustrates the shift of the global economy's center of gravity towards the East[5].

[5] References to East and West are as seen from Europe of course. Even these terms of relative location may be affected by the shift of the economic center of gravity.

[FIGURE 1. World's Economic Center of Gravity, 1980–2007]

Figure 2 summarizes the heroic, if not Quixotic, creative endeavor of Angus Maddison - a compilation of GDP data for practically all countries and regions from year 0 (zero)! It serves also to illustrate the fall of Asia from the early 19th century and its rise over the last 30 years.

[FIGURE 2. Major Economies Share of Global GDP, 0-2005]

In Table 1 similar information appears for major regions since 1820.

[TABLE 1. TABLE 1. Product per Capita 1820–2006 by Major Regions]

Some observations from the table:

Western Europe and its offshoots were by 1820 already significantly wealthier (as measured by product per capita) than Asia.

The income gap between regions was relatively low and increased by a large amount during the next 180 years. The US and other European offshoots were richer but given their relatively small population their combined share in global production was less than 2% in 1820. Western Europe's share was a much higher 23% but the undisputed giant was Asia, its share of global output exceeding 56%. This pattern changes drastically over the 19th century, Asia's share plummets while both Europe and the US advance steadily.

By the end of the Second World War the US emerges as the largest industrial power. In the following 50 years the dominant trend is the rise of Asia, first with Japan's fast rise to the point of having been seen as a realistic challenger to the American leadership, and later with the emergence of the first and second tier East Asian "tigers" (South Korea, Taiwan, Hong Kong, Singapore, Malaysia, Thailand, and Indonesia). Over the last 25 years it is China and India that have moved to center stage with the rise of the former eclipsing everything that came before.

China/India as 1750 leaders: The Big Divergence

It is difficult to appreciate the extent to which the rise of China has been unprecedented. There are no cases of countries growing at or above 10% per year consistently for over two decades and certainly no case of a very large country being able to do so. The commodity lottery may enable a small country to rapidly grow for a number of years but no one could have predicted this happening in a vast region with a population of over 1 billion people. And yet, the rise of China has often been interpreted as simply a normal (and therefore expected?) return to the pattern of the late 18th century making up for lost ground during the long hiatus.

China and India were the largest economies in the 17th-18th centuries. But that was in pre-MEG times. Their economic structure was mostly rural and agricultural with low productivity. There was little urbanization and industry, and certainly almost no manufactured exports. Trade was very low and internal markets not much integrated. In India:

> "... prior to the 19th century the grain trade … was essentially local, while more distant markets remained fragmented... In terms of the comparative Great Divergence discussion, the claim [that Asia had] reached a similar stage of economic development as Europe before the late 18th or early 19th century is therefore rejected for India." Studer (2008).

For China the evidence is less clear.

> "Our findings suggest that relative levels of market function in China and Europe were similar prior to the Industrial Revolution. Higher efficiency in Europe is seen only in the nineteenth century when

> industrialization was already underway. Moreover, these improvements occurred in a dramatic and sudden fashion" (Shiue and Keller, 2007)

But nevertheless, there was certainly no extensive science-based application of technology to production - the hallmark of Modern Economic Growth. In the last decades China has finally joined MEG with momentous restructuring, internally and for the world economy.

Measurement Issues -PPPs or ERs?

The economic distance between, say, China and the United States appears much smaller when measuring their outputs at PPPs (Purchasing Power Parities) than at exchange rates (ERs). At PPPs, and with the current growth rates, China will catch up with the US at a much earlier date than at ERs. Maddison's figures are PPP converted outputs as are the figures used in most of the international comparisons. However, not everyone agrees that *for this type of comparisons* the PPP figures are the most relevant. Richard Cooper has been arguing for some time that for trade figures ERs are more relevant[6]. PPPs are much influenced by services and Baumol's disease. World trade and international accounts are conducted in ERs not in PPPs. PPP differs from ER primarily because of the price of nontradables. For tradables ER may be a better guide; industrial production and weapons (two key inputs into measuring power) are tradables. The qualitative differences in nontradables (including manpower, military or civilian) may be much greater precisely because there is no market test and competition. Cooper has been recently joined by Stanley Fischer who argues that "PPP numbers … are seriously misleading…. It is the dollar values that represent the current weight of countries in the international economy." (2006, p. 180).

INTERCONNECTEDNESS

Over the last 50 years the world has become significantly more interconnected.

> "As a share of global output, trade is now at almost three times the level in the early 1950s, in large part driven by the integration of rapidly growing emerging market economies. The expansion in trade is mostly accounted for by growth in noncommodity exports, … [and it] is also characterized by growing regional concentration." (IMF, 2011).

[FIGURE 3 World Exports Relative to Production 1950-2010]

Recent studies of the network of world trade have documented the significant increase in trade links and the changes in the structure of the network itself. (See for example IMF, 2011, and De Benedictis and Tajoli, 2011). Some of the salient results from these studies are:
The World Trade Network has indeed changed in the past decades; in particular, the trading system has become more intensely interconnected. From 1960 to 2000 the increase in trade linkages has been fairly widespread, reducing the role of hubs in the network (De Benedictis and Tajoli, 2011).
Table 2 shows the substantial increase in trade flows over the period.

[TABLE 2. Trade Flows' Intensities]

A noteworthy development is the increase in South-South trade illustrated in Table 3.

[TABLE 3. South–South Trade]

[6] See for example Cooper (2005).

Most of the increase, however, is due to the growing importance of Asian trade. First, the share of Asia in world merchandise exports went up from 15% in 1973 to 29% in 2009 (WTO, 2010 p.11), and second, as seen in Table 4, more than half of these higher exports are intra-Asia trade. No other region comes close to Asia in its weight in total trade and less so in its contribution to South-South trade.

[TABLE 4. Intra- and Inter-regional Merchandise Trade, 2009]

A further sign of the increase in interconnectedness and in the complexity of the globalization process are the longer global supply chains. The portrayal of a complex good (the iPod for example) as one for which a national origin is impossible to specify has become commonplace.

The increase in the vertical specialization in production stretching across several countries was spurred by lower trade barriers, and by the declines in transportation and communication costs. The result can be seen in the increase in the foreign content imbedded in gross exports, also referred to as foreign value-added (FVA) exports, that almost doubled between 1970 and 2005 (IMF, 2011, p 10).
Table 5, compiled by Timothy Taylor (2011) out of statistics in the IMF report, illustrate the longer global supply chains and rising global interconnectedness. The figures reflect the integration of the Asian regional economy, with inputs often crossing borders several times at different stages of production, especially in the high technology sectors.

[TABLE 5 Foreign Value-Added in Exports]

A similar pattern was already observed in a detailed input-output study of industrialization in nine economies up to the early 1970s, where an important source of the increase in output and in manufacturing in particular was the increase in the intensity of intermediate use, that is, in the density of the interindustry matrix of production. The more recent data would seem to reflect more the supply chains effect[7].

[TABLE 6 . Import Content of Domestic Final Demand and Exports]

The recent expansion of global and regional trade was driven by vertical specialization and also by income convergence. (More on convergence in the next section). Contrary to the earlier pessimism of Robertson and Keynes, much of the expansion in world trade took the form of intraindustry trade among countries with an increasingly similar composition of their factor endowments. The expansion of intraindustry trade between 1985 and 2009 was particularly noted in countries integrated in a supply chain, such as China, Thailand, and Mexico[8].

IMPLICATIONS OF THE REALLOCATION

The large changes in the global economy among regions and countries since Kuznets wrote and especially in the last 2-3 decades have some immediate implications and some more remote and speculative ones for the prospects for conflict and cooperation which were the guiding point for the Kuznets lectures of 1964.

[7] The I-O matrix would seem to be less useful as a tool of analysis and of planning (if it ever was for planning).
[8] (IMF, 2011, p.9). Intraindustry trade was originally a puzzle for the simple Hecksher-Ohlin approach but not so for the relatively neglected approach of Linder (1961) that stressed the importance of *similarity* of incomes and consumption patterns.

Convergence

Over the last two decades the developing countries have been growing faster than industrial countries (Rodrik 2011). It seems that the much lamented limited spread of MEG has, finally, began to reverse leading to a noticeable convergence in incomes, especially among countries that have integrated themselves into the global economy (see table 7 and figure 4).

[TABLE 7. Annual Growth Rates in GDP and Per Capita GDP at constant PPPs].

[FIGURE 4. GDP Growth Rates, Advanced And Emerging Economies, 1980-2015]

Timothy Taylor (2011) refers to the Great Factor Price Equalization in the wake of the fall of Communism, the rise of the internet, and sporadic progress in institutional development in the emerging-market countries. In the last two decades or so the global labor force has virtually doubled in size, a change that augurs well for the newly globalizing countries even while leading to raising tension in the richer countries where growth is lower or has slowed down or even stagnated. It will put to the test the profession of solidarity among peoples especially in the more communitarian and cosmopolitan Europe[9].

Structural Changes

Restating the key finding above: the central fact for the structure of the global economy has been the reallocation of the center of economic activity from Europe and the Atlantic towards Asia and the Pacific.

Sectoral composition of output and trade: Beginning in the late 1960s deindustrialization (in relative terms) has taken place in all advanced countries while in Asia and other emerging countries a rapid rise of industry was observed, in part related to the disaggregation of the chain of production and the increase in the intraregional network of trade.

The faster growth rate in emerging countries coupled with the intensification in the industrialization process there has resulted in a substantial reallocation of manufacturing output towards the group of emerging countries. This trend already observed and analyzed by Chenery in 1977 was turned into one of many UN "Targets" - The Lima target – under which developing countries were to account for approximately a quarter of world industrial production by the end of the century[10]. Ironically, this became one of the precious few targets actually achieved but only after the prescribed UN engineering approach was abandoned.

Engines of growth: The "South" is no longer a passive participant in global growth. In the last decade China accounts for a larger share of global growth than either the US or other advanced countries as a group (see table 8). This does not only reflect the recent financial crisis but it is the continuation of a decades-long process. China can no longer take the world economy as a given within which it can choose its best strategy but it has rather become an important player determining the shape of the world economy. This creates incentives for China to contribute to the stability and smooth expansion of the system.

[Table 8. Contributions to Global GDP Growth, 1970-2015]

[9] The current climate in the Euro-crisis area and beyond does not augur well for global solidarity.

[10] According to the "Lima Declaration and Plan of Action on Industrial Development and Co-Operation" adopted in 1975 by the Second General Conference of the UN Industrial Development Organization in Lima, Peru.

Structure of global trade: The rapidly industrializing developing countries, especially China and other Asian countries,

> "demand proportionately more industrial raw materials, energy and food products, as opposed to manufactured consumer goods and non-tradeable [sic] services. Hence with the growing importance of developing countries as an engine of growth, this is likely to sustain the high increases in commodity prices that occurred in 2010 over the forecast horizon" (World Bank, 2011, p.55).

These changes affect in different ways different regions and countries. As a simple and rough approximation producers of commodities in high demand by China (and other Asian countries) have benefitted while those mostly in competition with the Chinese manufactured exports have suffered. The apparently superior performance of Brazil over Mexico over the last 1-2 decades can largely be explained applying this simple taxonomy even before mentioning the detrimental impact of the narcotraffic and other such differences[11].

Emissions*:* The differential growth and reallocation of production towards countries where industry is in the process of expanding has also implications for global CO_2 emissions. Even if all the developed countries including the United States were to adhere to the Kyoto parameters the amount of emissions would inexorably continue to grow for the foreseeable future. The U.S. Energy Information Administration (2010) forecasts that shortly after 2020 China will account for a larger share of global CO_2 emissions than the United States and the OECD (Europe) *combined*. The amount of emissions forecasted for China in 2035 are three times the OECD's level in 2005 and account for over 30% of the forecasted world total (table 9).

[Table 9. World Carbon Dioxide Emissions By Region]

Liberal democracy: The expected significant decline in the weight of the EU15 countries in global GDP does not augur well for the future of liberal democracy around the world. Who might take up the slack as representatives of liberal democracy? For Fogel (2007) the answer is that it will mostly be Asia, especially India and the SE6 where democracy prevails (Taiwan, Korea, Indonesia and Singapore; and less so far in Thailand and Malaysia). His optimism seems a bit premature. According to the Economist Intelligence Unit's (EIU, 2010) in 2010 the majority of countries and most of the world's population lived under regimes that were not fully democratic (table 10)[12].

[Table 10. Democracy Index By Regime Type, 2010]

More than 35% of the world's population still lives under authoritarian rule (with China accounting for a large share of them). The wave of democratization that began in the mid 1970s and intensified after 1989 seems to have come to a halt or even gone into a retreat. Even in Europe where the financial crisis has had a negative impact on democracy. Beyond Europe, there has been backsliding on previous progress in Russia and its neighbors, in Sub-Saharan Africa, in Turkey, and in the new populist regimes in Latin America. In the most authoritarian region in the world, the Middle East and North Africa, It is not at all clear whether the "Arab Spring" will usher in a wave of democracy or will instead turn into an "Arab Winter".

Regarding the prospects for mid-century we note that among the 10 countries expected to grow the fastest between 2009 and 2050 (PwC, 2011) we find several populous authoritarian regimes

[11] A recent IDB (2011) report entitled "One Region, Two Speeds?" shows two distinct clusters of experiences labeled the 'Brazilian cluster' and the 'Mexican cluster'.

[12] "The Economist Intelligence Unit's Index of Democracy is based on five categories: electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture." (EIU, 2010, p. 1). The summary in the text draws liberally from this report.

(Vietnam, Nigeria, China, Saudi Arabia). Figure 5 presents a much less sanguine view of the prospects for democracy than Fogel's.

[FIGURE 5. GDP by Governance Form]

SHIFTS IN RELATIVE POSITIONS

The rise of Asia, the end of the Cold War, and America's entanglement in wars in Asia has prodded a renewed thinking on overstretching and the decline of empires and economic primacy. Two contradictory approaches interpret these events thus: The first one stresses the inevitability of the decline in the US and predicts dire consequences for the world system unless the decline is graciously accepted giving ample room to the emergent new number one whose identity has variously changed over the last three decades. A second approach sees also a potential for great distress in the global system unless the US is willing to assert its still considerable economic and military preeminence.

Changes of leadership come usually amidst general advance but not necessarily as an absolute decline of the erstwhile leader. In Cipolla's classic *Economic Decline of Empires* (1970) it is repeatedly shown that except for cases where societies die out all cases of decline turn out to be of relative decline, of loss of political, economic, and cultural predominance.

The recent rise of China and other Asian countries suggests to many the imminent displacement of the US as the leading, or sole, superpower. This echoes similar predictions in the not too distant past about the rise of Japan, of fortress Europe, etc. They proved to be more a wish to ascertain the decline of the US than a realistic assessment.

When Kuznets was writing and for the next two decades, it was the common view that the USSR was going to surpass the US. The question was only *when*[13]. In the late 20th century it was Japan's turn to be number one. When it stalled and the US took off in the 1990s the search was on. Then it was ascertained that the 20th century had been the US century and the 21st was going to be Europe's century[14]. In his 1996 book on *Economic Primacy,* Kindleberger ends the very last sentences of the book in a section entitled "*Next*?" with a list of various possibles for the role of emerging primary world economic power: "The United States again? Japan? Germany? the European Community as a Whole? Perhaps a dark horse like Australia or Brazil [and then almost as an afterthought] or China? Who knows? Not I."

Implications of shifts in relative positions

More important than who is number one might be the ability to cope with decline (Kindleberger, 1996). Differential economic growth implies that economic shares in world totals change resulting at times in changes in economic leadership. Scholars of international affairs, ever since the classical statement of Jacob Viner in his "Power versus Plenty" (1948), have argued against drawing too sharp a distinction between international economic and security affairs. Gilpin (2001, p.23) incorporates into this framework shifts in relative positions of countries and concludes that: "the resulting transformation of the international balance of power causes states to redefine their national interests and foreign policies. Such political changes frequently undermine the stability of the international economic/political system and can even lead to international conflict."

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[13] In Samuelson influential textbook over a period of three decades one finds a graphical prediction of the year at which the USSR would overtake the US. The date was about 25 years into the future and it kept shifting forward in successive editions without any posterior adjustment to the strong prior.

[14] January 9, 2001 in the *Independent* / UK: *The 20th Century Was American, But This One Will Be Europe's by* Mary Dejevsky]. Also *Why Europe Will Run the 21st Century* Mark Leonard, Fourth Estate (21 Feb 2005).

League mentality and measurement of performance

Before the 20th century changes in economic primacy would only become clear long after the fact as the meager and partial statistics accumulated, or through some decisive event such as a military victory. The development of national income accounts and their institutionalization as measures of performance officially sanctioned by the UN and its agencies, increasingly led to a narrow focus on GDP (total and per capita) and its rate of growth as measures of economic power to the almost exclusion of any other measures with the exception of military data. With the end of the Cold War even the latter has tended to be downplayed.

The availability of (more or less – probably less) comparable figures on GDP across countries, widely diffused, have created a league mentality where the position of a country in the pecking order becomes a national objective and an element of national pride[15].

Kuznets repeatedly argued for the importance of a continuous clarification of what is included in the measurement on national income and where to draw the line between gross and net output. Moreover the answers to these questions may well differ between nations making the comparisons problematic. The position of a country may be affected by nations changing the classification of items, the valuation of output, the treatment of intermediates in vertically integrated industries, etc. Where these measures do not suffice the next step is to call for a redesign of the way we measure GDP (but always in a one-size-fits-all mold) or progress. If, say, France consistently lags behind the US in the GDP per capita league then she can simply call for a new way to measure progress[16].

Measurement of relative power

The almost obsessive tracking of the relative rise of China and other Asian countries equates economic size with political and economic power. This core concept in international politics is largely absent from the economic literature (except for market power usually within a country or Marxian studies).

In realist approaches in international relations the main elements of state power considered are the sizes of the population, the territory, and the economic (GDP), and military strength. In a recent study by the CIA's Strategic Assessments Group (Treverton and Jones, 2005), the main metrics for world power used were GDP, population, defense spending, and a less precise factor that includes innovation in technology. A group of analysts at RAND (Tellis, 2000) argues that the postindustrial world requires new ways to assess national power and calls for the inclusion of additional measures to reflect soft power, ideational resources, etc. A post-modernist hollowing of the analysis that inevitably concludes with the demoting of the US.

A final measure worth mentioning is the Chinese Comprehensive National Power (CNP)[17], presented as a single figure that combines various quantitative indices of indicators of hard and soft power. Strategically or not the CNP calculations rank China not only far behind the United States but also behind the United Kingdom, Russia, France and Germany and also suggest that it is unlikely that China will overtake the United States in the 21st century.

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[15] And since the position of a country relative to various official thresholds can determine, for example, access to concessional aid, this creates an incentive to gaming the system. Similar comments apply, *mutatis mutandis*, to incentives for creative accounting to become eligible for, say, the Euro club.

[16] See the report by Stiglitz, Sen, and Fitoussi (2009), for the commission appointed by President Sarkozy.

[17] Reputedly used by Chinese leaders and strategists (see United States, Office of the Secretary of Defense, 2007). The description of the CNP is based on the Wikipedia entry "Comprehensive National Power," *Wikipedia, The Free Encyclopedia,* (accessed December 2, 2011).
http://en.wikipedia.org/w/index.php?title=Comprehensive_National_Power&oldid=460282637

On most items the dominance of the US is paramount

GDP: even when measured in PPP (less relevant for relative weight in the global economy) China is still years away from catching up with the US in terms of total GDP and many decades away in terms of per capita GDP. China is and will remain a very poor country for quite some time. Figures 6 and 7 and Tables 11 and 12 show comparative data on military expenditures, demography, and technology relevant for the assessment of relative power.

Military: China is huge and the regime is still capable of commanding and deploying, as in Korea in the early 1950s, waves of soldiers. But the superiority of the US in military expenditures and the quality differential is still overwhelming. Figure 6 makes clear the vast dominance of the US. The EU countries are a shadow of their former self; even if the five largest EU countries were to pull and coordinate their military resources their combined spending would amount to less than 14 percent of the world total.

[Figure 6. The World's Top 7 Largest Military Budgets in 2010]

Demography: The UN projections of population in Table 11 show that in 2050 India, China, the United States, Nigeria, Indonesia, and Pakistan are each expected to be as large as the 4 largest EU countries combined. In Russia, Japan, Germany, Italy, *and* China the population in 2050 is expected to be lower than today. The one-child policy succeeded in making China an outlier among less developed countries. India will become the most populous country in the world and the US will evidence only a moderate decline in its share of the world's total. Large increases in population are expected in Africa and the Middle East – one the poorest region and the other a region sustained by oil wealth.

[Table 11. Population in 2010 and UN Projections to 2050]

The U.S. demographic composition between working-age people versus dependents is relatively favorable when compared to most developed economies and China, (see table 12).

[Table 12. Old-age Dependency Ratio]

Finally, as Charles Wolf (2011) recently reminded us:

> "What the numbers omit is as significant as what they convey. Omissions include the societal and systemic factors that stimulate or impede creativity, innovation, entrepreneurship and new ventures. Numbers also ignore the effects of culture, property rights, law and political freedom in the near and long terms. "

On all of the above the advantage of the US is still very much in evidence.

***Technology*:** Figure 7 reproduces some charts on R&D and other technology indicators from the National Science Board, *Science and Engineering Indicators 2010.*

[FIGURE 7. R&D and Technology Indicators]

The pattern that emerges from these figures is one of continued US leadership in technology, especially on patents, R&D expenditures, and high-tech production. But there is also evidence of strong catching up on the part of China; its share of global high-tech goods exports more than tripled between 1995 and 2008 making China the single largest exporter of such products. It is still the case, however that the United States remains the number one destination of foreign students worldwide (OECD, 2011).

Resources: Energy resources have been the weak point in the US position since the 1970s. However at least when it comes natural gas production this has been changing rapidly thanks to the exploitation

of underground shale formations[18]. Between 2006 and 2010 U.S. shale gas production nearly quintupled accounting for almost a quarter of U.S. natural gas production. The reserves of the U.S. Northeast's Marcellus Shale formation is likely the world's largest unconventional natural gas reserve. The prospect for the US seem to be radically changing from large importer of natural gas from unsavory a once improbable future as an energy exporter.

Summing up: The overall picture is far more complex than the simple one portrayed by declinists[19].

PROSPECTS

The rise of China has come to dominate the discourse about the global economic and political systems. A key question then becomes whether the extraordinary fast growth of China is sustainable.

After two decades of intense attention to the growth and transformation of the Chinese economy it is not easy anymore to appreciate the extent to which they were unprecedented and unexpected putting into question many long held beliefs. There is no precedent of *sustained very fast growth* for decades in a *very large country*[20]. Large countries have low trade shares especially if they are not oil exporters. No totalitarian country has been able to sustain fast growth for decades without major turmoil or worse.

Can fast growth persist?

Once again we find two camps with very different outlooks. The first one adopts Herbert Stein's saying[21] ("If something cannot go on forever, it will stop") and focuses on the spread of rent seeking behavior and corruption, and the resulting political instability to predict that these developments will inevitably limit or halt China's growth. Other scenarios that may result in a slowdown[22] include overinvestment and the possibility of a downturn with higher unemployment, the inefficiencies of the SOEs (state owned enterprises), a collapse of the banking system, inflation, lack of democracy, and inequality. Then there is also the observation (echoing Stein) that individual country growth is mean-reverting.

But there are others, Robert Fogel for example, that question this and, so far, seem to be right. Fogel (2007) is confident that: "in 2040, the Chinese economy will reach $123 trillion, or nearly three times the output of the entire globe in the year 2000". Fogel expects that by 2040 China will become superrich with a per capita income twice that of the EU15. This is almost beyond comprehension; it cannot just be more of the same but will involve huge reallocations and new products[23]. But how is this phenomenal transformation supposed to come about? The very high gains from intersectoral shifts accounting (*pace* Fogel) for fully one third if the fast growth so far should continue. Enhancement of the quality of labor by education. Limits of control by central government based on the accepted policy called 'market preserving federalism' which promotes competition among local governments, constrains rent seeking, and provides incentives to innovation.

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[18] This section is based on "The FP Top 100 Global Thinkers," in the December 2011 issue of *Foreign Policy,* entry on Terry Engelder, Gary Lash, and George P. Mitchell selected for "upending the geopolitics of energy".

[19] Samuel Huntington (1988) first used the term in his critique of Paul Kennedy's overstretching thesis in *The Rise and Fall of the Great Powers.*

[20] Japan's experience between 1950 and 1975 comes closest but it started from a much higher income in 1950.

[21] Chairman of the Council of Economic Advisers under Presidents Nixon and Ford from 1974 until 1984.

[22] Fogel (2007) and Rogoff (2008).

[23] Over 70% of the goods in a contemporary consumption basket are in categories that have seen major changes (but still recognizable – e.g., watches) or radical changes (e.g., appliances, medical care, transportation) since the beginning of the 19th century (Nordhaus, 1997).

Fogel is not alone in his bullish forecast: Boltho (2004) and Martin Wolf (2008) for example, stress that GDP per head in China is only a tenth of US levels at PPP giving it still plenty of room for catch up. Then there is also the widespread belief in China that living conditions have improved contributing to political stability.

In the experience of fast growers in the past there have been many false overtakes or aborted take-offs. Willem Buiter (now Citigroup Chief Economist) and Rahbari (2011) argue that:

> "'This time it's different': many EMs have either opened up already or are expected to do so, and have reached a threshold level of institutional quality and political stability.
>
> For poor countries with large young populations, growing fast should be easy: open up, create some form of market economy, invest in human and physical capital, don't be unlucky and don't blow it. Catch-up and convergence should do the rest."

CHALLENGES

Recapping – Kuznets saw in the growing interdependence among progressively more diverse countries a source for potential benefits but also for tension and conflict. The short time elapsed since the end of the War and the assertive Soviet muscularity called for sober analysis. Fifty years later the post-modern peace in Europe, the fall of Communism, and America's imbroglios in three Asian wars (Vietnam, Iraq, and Afghanistan) have helped to redirect the attention away from international relations towards other challenges such as climate change and human rights. Security issues still loom large but not so much as rivalry among big powers but rather in the form of terrorism (much of it state-sponsored), the spread of WMDs, piracy, rogue states, etc. In this section I discuss three main areas with significant potential gains from cooperation but also large potential for conflict: the realignment of the balance among nations, the increased scarcity in resources and food, and the issue of global governance.

Realignment of the balance among nations

Looking beyond the current financial crisis we can expect a continuation of the recent differential growth performance: high growth in Asia spreading (maybe) to other areas, and low growth in most advanced countries. These trends will pose two major challenges: accommodating the rise of very large and still very poor economies and, within countries, adjusting to the structural changes implied in the high and low growth patterns in an increasingly interconnected world economy.

In the 1964 lectures Kuznets pointed to the limited spread of MEG as a source of conflict. Now the source of conflict has become the long awaited spread of MEG to parts of Asia and Latin America. The adjustment to the newcomers would be easier if rich countries were to grow at their post-war historical rates. As discussed below this seems unlikely for the near future. Other challenges posed by the rise of China and other Asian countries were already mentioned above.

The second challenge --adjusting to the structural changes implied in the high and low growth patterns-- brings us to the question: is growth the normal? For China the question is about the realization of a potential (which is not automatic). Catch up is a potential source of growth for follower countries but it's realization is a different story -- a point often emphasized by Kuznets. But for countries closer to the technological frontier -- the US, much of Western Europe, and Japan—the question is mostly an unexamined one. Peter Bauer stressed that "Poverty has no causes. Wealth has causes" as in the title of Adam Smith's opus: *An Inquiry Into the Nature and Causes of the Wealth of Nations,* but his remains a minority view since the rise of Development Economics as a field. The anomaly to be explained is the increased prosperity of the last 250 years not the lack of growth that was the fate of humanity for millennia. Modern Economic Growth is a very recent phenomenon.

Fifty plus years of fast growth in the heels of the sustained if slower growth from the mid 18th century on, have led us to accept growth as the normal state of affairs. Fifty years of growth theory has

hammered in the concept of steady state balanced growth even if totally ahistorical and close to a contradiction. Steady (more or less) growth has by now been internalized into our discourse and worse into our expectations and institutions. Without it pension plans become insolvent, deficits explode, debt ratios grow unbounded and we find ourselves in the midst of a crisis worsened by those expectations.

In spite of the textbook presentation that regards growth as the normal and the enormous progress achieved over the last two centuries, expectations of stagnation and of "Limits to Growth" abound; at times they become salient and are articulated by leading economists. I mentioned above the pessimistic forecasts for the American economy at the end of World War II that were based on the "secular stagnation" thesis that saw stagnation as the result of an expected fall in aggregate demand after demobilization, the closing of the frontier, and the exhaustion of investment opportunities. Rapid population growth in LDCs and OPEC's sharp increase in oil prices around 1970 generated a burst of apocalyptic predictions: mass starvation in Asia, exhaustion of oil and other natural resources, massive species extinction. Fertility declines and the green revolution were not foreseen then and neither was the extraordinary economic growth of China and other Asian countries (Fogel, 2005).

Writing about today's global imbalances Martin Wolf (2010) borrows a page from the past when he writes): "… the notion of a savings glut is not right. It might be better thought of as an *investment dearth*. This is true of the high income countries in particular." (p.65, my italics).

For long term growth the crucial factor is, to quote Kuznets, the "increasing stock of technological knowledge" (p. 79). In the 1964 lectures he writes that it is impossible to quantify the stock of technological knowledge or to trace the consequences of its accumulation especially as they are spread out extensively over time and lead to unknown and unforeseeable paths. "… there is no tested theory that traces the path from basic science to the emergence of technological innovations, to their gradual spread through the production system." (p. 81). Thus, successful performance in one decade may be a reflection of previous technological innovations making their mark with a lag due to slow spread in adoption and implementation or to a previously unsuitable institutional environment.

We lack a solid theory of the determinants of TFP so we proceed with partial theories . Over the last three decades the income of the median American household has not kept up with the expectations based on previous performance. Tyler Cowen (2011) labeled this experience "The Great Stagnation"[24] and attributed it to the slowdown in the rate of technological change combined with the exhaustion of the “low hanging fruit” from previous innovations. Not only has long term productivity growth declined but much of the recent innovations are more geared to private goods that benefit few unlike earlier public goods with very diffused impacts. Compare the employment generated by car production versus that of google or facebook.

Granted that technological breakthroughs are not foreseeable, the prospects are not bright. In a summary of his report for the Council on Foreign Relations, Spence (2011) shows that of the roughly 27 million jobs created in the American economy between 1990 and 2008, close to 98 percent were created in the nontradable sectors, led by government and health care (with retail, construction, and hotel and restaurant industries also contributing significantly to job growth). Meanwhile in manufacturing, engineering, and consulting services employment barely grew.

Then there are those that go the other route and forecast accelerating growth. In its extreme version --the singularity approach-- it predicts exponential growth for an indefinite future enabled by machine intelligence on a human level (Hanson, 2008). Still extreme but closer to the mainstream, Brian Arthur (2011) argues that digitization is creating a second economy that will lead to the biggest change since the Industrial Revolution. One final example, firmly within the mainstream, is the study by Brynjolfsson and McAfee (2011) where, contra Tyler Cowen, they argue that productivity growth is

[24] Published as an eBook and subtitled: "How America Ate All The Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better".

accelerating, that we are entering a third industrial revolution fuelled by computers and networks. The possibilities envisaged are vast but their realization is not automatic. Brynjolfsson and McAfee are not optimistic about the employment prospects unless institutions catch up with the speed of technological change. "The root of our problems is not that we're in a Great Recession, or a Great Stagnation, but rather that we are in the early throes of a Great Restructuring" (Kindle Locations 170-171). "As technology accelerates … so will the economic mismatches undermining our social contract" (Kindle Locations 452-454). Which takes us back to a crucial Kuznets theme: structural change is conflictual and, barring the proper institutions (such as a state as an agent for conflict resolution), the opposition they engender can hamper or stop growth.

Resources/food

Access to food, to energy sources, and to other raw materials has always been an important strategic element in the global economy. The 19th century search for secure sources was a key factor in the quest for empires. Malthusian fears of population growth outstripping the production of food were part of the relentless search for secure sources of supply. Neo Malthusian predictions of imminent exhaustion of oil and other natural resources have reversed the target from secure supply to limiting consumption with little to show so far for the vociferous advocacy.

While Malthusian fears still seem unwarranted it is nevertheless the case that the sudden acceleration of growth in very populous countries is causing demand to outstrip supply of many commodities leading to an increase in prices (beneficial to Brazil and Argentina, less so to Mexico and much of the developing world).

A growing consensus, that goes beyond the 'chicken little' [the sky is falling] club, is emerging that for many prices of commodities we can expect an upward trend for some time to come. Rogoff (2005) argues that these trends will have:

> "huge implications for the global balance of power. Indeed, perhaps no other aspect of economic globalization will pose greater challenges to world leaders over the coming decades ... Will the rebalancing of global economic power that results from this destabilize world politics? World War I, of course, was partly set off by Germany's concern that the other colonial powers had locked up too large a share of world oil and commodity supplies. Similarly, in World War II, Japan feared for the stability of its foreign supplies of oil and other natural resources. Will similar tensions arise between resource-challenged China (where even water scarcity is a problem) and the West?"

Similarly *The Economist* in a Special Report on "Feeding the World" (February 24, 2011) announced that "An era of cheap food has come to an end", and the US National Intelligence Council in his *GLOBAL TRENDS 2025* argues that "… unprecedented economic growth, coupled with 1.5 billion more people, will put pressure on resources—particularly energy, food, and water—raising the specter of scarcities emerging as demand outstrips supply." A recent study in Nature (Foley and (many) others, 2011) is optimistic about the prospects of food production but adds that:

> "…we face one of the greatest challenges of the twenty-first century: meeting society's growing food needs while simultaneously reducing agriculture's environmental harm."

Trade-offs may yet come to be recognized.

Global governance

The challenges of accommodating raising new powers in a slow growth environment and of resource scarcity, as well as the many other areas where the interaction among countries may be fraught with conflict have all elicited calls for an improved global governance.

The lowering of global barriers has resulted in many more friction points; it has become increasingly difficult to remain an isolated island. Hufbauer (2002) suggests that the main reason for harmonious governance before the mid 1980s was the competition between capitalism and communism that affected every aspect of the international economic and political life. This is no longer the case. The

emergence of many new countries and actors and the wider dissemination of information create a greater potential for perceived exclusion in global decision making – exclusion related to changes in the global distribution of power and wealth. The call for governance often amounts simply to demands for a better functioning, more transparency, and wider representativeness of existing practices and institutions such as the World Trade Organization and the security council of the United Nations. At other times it goes further calling for a world government.

With the thickening agenda and increased congestion at the table coordination has never been more important**.** But the belief that there are world solutions to be achieved by global governance or, by default, by international law is a chimera. The growing literature on the supply of global public goods – a key component of global governance -- mostly ignores that there are fundamental differences in preferences among countries (and regions, and individuals) and a wide potential for conflict. It is not just differences in marginal evaluations and willingness to share the burden of an activity desired by all, formidable obstacles in themselves, but in the more fundamental question of conflicting evaluations as to whether the provision of a particular public good is desirable or not. Security, freedom, and culture come to mind. In a world of increased differentiation it ignores subsidiarity and local knowledge.

There is no agreement on the minimal objectives for the global system nor on the rules of the game including mechanisms of adjudication and of conflict resolution. The Arrow paradox reemerges in full force. It is even doubtful whether the desiderata underlying the search for a Social Welfare Function (Arrow, 1951) command widespread acceptance; certainly not in the two large groups emerging as forceful new players and as challengers of the current system, namely, China and Islam.

A growing literature[25] has been questioning the prevalent but unexamined belief that nations comply with international law for non-instrumental reasons such as “a sense of obligation to comply … or international law’s normative pull” (Goldsmith and Posner, 2006). International law works primarily by providing focal points for coordination, and signaling cooperative solutions in prisoner’s dilemmas among sovereign states but without central enforcement.

The importance of national self-interest and the consequent primacy of great powers were forcefully argued in International Studies more than three decades ago by Krasner (1976)who bemoans in his essay the excessive attention paid to transnational forces at the expense of the still dominant role of the great powers. The global community as represented by the ubiquitous Global Civic Society (NGOs, epistemic communities, policy networks, transnational social movements) is leading to a "world civic politics" where nation-states are contested and nonstate actors (IGOs, NGOs, IFIs, MNCs, etc.) become more prominent. They threaten sovereignty but with only limited effective success; their high level of engagement and of public activity demonstrate existence but it should not be taken as a measure of impact. Smaller states and nonstate actors often affect the process but not necessarily the outcome (Drezner, 2007).

Global governance processes are substitutable; there is choice between instruments (soft or hard law), agents to advance the agendas (international organizations, NGOs, or directly), and venues or forums. We should expect more forum-shopping (if not always with great transparency) as the great powers, even with their weighted voting schemes, find it increasingly more difficult to work through the International Financial Institutions because of their “strong norms of consensus decision-making” (Drezner, 2007, p.205) and the fast economic growth in several low and middle income countries. To sum up, agreement among the great powers is necessary and sufficient for effective global governance. Other actors influence the process but not the outcome because the powers can substitute among processes and can shop for a friendly forum.

[25] The most notable specimen of this literature is the 2005 book by Goldsmith and Posner, *The Limits of International Law.* It was the subject of a special symposium in the *Georgia Journal of International and Comparative Law* (2006). In the text I draw heavily from the authors *Response* in the symposium (Goldsmith and Posner, 2006).

The utopian outlook that envisages a harmonious style of global governance is an extrapolation from the experience of the European Union to the world. The emergence of a postmodern system of security in Europe is seen as the desirable and likely future for the world[26].

Given "the configuration of state interests, the distribution of state power, the logic of collective action, and asymmetric information … some global problems may simply be unsolvable." (Goldsmith and Posner, 2005, p.225).

[26] Robert Cooper, in *The Breaking of Nations* (2003), extols the European system but he also recognizes the encroachment of chaos on the civilized world – from around it and within it. See also Syrquin (2010).

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TABLES

TABLE 1. Product per Capita 1820–2006 by Major Regions

	1820	1870	1913	1950	1973	2006
Product per capita, region						
(In USD according to 1990 PPP)						
Western Europe	1,204	1,960	3,457	4,578	11,417	21,098
Australia, Canada, United States and New Zealand	1,202	2,419	5,233	9,268	16,179	30,143
Japan	669	737	1,387	1,921	11,434	22,853
Asia (except Japan)	577	548	658	635	1,225	4,606
Latin America	692	676	1,494	2,503	4,513	6,495
Eastern Europe and the former Soviet Union	686	941	1,558	2,602	5,731	7,000
Africa	420	500	637	890	1,410	1,697
World	667	873	1,526	2,111	4,091	7,282
Share of global production						
(Percentages)						
Western Europe	23.0	33.1	33.0	26.2	25.6	17.7
Australia, Canada, United States and New Zealand	1.9	10.0	21.3	30.7	25.3	22.7
Japan	3.0	2.3	2.6	3.0	7.8	6.2
Asia (except Japan)	56.4	36.0	22.3	15.5	16.4	36.4
Latin America	2.2	2.5	4.4	7.8	8.7	7.7
Eastern Europe and the former Soviet Union	9.0	12.0	13.4	13.0	12.9	6.0
Africa	4.5	4.1	2.9	3.8	3.4	3.3
World	100.0	100.0	100.0	100.0	100.0	100.0

Source: Inter-American Development Bank, (IADB), 2009, Table 1.1

TABLE 2. Trade Flows' Intensities

	1950	1960	1980	2000
Countries reporting trade flows	60	113	143	157
Total number of flows	1,649	3655	8180	11,938
Value of total imports (million US$ at constant prices)	1,585	3,205	19,529	34,100
No of flows making up 90% of trade	340	634	894	855
No. of export markets: median	24	25.5	52	67
No. of import markets: median	27	3	64	71.5

Abstracted from Table 1 in De Benedictis and Tajoli, 2011, p. 142

TABLE 3. South–South Trade in World Trade, 1955- 2009

Year	Total ($ billions)	Share in World Trade	Share in Developing Country Trade	Developing Country Share in World Trade
1955	5.8	7.1	25.3	28.0
1965	7.5	4.9	22.7	21.4
1975	49.1	6.7	24.9	26.7
1985	126.1	7.8	30.2	25.8
1990	208.5	7.4	35.5	20.7
2000	629.9	10.3	33.7	30.5
2009	2,020.9	17.3	45.9	37.8

Source: Prema-chandra Athukorala, *South–South Trade: An Asian Perspective,*
ADB Economics Working Paper Series No. 265, July 2011
1955-1985: Only transactions between industrial and developing countries are included; based on UNCTAD database,
1990-2009: Compiled from UN Comtrade database.

Origin	Destination							
	North America	South and Central America	Europe	CIS	Middle East	Africa	Asia	World
Share of regional trade flows in each region's total merchandise exports (%)								
World	**16.6**	**3.6**	**41.9**	**2.6**	**3.2**	**4.2**	**26.3**	**100.0**
North America	**48.0**	8.0	18.2	0.6	1.8	3.1	20.2	**100.0**
South and Central America	25.0	**26.1**	19.6	1.3	2.8	2.5	20.8	**100.0**
Europe	7.3	1.5	**72.2**	2.9	3.2	3.1	8.5	**100.0**
Commonwealth of Independent States (CIS)	5.2	1.1	52.9	**19.2**	1.6	3.2	13.9	**100.0**
Africa	17.1	2.4	38.8	0.3	**11.7**	3.0	22.2	**100.0**
Middle East	8.7	0.7	11.0	0.5	4.9	**15.5**	51.8	**100.0**
Asia	17.5	2.7	17.9	1.6	2.8	4.6	**51.6**	**100.0**
Share of regional trade flows in world merchandise exports (%)								
World	**16.6**	**3.6**	**41.9**	**2.6**	**3.2**	**4.2**	**26.3**	**100.0**
North America	**6.3**	1.1	2.4	0.1	0.2	0.4	2.7	13.2
South and Central America	0.9	**1.0**	0.7	0.0	0.1	0.1	0.8	3.8
Europe	3.0	0.6	**29.7**	1.2	1.3	1.3	3.5	41.2
Commonwealth of Independent States (CIS)	0.2	0.0	2.0	**0.7**	0.1	0.1	0.5	3.7
Africa	0.5	0.1	1.2	0.0	**0.4**	0.1	0.7	3.2
Middle East	0.5	0.0	0.6	0.0	0.3	**0.9**	2.9	5.7
Asia	5.2	0.8	5.3	0.5	0.8	1.3	**15.2**	29.4

TABLE 4. Intra- and Inter-Regional Merchandise Trade, 2009
Source: World Trade Organization, International Trade Statistics 2010, Table I.4

TABLE 5. Foreign Value-Added in Exports

	Foreign value-added as share of total exports	Foreign value-added as share of high technology exports
China in 1995	15.5%	20.1%
China in 2005	27.4%	48.5%
Japan in 1995	8.2%	10%
Japan in 2005	15.2%	21.5%
U.S. in 1995	9.5%	16.6%
U.S. in 2005	12.3%	17.4%
Germany in 1995	20.8%	24.1%
Germany in 2005	27.8%	31.2%

Source: Tim Taylor (2011)

TABLE 6. Import Content of Domestic Final Demand and Exports (%)

Country	Year	Import content of domestic final demand	Import content of exports
Korea	1963	11.2	15.8
	1973	17.9	25.5
Taiwan	1956	9.7	13.6
	1971	17.9	25.0
Turkey	1963	3.7	2.7
	1973	4.7	3.9
Colombia	1953	7.0	4.1
	1970	7.3	3.7
Mexico	1950	6.6	5.2
	1975	8.3	10.5
Japan	1955	4.2	6.6
	1970	8.5	10.0
Israel	1958	12.8	12.1
	1972	27.0	21.2
Norway	1953	18.7	16.3
	1969	23.4	21.9
Yugoslavia	1962	6.0	9.6
	1972	14.1	18.7

Source: Kubo, 1985, based on Chenery, Robinson, and Syrquin, 1986.

TABLE 7. Annual Growth Rates in GDP and Per Capita GDP at Constant PPPs

	GDP - PPP	
	1990-2000	2000-2010
World	**0.053176**	**0.056391**
Advanced economies	**0.049118**	**0.038036**
Emerging and developing economies	**0.060429**	**0.081335**
Developing Asia	0.090139	0.102482
Latin America and the Caribbean	0.052231	0.053576
Middle East and North Africa	0.055205	0.070748
Sub-Saharan Africa	0.042045	0.075602
	GDP per Capita - PPP	
	1990-2000	2000-2010
Advanced economies	**0.040**	**0.032**
Emerging and developing economies	**0.041**	**0.067**
Developing Asia	0.075	0.090
Latin America and the Caribbean	0.036	0.040
Middle East and North Africa	0.034	0.042
Sub-Saharan Africa	0.014	0.049

Source: International Monetary Fund, World Economic Outlook Database, April 2011

TABLE 8. Contributions to Global GDP Growth, 1970-2015
(percent)

	US	Other advanced countries	China	Rest of the World
1970-1985	18	36	4	42
1985-2000	24	38	15	23
2000-2010	15	21	24	40
2005-2015	10	14	33	43

PPP Basis (percent, three-year moving averages)
World Economic Outlook (WEO) Rebalancing Growth…, April 2010
http://www.imf.org/external/pubs/ft/weo/2010/01/#ch1fig

TABLE 9. World Carbon Dioxide Emissions by Region (Million metric tons carbon dioxide)

			Projections		%of World total	
Region/Country	**2005**		**2020**	**2035**	**2005**	**2035**
United States	5,974		5,851	6,320	21	15
OECD Europe	4,398		4,042	4,107	16	10
China	5,558		9,057	13,326	20	31
India	1,187		1,751	2,296	4	5
Other Non-OECD Asia	1,637		2,163	3,362	6	8
Other*	3,469		4,779	6,036	12	14
Total World	**28,306**		**33,812**	**42,392**	**100**	**100**

*Middle East, Africa, and Central and South America
U.S. Energy Information Administration / International Energy Outlook 2010, p. 154
www.eia.gov/oiaf/aeo

TABLE 10. Democracy Index by Regime Type, 2010

Type of regime	**Countries**	**% of countries**	**% of world population**
Full democracies	26	15.6	12.3
Flawed democracies	53	31.7	37.2
Hybrid regimes	33	19.8	14.0
Authoritarian regimes	55	32.9	36.5

Source: Economist Intelligence Unit, 2010, *Democracy Index 2010: Democracy in Retreat*
http://graphics.eiu.com/PDF/Democracy_Index_2010_web.pdf

TABLE 11. Population in 2010 and UN projections to 2050

Country	2010	2050	2050/2010	2010	2050
World	**6896**	**9306**	**1.35**	**100.0**	**100.0**
China	1341	1296	0.97	19.5	13.9
India	1225	1692	1.38	17.8	18.2
United States	310	403	1.30	4.5	4.3
4 EU countries	*268*	*279*	*1.04*	*3.9*	*3.0*
Germany	82	75	0.91	1.2	0.8
France	63	72	1.14	0.9	0.8
United Kingdom	62	73	1.17	0.9	0.8
Italy	61	59	0.97	0.9	0.6
Russian Federation	143	126	0.88	2.1	1.4
Japan	127	109	0.86	1.8	1.2
Latin America	590	751	1.27	8.6	8.1
Sub-Saharan Africa	856	1960	2.29	12.4	21.1
Western Asia	232	395	1.70	3.4	4.2

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2010 Revision*, http://esa.un.org/unpd/wpp/index.htm, November 29, 2011; 12:56:51 PM

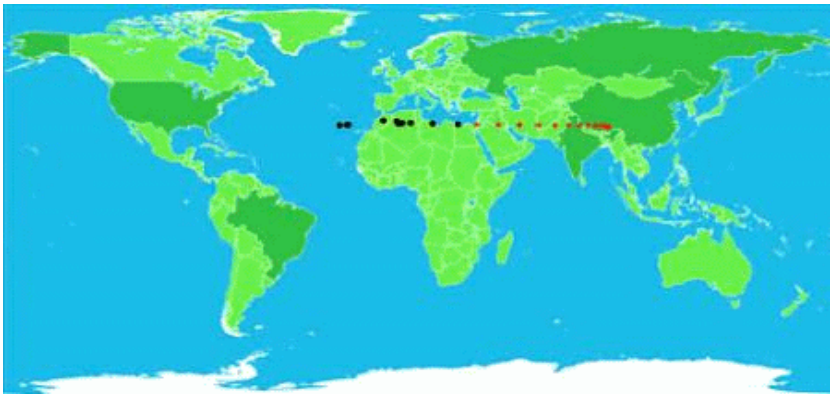
TABLE 12. Old-age Dependency Ratio

	2000	2050
China	10	42
India	7	20
United States	19	35
Western Europe	24	50
Italy	27	62
Japan	25	70
Russian Federation	18	39
Nigeria	6	8
Latin America	9	30

Source: United Nations, Department of Economic and Social Affairs/Population Division, *World Population Prospects: The 2010 Revision*, http://esa.un.org/unpd/wpp/index.htm December 02, 2011; 1:15:30 PM

FIGURES

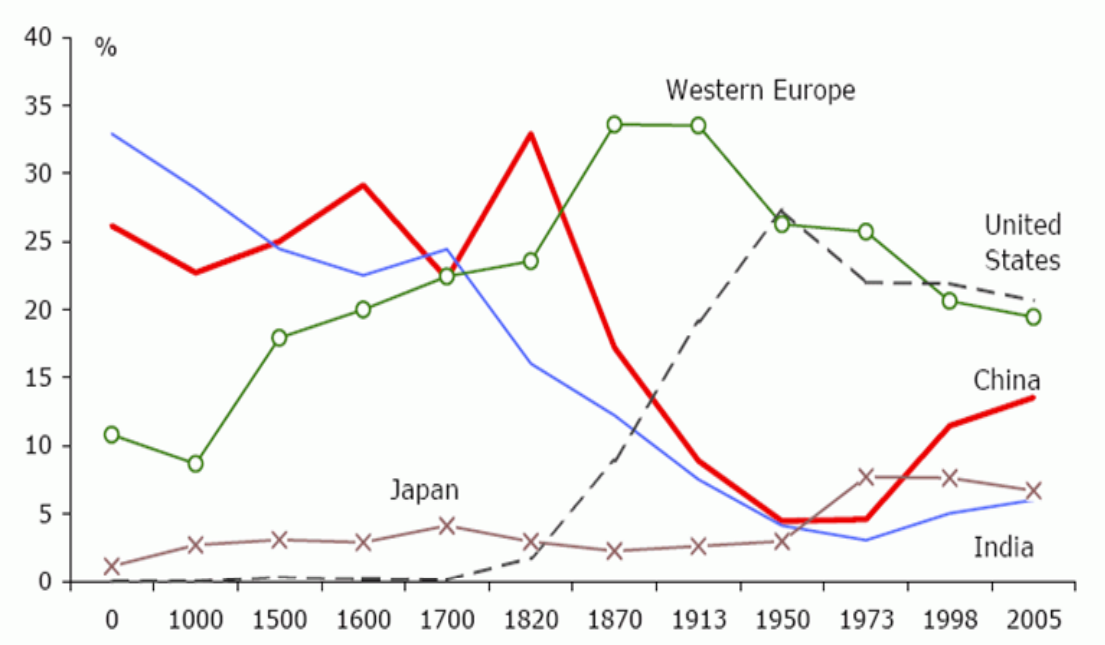
FIGURE 1. The World's Economic Centre Of Gravity, 1980–2007 (black) and extrapolated (in red, reduced size, italicised in table).



Year	Longitude (degrees)
1980	−24
1989	− 6
1998	1
2007	27
2016	*53*
2031	*83*
2049	*92*

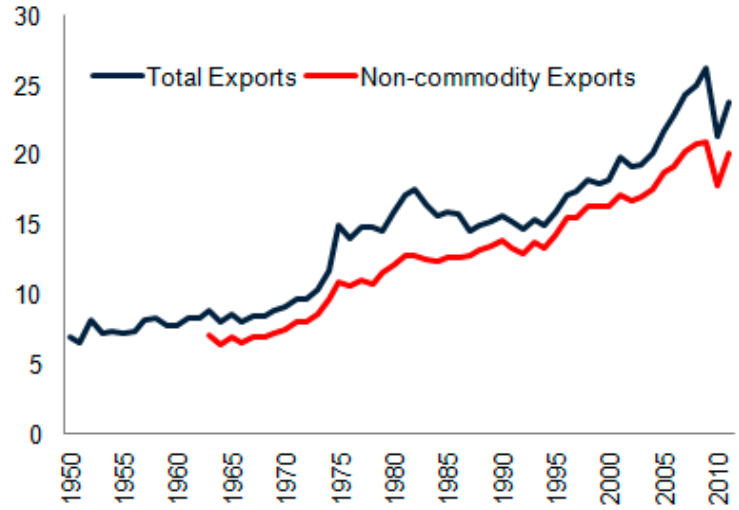
Source: Quah, 2011.

FIGURE 2. Major Economies' Share of Global GDP, 0-2005



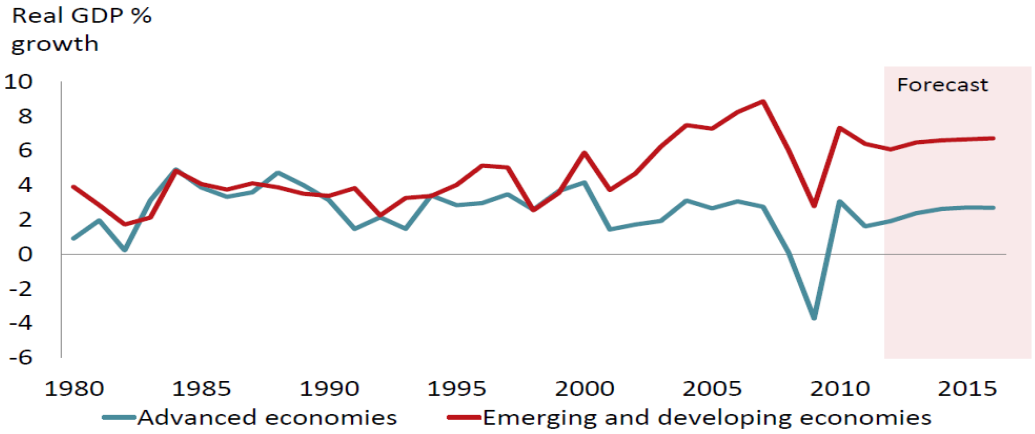
Source: Eslake, 2005. http://photos1.blogger.com/blogger/8020/421/1600/worldgdp.gif

FIGURE 3. World Exports Relative to Production (Percent of GDP).



IMF, Changing Patterns of Global Trade, June 15, 2011, page 6

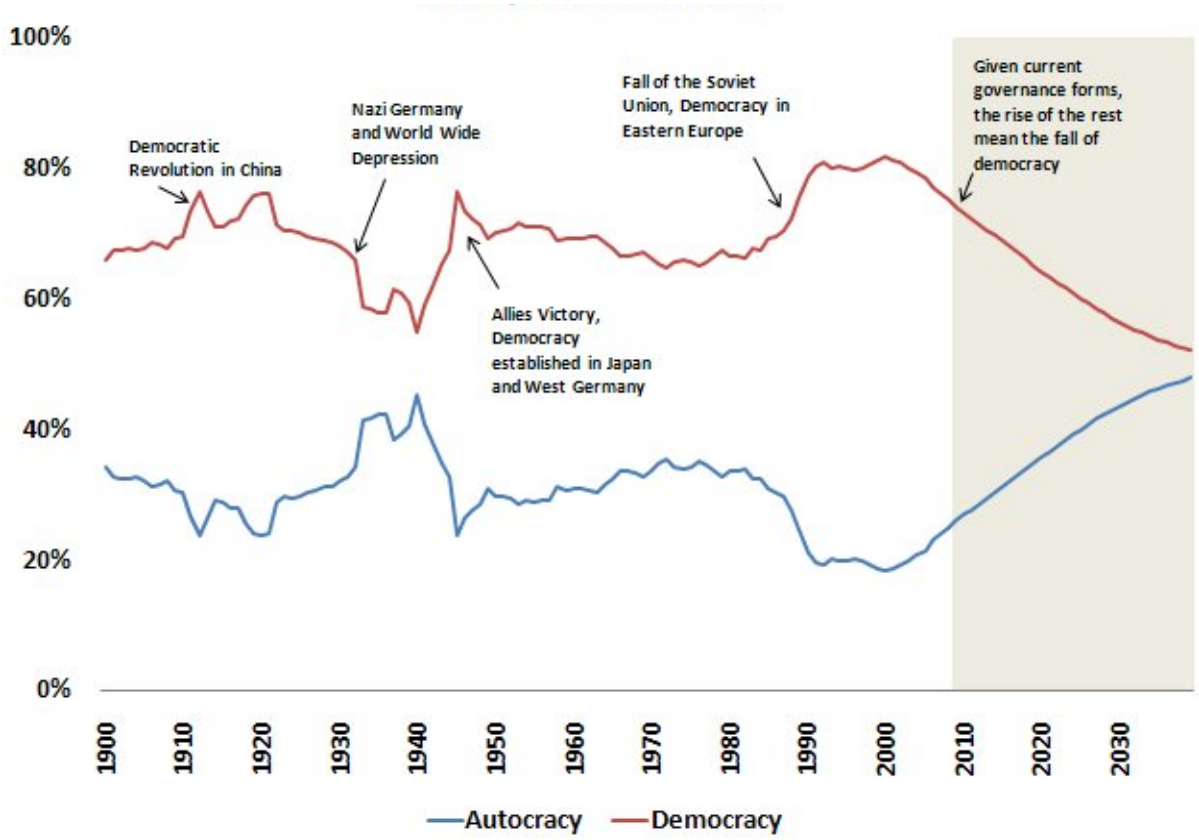
Figure 4. GDP Growth Rates, Advanced and Emerging Economies, 1980-2015



Source: IMF September 2011

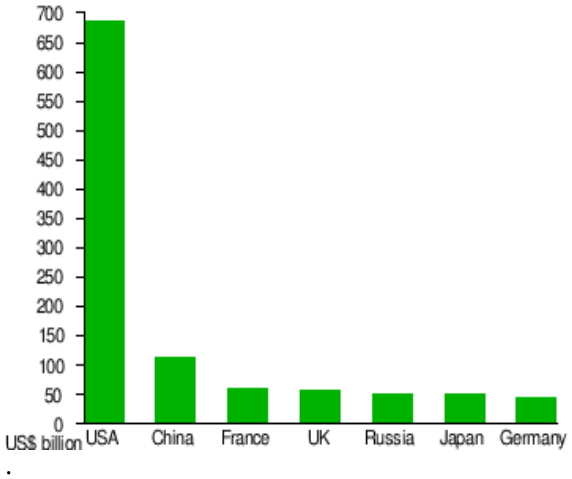
Global Outlook. The View Beyond 2011: Trends and tensions in a two speed world
Dr Megan Walters MRICS October 2011 http://propertyozevents.com.au/national/wp-content/uploads/2011/10/PIM_Megan-Walters-Australia.pdf

FIGURE 5. GDP by Governance Form



Source: Setser and m Swartz, 2009.

FIGURE 6. The World's Top 7 Largest Military Budgets in 2010



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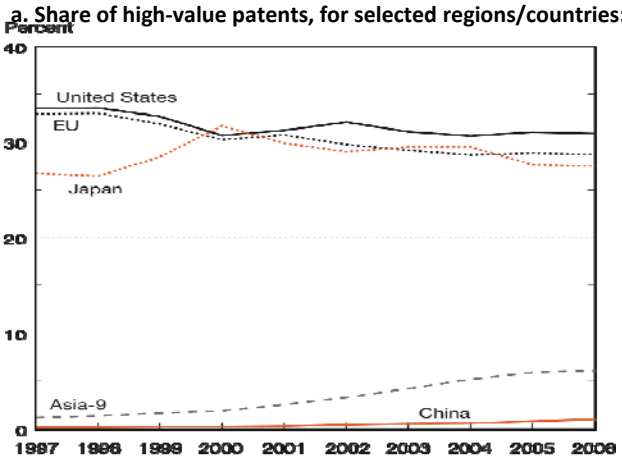
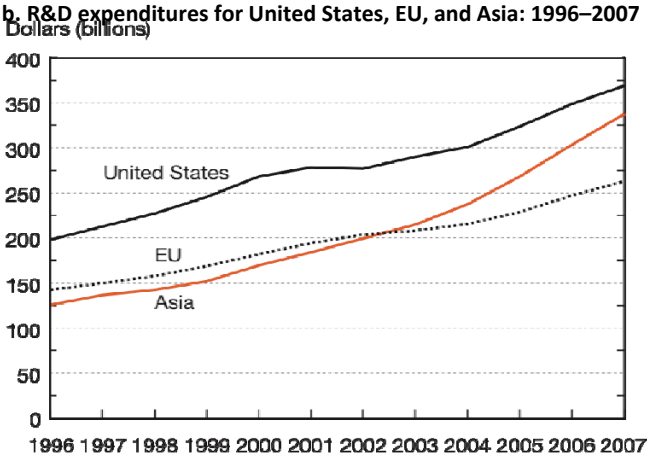
Source: Wikipedia, "List of countries by military expenditures," http://en.wikipedia.org/wiki/List_of_countries_by_military_expenditures, accessed November 27, 2011.

FIGURE 7. R&D and Technology Indicators

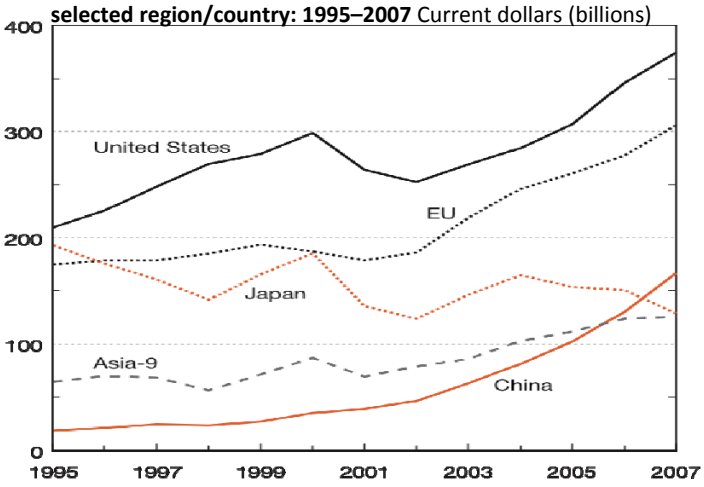
a. Share of high-value patents, for selected regions/countries: 1997–2006



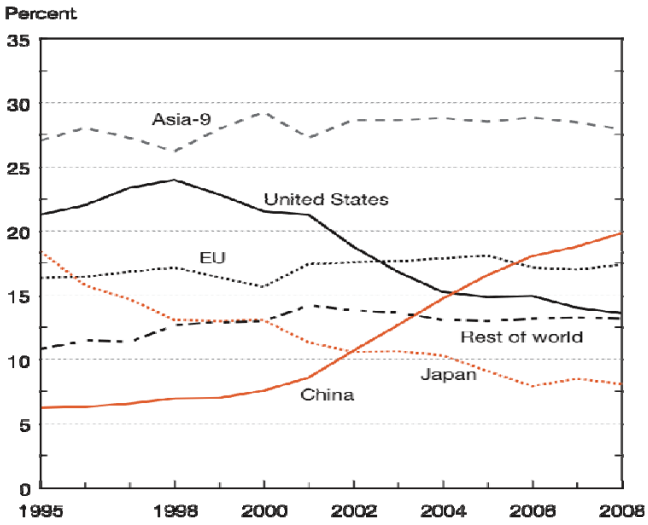
b. R&D expenditures for United States, EU, and Asia: 1996–2007



c. Value added of high-technology manufacturing industries, by selected region/country: 1995–2007 Current dollars (billions)



d. Share of global high-technology exports, by region/country: 1995–2008[a]



SOURCE: Tables NATIONAL SCIENCE BOARD, *Science and Engineering Indicators 2010*, Figures O-2, O-23, O-27, O-30.
http://www.nsf.gov/statistics/seind10/start.htm

NOTES: High-value patents are registered in three markets: the United States, the EU, and Japan.

High-technology manufacturing includes air- and spacecraft; pharmaceuticals; office, accounting, and computing machinery; radio, television, and communication equipment; and medical, precision, and optical instruments. Asia-9 includes India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. China includes Hong Kong. EU includes all 27 member states.

Asia-9 includes India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. China includes Hong Kong. EU includes all 27 member states.

Asia includes China, India, Japan, Malaysia, Singapore, South Korea, Taiwan, and Thailand. EU includes all 27 member states.

[a]Excludes intra-EU trade; EU excludes Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia.