

As the World Economic Forum highlights annually in its Global Competitiveness Report, productivity is the most important determinant of long-term growth. Yet productivity growth has stagnated around the world, particularly since the great recession, putting into question our ability to provide rising living standards for the world's citizens.

Page 69 Share Cite Suggested Citation: Balancing the National Interest: The National Academies Press. Although the objective of denial still underlies U. In this regard, three major developments may be noted. First, the character of the international marketplace is evolving in such a way that global diffusion of commercial technology takes place at a rapid rate; with growing frequency the technology being diffused has military applications. Second, the growing importance of trade as a part of U. In any reconsideration of U. More and more, Western nations are exporting large proportions of their domestic output and consuming sizable quantities of imported goods. Integral to these developments is the phenomenon of information diffusion, which is occurring more and more rapidly, in ever-greater volumes, and to more destinations than ever before. This development is partially due to the improved capabilities offered by new communications technologies such as satellites, fiber optics, and digital switching systems. It is also due to the widespread use of many other technologies for example, computers- which make expanded global interaction more efficient and less expensive as well. The current competitive environment promotes information diffusion because it creates incentives for companies to pursue such global production strategies as locating research, development, and manufacturing facilities around the world and entering into joint ventures. As these companies work to coordinate their international efforts, they transfer massive amounts of information. Attempting to control these rapidly growing volumes of data transfers would be an enormous endeavor; moreover, significant interference with this vital flow would disrupt the communications essential for competitive business operations. The shift to global production has resulted in the emergence of a new type of product, such as the "world car," whose components may cross national borders a number of times during production. It has also greatly expanded the roster of countries capable of mass-producing high-technology products. As can well be imagined, this situation has become a source of rising concern among defense planners. Another important development in international trade is the expanding commercial market for dual use products, most of which embody advanced technology. Early in the postwar era, DoD recognized that technology would be more and more vital to the defense of the NATO alliance and consequently supported research and development in a number of important fields. Defense-funded programs in aeronautics, propulsion, and electronics were particularly successful and ultimately had major impacts on the civilian economy as these new technologies were commercialized. As long as DoD-funded programs remained at the leading edge of technology development, subsequent commercial exploitation presented little threat to U. New weapon systems could be fully operational in the U. For a variety of reasons, the cost of developing new weapon systems incorporating state-of-the-art technology rose dramatically after the late s. Thus, by the late s there were a number of dual use high technologies, such as advanced microelectronics, that were introduced into the commercial sector well before they found application in military systems. As a result the U. This dilemma is central to the debate over national security export controls. Effective control is growing more difficult, however, because of the increasing rate of information diffusion and the rise of global production capabilities. FIGURE Manufacturing trade as a percent of gross domestic product per manufacturing domestic and foreign exports, f. Manufactured exports as a percentage of gross domestic product for manufacturing were 9 percent in and grew to 25 percent in before declining to 18 percent in The size and importance of the manufactured goods component of U. Because export controls bear most heavily on manufactured goods, such controls can have a serious impact on the overall economic well-being of the United States. With such high levels of interaction in world markets, it is not surprising that European and Asian countries are sensitive to the negative effects on trade caused by export controls. Department of Commerce DOC-3 definition. Department of Commerce, Bureau of the Census. Virgin Islands and foreign countries. By contrast, exports to the Soviet bloc in represented only 1 percent of U. Therefore, trade policies that might

diminish West-West trade have greater potential to damage the U. The high-technology sectors is an important component of U. It accounted for 30 percent of all U. This surplus helped to offset the trade deficit produced by other sectors. But for the past 5 years, the high-technology trade balance has worsened in parallel with the overall U. Export controls are not a leading cause of this recent decline in high-technology export performance, but they may tend to exacerbate the U. Consequently, a number of countries are devoting a great deal of attention to developing and improving their indigenous technical capabilities. CoCom Countries Many of the CoCom countries have a long history of advanced technological development. In the post-World War II period, these nations did not offer significant competition to the United States as they worked to rebuild their economies. But several of these countries- notably West Germany, France, and Japan are now providing significant competition to the United States. The ability to compete is in part the result of long-term efforts to enhance their indigenous technical capability. In the United States devoted more than half its total government RED funding to defense-related research; West Germany and Japan, on the other hand, devoted 9 percent and 2 percent, respectively. Although defense-related research can have commercial benefits, some have questioned its efficiency in generating commercially viable products in comparison to resources targeted specifically for commercial research purposes. Estimates for the period show that the inclusion of capital expenditures for the United States would have an impact of less than one-tenth of one percent for each year. Another indication of the long-term commitment by these countries to enhance their technical capability is their increasing employment of scientists and engineers. Although the United States still employs the highest proportion of technical professionals in the Western labor force, Japan, West Germany, France, and the United Kingdom have all moved to close this gap as shown in Figure One indirect measure of the growing technical competence of the Europeans and the Japanese can be found in patent applications. Between and the number of U. As shown in Figure there has also been a sharp decline in the number of U. A more concrete assessment of the growing competition faced by the United States is gained from a review of specific technologies. The following case examples help illustrate the tenuous nature of U. The United States no longer has the lead in several important areas of semiconductor technology. Japan has an emerging leadership role in metal-oxide semiconductor MOS high-density computer memories with well over 50 percent of the world market. Japanese firms are reputed to be leading most U. Japan also rivals U. The erosion of traditional U. Japan is acknowledged to have gained a clear lead in light source technology, one of the main components of fiber optic systems. In addition, Japan is credited with a lead in fiber optic applications and is competitive with the United States in other component technologies. And even before the U. In related U. Between and Airbus captured 17 percent of the world market. Although the United States retains broad leadership in computer hardware and software production, the Japanese now match or exceed the capabilities of U. The growing challenges to U. If goods comparable to controlled U. The trend toward non-U. During its European study mission, the panel heard repeatedly from representatives in every country it visited that some of their companies were in the process of switching to non-U. These actions stem not only from concerns about the additional costs and delays imposed by U. In assessing the scope and gravity of the problem of non-U. Customers that buy equipment incompatible with U. Although this pattern has worked to the advantage of the United States in the past, once non-U. Any benefits in terms of enhanced protection of an item from acquisition by the Soviet bloc that might be derived from more stringent unilateral controls on U. In technology areas in which there are non-U. For example, the value of manufactured goods exported from South Korea rose by a factor of between and Currently, a large share of these exports are traditional manufactures. They also are committed to developing more advanced indigenous capabilities. The ability to produce high-technology goods does not necessarily imply that a country possesses the indigenous capability to develop them. Many of the NICs are aware of this fact and are aggressively pursuing greater indigenous technological sophistication. A variety of policies are used to encourage development of indigenous capability: Industrializing countries vary in their willingness to comply with controls on militarily critical technology. Although the need for such agreements is evident, there is a clear danger associated with an exclusively bilateral approach. An agreement with a non-CoCom country that puts controls on U. Such a situation is likely to lead to the loss of U. Agreements with non-CoCom countries would result in more

effective control with less risk to U. Moreover, to be truly effective, any such agreements should also encompass indigenously produced goods and technology. The changing character of the global economic and technological environment discussed in this chapter has at least one clear implication: Effective control of technology must be pursued in a consistent, multilateral fashion. To the extent that the U. The various statistics in this chapter are drawn almost entirely from the following sources: Cooper, "Growing American Interdependence: Department of Commerce, International Trade Administration, National Academy Press, , which was prepared for the Department of Defense. Quick, and Karen M.

Chapter 2 : Major Social Changes:

Global Economic and Technological Change: Former Soviet Union and Eastern Europe, and China Hearing Before the Subcommittee on Technology and National Security of the Joint Economic Committee, Congress of the United States, One Hundred Second Congress, Second Session; June 8 and July 27, by United States Joint Economic Committee.

Globalization, Informatization, and Intercultural Communication Randy Kluver Globalization is not the only thing influencing events in the world today, but to the extent that there is a North Star and a worldwide shaping force, it is this system. Indeed, Friedman is only one in a long line of commentators and analysts who have ascribed tremendous importance to the forces of globalization and informatization that have already redefined industries, politics, and cultures, and perhaps the underlying rules of social order. This complex multi-level process of mediation between the global and the local, as an inherently communication phenomenon, promises to change not only the context, but likely the nature of intercultural communication. But what are these forces that seem to have such a profound effect on our lives? The awesome potential of information technologies and globalization has already had a profound impact upon industries, particularly the financial markets. What are the implications of these forces for those interested in intercultural communication? Moreover, in what ways can intercultural communication theory help us to understand these forces? Is the traditional study of intercultural communication, bound as it is by the interpersonal context, even relevant to the new issues arising with globalization and informatization? It is the purpose of this essay to explore the relevance of these globe-shaping forces to intercultural communication, and vice-versa, to identify some of the salient questions for theorists of intercultural communication that arise as a result of these forces, and finally, to identify the role of intercultural communication in providing foundations for understanding a globalized, technologized world. Globalization has been defined in various ways, but is most typically defined in reference to the interconnectedness of political entities, economic relationships, or even computer networks. Globalization refers primarily to the ways in which economic and industrial institutions such as industries or corporations interact in various locations throughout the world, with primacy given to no specific geographic location. Kennedy describes globalization in primarily economic terms, defining it as primarily integrative structures p. He further argues that globalization of economic structures means that local and national governments eventually cede control of policy to the global institutions primarily multinational corporations, but also including non governmental, regional, or international organizations, such as the World Bank or the International Monetary Fund. Even though the term globalization typically refers to economic phenomenon, there are ripple effects that make the impact of globalization much broader socially and culturally. Ideas, customs, and cultural movements all follow closely after the exchange of goods across national boundaries. At the recent Davos Economic Forum in Switzerland, Humberto Eco differentiated between globalization as a fact and globalization as a value. Globalization as a fact is the real economic ties, institutions, and realities that underlie a new economy. Globalization as a value is the extent to which we seek further integration of markets, pools of capital, and industries, although many seem to use the term to refer not to greater economic integration, but rather cultural and social integration. Not everyone is in full support of further globalization, as is evidenced by the December, riots at the World Trade Organization in Seattle. Opponents, such as Stop WTO! By informatization, I refer to the process primarily by which information technologies, such as the world-wide web and other communication technologies, have transformed economic and social relations to such an extent that cultural and economic barriers are minimized. In his groundbreaking book, Information Society as Post Industrial Society Yoneji Masuda argues that the technological innovations will provoke radical cultural and social changes that will be fundamentally different from the status quo. In the post-industrial, information-based society, knowledge, or the production of information values, will be the driving force of society, rather than industrial technologies p. Moreover, the convergence of technologies will precipitate further changes that promise to fundamentally alter the human landscape. Wang describes the same phenomenon which she calls "informatization" as "a process of change that features a the use of informatization and IT [information technologies] to such and extent that they become the dominant forces in

commanding economic, political, social and cultural development; and b unprecedented growth in the speed, quantity, and popularity of information production and distribution" p. This "New International Information Order" no longer allows national or regional considerations to stand in the way of the global integration of values, attitudes, and shopping brands. Thus, informatization is the process whereby information and communication technologies shape cultural and civic discourse. This would include not just computers and the internet, but other related technologies that have as their primary characteristic the transfer of information, including more traditional media technologies, such as film, satellite television, and telecommunications. As societies and economies re-orient themselves around technologies, there are inevitable consequences. These two concepts, globalization and informatization, thus explain different phenomena, but there is a marked overlap between their social, political, economic, and cultural functions. Although globalization ultimately refers to the integration of economic institutions, much of this integration occurs through the channels of technology. Although international trade is not a new phenomenon, the advent of communications technologies has accelerated the pace and scope of trade. Previously, ideas and technologies took centuries to diffuse across the globe, not seconds Sprague , With electronic communication media, however, within an instant, the most novel ideas can reach around the globe, or news of events in one continent can drastically affect financial markets around the world. On a daily basis, over one trillion dollars flows around the world on these electronic networks Kennedy , p. Conversely, globalization allows the proliferation of information technologies, and creates a world wide market and clear strategic incentives for the adoption of information technologies. Observers of the twin forces of globalization and informatization have argued that these forces will likely have consequences far beyond the immediate economic context. Rather, they are likely to have a profound impact on the cultural and social consequences of society. Certainly, globalization has contributed to a greater global consciousness that makes political and economic issues extend far beyond their immediate borders. The Dalai Lama, for example, now has as large a following among Westerners as he does in Dharamsala. Masuda argues that the post-industrial society will likely have the same impact, if not more, than the industrial revolution had on eighteenth century Europe. Just as the industrial revolution ultimately contributed to an increase in urbanization, social dislocation, and the development of new economic forms, the information revolution will create a new social context, including the emergence of "information communities," participatory democracy, and a spirit of globalism. Other scholars argue that globalization and informatization are likely to diminish the concept of the nation as a political institution at all Poster , Friedman argues that as nation-states decline in importance, multi-national corporations, nongovernmental organizations, and "superempowered individuals" such as George Soros gain influence and importance. As these non-political organizations and institutions gain importance, there are inevitable challenges to political, economic, and cultural processes. The overall impact of these forces, however, is difficult to discern. Predictions that they would usher in a new utopia, in which demarcations of economic, political, or geographical advantage would no longer matter, have proven to be chimeric. In some ways, globalization and informatization have clear advantages for human societies, but there are just as many potential problems that arise, so that the overall impact is still merely a subject for speculation. On the positive side, globalization and informatization can empower individuals and societies to engage in international arena for economic, political, and cultural resources. Moreover, these forces allow for the greater flow of information, even from places and to people who have traditionally been sealed off from the free flow of information. As Friedman argues, technologization has brought about a "democracy of information" p. Moreover, there is a proliferation of information about lifestyles, religions, and cultural issues. For example, the rise of the internet allows commerce to take place from anywhere, to anywhere, and is open to anyone. Consumers around the world can buy books from a source such as Amazon. Religious pilgrims can use live video streams to have a "virtual visit" to religious shrines, such as the Western Wall. The telecommunications and computer networks also allow for unprecedented global activism. Nonprofit activist groups such as the Ruckus Society , for example, use technological means to gather volunteers, teach about environmental and human rights activism, publicize events, and raise support through such traditional means as offering coffee mugs and T-shirts to supporters. This democratization of information increases the potential for international harmony, although it by no means

guarantees it. Information technology can also be used to empower marginalized communities, and some resources, such as the Global Knowledge partnership, engage in activities to make information technologies, including computing resources and telecommunications, as well as more low-tech media forms, available for the purposes of national and local economic development. This video clip from the World Bank argues that technological development should be used for the purposes of providing for health, agriculture, and environmental change, and ultimately, to eliminate poverty World Bank statement on new technology , Some argue that the new forces will help to democratize regimes that must either allow information or risk losing out on economic growth, contributing to an inevitable democratization of societies. In the People's Republic of China, for example, the webwar between the government and democratic activists is usually won by the activists US Embassy , There is no doubt that there is far greater access to various opinions, but whether or not these are accessed, and their impact if they are accessed, is still open to some debate. On the negative side, however, these twin forces threaten to undermine centuries of tradition, local autonomy, and cultural integrity. The internet, for example, is overwhelmingly an English language medium, and those who want to participate fully with all it has to offer had best read English Barber , Moreover, globalization establishes a global economic system in which those with the most capital are best able to capitalize on the global market, setting up what Friedman calls a "winner take all" system , p. Although technology levels the playing field, it does nothing to diminish the size of the competitors. The US, for example, overwhelmingly benefits from the rise of information technology, as it is the US that dominates almost all commercial sites and many, if not most, of the most profitable technology manufacturers. In addition, Westerners have clear advantages in telecommunications, as illustrated by the fact that there are more internet connections in Manhattan than in the entire African continent World Bank statement on technology , The same access to information made possible by the internet also empowers those with devious ends, such as international terrorism or even garden variety hackers, with greater powers at their disposal to exploit or attack others. A United Nations Development Project report in argued that globalization was indeed widening the gap between the rich and poor nations, and that the industrialized nations overwhelmingly benefit from both globalization of markets and the rising importance of information and knowledge in the new global economy. Moreover, the report estimates that English is the language of choice for 80 percent of web sites, and that 26 percent of Americans use the World Wide Web -- as opposed to 3 percent of Russians, 0. Barber characterises the dialectic between "McWorld vs. Jihad" as an inevitable point of conflict in the future, between a "McWorld tied together by communications, information, entertainment, and commerce" versus a "Jihad Moreover, the aggressive nature of the forces of globalization and informatization make mutual acceptance untenable. It is impossible to stand outside the globalizing world, as there are too many political, economic, social, and even technological forces pushing nations and societies in that direction. Although it might be possible for an individual to refuse to cooperate, the very nature of the globalized world make it impossible for whole societies to stand against it and still prosper. This brief introduction to the forces of globalization and informatization is by no means exhaustive, but it helps to raise some of the salient issues for further discussion. I will turn my attention now to the implications of these forces for international and intercultural communication theory, and give tentative expression to some of the questions that arise for theorists of intercultural communication. As noted previously, intercultural communication theorists have often noted the globalizing forces of economic integration, tourism, migration, etc, as important forces that provide a rationale for increased intercultural communication competency. Few, however, have attempted to discern the more fundamental questions of how these forces will change the very nature of intercultural contact. One notable exception is Chen and Starosta , In this section, I will attempt to articulate several broad areas of questions, and articulate some important areas that merit the attention of intercultural communication theorists. I will articulate these in two broad categories, the social implications and the interpersonal implications. Given that the field of intercultural communication is typically construed as primarily interpersonal, it might seem more helpful to address these first. However, given the fact that these forces are inherently cultural and social, I think it best to begin with a discussion of the larger social and cultural implications. These are areas that are typically not directly addressed by theories of intercultural communication, but rather more often come within the range of theorists of international

communication, critical theory, or even post-colonial literary theory. However, given the force we have ascribed these trends in the contemporary world, it is critical that theorists of intercultural communication engage them, as it is the social and cultural context in which all intercultural communication arises. I will specifically discuss three critical areas that need to be addressed, our understanding of culture, the ways in which cultural change is precipitated by globalization and informatization, and their role in defining personal and communal identity. Culture, of course, is an amorphous concept, even in the most rigorous theories of intercultural communication. Typically, it is defined as a symbolic system, which includes issues of perception, cognition, and understanding. Culture is not merely an abstract set of folk practices, nor a collection of touristy festivals. Rather, as Geertz defines it, it is a set of symbolic systems, that serve not only to define and identify the culture and social structures, but also to articulate the synthesis of two essential parts of human culture, ethos and world view. Geertz employs a very diffuse, totalistic conception of culture, that can not easily be perfunctorily articulated. Every specific act, every utterance, every thought must be understood within a much larger, much broader context. There are certain inherent challenges that globalization, in particular, make upon our understanding of culture. One of these is a tendency to equate "culture" with "nation. The nation, as a political abstraction, is certainly very different from the culture, which as Geertz has described it, is primarily a system of symbols. Although scholars distinguish between co-cultures within North American boundaries, this concept is rarely applied to other nations. The language most often called Chinese, Mandarin, or putonghua, the official language based on the dialect of the northern region around Beijing, is the official spoken language, but to the vast majority of citizens of the nation, it is a second language.

Chapter 3 : Globalization, Informatization, and Intercultural Communication

Global Economic and Technological Change: Former Soviet Union and Eastern Europe, and China Hearing Before the Subcommittee on Technology and National Security of the.

Explore the latest strategic trends, research and analysis Our lives are being shaken to their very core by technological change, with the Fourth Industrial Revolution transforming economies as never before. The unprecedented speed of change, as well as the breadth and the depth of many radical changes unleashed by new digital, robotic and 3D technologies, is having major impacts on what we produce and do, how and where we do it and indeed how we earn a living. And while the transformation will proceed differently in advanced and developing parts of the world, no country or market will be spared from the tidal wave of change. To appreciate the changes at hand, two interrelated aspects of the economy are particularly illustrative: As the World Economic Forum highlights annually in its Global Competitiveness Report , productivity is the most important determinant of long-term growth. While arguments abound as to what has been driving the productivity slowdown, an important question is how the Fourth Industrial Revolution will drive it in the years to come. In theory, the application of new technologies to existing problems should improve efficiency and thus productivity. Technological innovations tend to raise labour productivity by allowing the existing workforce to do more with less, by replacing existing workers with technology with an obvious downside, as I will come to later , and they also usher in new products and processes that open up new sources of growth. Techno doom, or techno utopia? Yet there is much debate on the likely size of the impact. On one hand, experts such as Robert Gordon of Northwestern University believe that the most important contributions of the digital revolution have already been made, and that the productivity impact of the current technological revolution is almost over. That would be worrisome indeed, particularly given the present slowdown. Perhaps there are such divergent views because the impact of technology is so difficult to measure. Even back in , the Nobel-winning economist Robert Slow noted: The Ubers and Airbnbs of the world are clearly providing efficiency and productivity gains. Yet many of the benefits of these new activities are not accounted for in the calculation of GDP, in the same way that private housework and childcare are neglected. In other words, we are increasingly producing and consuming much more value than our economic indicators measure. This suggests that we need a new way of measuring output and productivity, since we are not sufficiently taking into account the value that is being produced in the economy. It will be particularly important to revise the traditional growth and productivity numbers, since most of these new productivity gains will be achieved in a way that makes our world more environmentally sustainable. What happens when robots turn white-collar And while discussions of productivity and measurement remain somewhat theoretical, nothing can be more concrete than the potential impact on what is arguably most fundamental to our sense of economic worth: Throughout the ages , technology has replaced human effort, which while good for productivity growth as mentioned above and growth overall, is disruptive for those workers who lose their jobs. And this is no longer just about repetitive factory jobs: Given the speed and breadth of the changes now being unleashed, it is clear that new technologies will dramatically change the nature of work across all industries and occupations. And as automation will inevitably replace labour in providing existing goods and services, the main question is how long this will take and how far it will go. It has always been the case that technological innovation destroys some jobs and replaces them in turn with new ones, in a different activity and possibly in a different place. As technological innovation forges ahead, one can expect that low-skill activities will be progressively replaced by tasks that require creativity and social intelligence. We have already seen an increase of inequality within most OECD countries in recent decades, and institutions such as the IMF and the OECD are quantifying the extent to which this inequality is hampering growth and development. School, work, retirement â€” RIP Given that the dislocation will be significant and that the transition between the old and the new jobs will take time, the main question is what to do to foster more positive outcomes and best manage those caught in the transition. In a working environment that evolves so rapidly, the ability to anticipate future requirements in terms of the knowledge and the skills necessary to adapt becomes increasingly critical. The

traditional model of school-work-retirement will simply not cut it any more. This will be particularly important if we are entering an era when jobs are being rendered obsolete much faster than new ones are created. Will developing countries leapfrog ahead or be left behind? Finally, it is important to reflect upon what this might mean for developing countries. Over recent decades, although there has been a rise in inequality within countries, inequality across countries decreased significantly as developing countries began to catch up. Does it risk potentially reversing the catch up we have seen to date in terms of income, skills, infrastructure, finance, etc? Or on the other hand, will these technologies and rapid changes be harnessed for development and faster catch up through leapfrogging? The homo economicus of tomorrow It is hard to answer these questions, but they will require significant thought as advanced economies contend with their own challenges. It is not only a moral imperative to ensure that swathes of the globe are not left behind; such a scenario would also pose a risk to global stability through channels such as global inequality, migration flows, and even geopolitical relations and security. Ultimately, developing countries have the greatest gap to close, but can also benefit from learning from the mistakes of the advanced economies, leapfrogging to more prosperous and technologically enhanced futures. The successful homo economicus of tomorrow will certainly be different from today: She will live in a world that has been profoundly altered by the Fourth Industrial Revolution. Now is the time to make sure it is changed for the better. More on the Fourth Industrial Revolution.

Below is the uncorrected machine-read text of this chapter, intended to provide our own search engines and external engines with highly rich, chapter-representative searchable text of each book.

Import into RefWorks 1. Introduction Economic status of a country is fully depends on its financial system. Banking sector is predominate and plays a key role in the financial system of modern economy. Growth of banks accelerates financial system positively and contributes more in development of a nation. Many researches bear out countries with well equipped banking system develops very faster than weaken one. Indian financial system was very strong due to many reforms and policy changes undertaken by the rulers of the nation over the years. Liberalization, privatization and globalization policy integrated Indian economy with the global economy, which brought many structural changes in major sectors primary, secondary and tertiary. Indian banking system also changed with technological innovations like internet banking, mobile banking, Automated teller machine ATM , tele-banking and anywhere and anytime banking. These technical changes made Indian banks to cut their business boundaries and to penetrate into foreign market. It was strongly believed that Global economic crisis GEC did not affected Indian banking sector directly, due to limited operations outside India and not directly exposed to sub-prime mortgage assets, and also strong policies and regulations coined by both government and central bank of India. However, Indian banks would have affected indirectly, since, Indian economy was linked strongly with global economy and therefore it is impossible to think India to remain immune to the GEC. Crisis affected India in three different ways viz. Banking sector, external commercial borrowings and equity markets falls under financial sector and Collapse of Lehman Brothers squeeze the liquidity of global market which made companies to shift their credit demands from external to domestic market and a sudden increase of internal credit demand raised inter-bank call money rate. Credit crisis and collapse of large banks in USA increased the risk aversion of Indian banks and eventually harm credit expansion in the domestic market [1]. With this background it was believed, that there would have been an impact of the crisis on productivity changes of Indian commercial banks. Therefore, the present study was focused to explore productivity growth of Indian banking sector during recent global financial crisis. These technical changes will provide a clear picture on the source of productive change and also enables to explore main source for efficiency change either changes due to improvement in management practices or towards optimal size of commercial banks in India. The rest of the paper is organized as follows: Section 2 provides the literature review related to productivity growth, Section 3 provides the objective of the current study. In section 4, theoretical construction of DEA based MPI are briefly explained, Section 5 includes selection data and variables for the present study, following that Section 6 presents the results and discussion, and section 7 concludes the study. Literature Review Numerous research works has been reported on the measurement of productivity growth; and most of them are from developed nations and in that majority, can be seen as studies on industry and agricultural sectors which are the backbone sectors for the economy of a country [][2]. In developed countries like U. Even though banking being an important sector for the economical reforms of a nation like India, only few studies were undertaken regarding productivity concern [][20]. Studying the banks productivity changes will be more useful for bank managers, policy makers, and share holders. From policy perspective, if productivity of banks increases, it can be used for many purposes viz. Besides these, it would be as a safety net against different type of risk associated to banking sectors. Objective of the Study The main objective of the present study was to explore productivity changes of commercial India banks. DEA Based MPI Even though Sten Malmquist introduced Malmquist index MI to measure the changes of consumption in different period in the year , it was developed only after introducing theoretically in two influential papers [29 , 30]. Since malmquisit distance function was used for calculation of TFP by these authors, it was referred as malmquist TFP index. The usage of this method increased in various fields after it was empirically applied by [31], and by combining the ideas of [29 , 30 , 31] on the measurement of efficiency and measurement of productivity. The ratio of distance functions forms the malmquist TFP index, which provides details on degree of production changes and its components [31]. The

distance function can be viewed in two ways viz. The differences between the two are, the input distance functions describes the production by looking at a minimal proportional decrease of the input vector, given as an output vector. Whereas, output uses the given input vector and describes a maximal proportion increase of the output vector. Banks have more control over inputs than outputs, and therefore, in the present study input oriented distance function was used for construction of MTFP $\hat{\epsilon}$ DEA. Input Oriented Distance Function Input oriented distance function is defined as follows. Let us consider a sample N DMUs using $K \times 1$ inputs in the production of $M \times 1$ outputs in the time period and represents the set of all input vectors X , which can produce the output vector, Y . In an input-based approach, the production function was completely characterized by the input distance function, and is defined on input set, as follows: Input oriented distance function and production possible set Source:

Chapter 5 : Tecnology and Society, Impact of Technology Change in Society

Internet Archive BookReader Global economic and technological change: Japan and the Asia-Pacific region: hearing before the Subcommittee on Economic Goals and International Policy of the Joint Economic Committee, Congress of the United States, One Hundred Second Congress, second session.

They transcend local boundaries and touches lives of everyone. Evolution of mankind can be seen in terms of technological evolution as well. Invention of fire and wheel changed the face of mankind. Various historical epochs - hunter-gatherers, agrarian society and industrialist society are distinguished from each other in term of technological advancement. The technological factors represent the conditions created by men that have a profound influence on his life. Technology is product of civilization. According to Karl Marx even the formation of social relations and mental conceptions and attitudes are dependent upon technology. Veblen has regarded technology as the sole explanation of social change. F Ogburn says technology changes society by changing our environments to which we in turn adapt. This change is usually in the material environment and the adjustment that we make with these changes often modifies customs and social institutions. Technology has contributed to the growth of industries or to the process of industrialization. Industrialization is a term covering in general terms the growth in a society hitherto mainly agrarian of modern industry with all its circumstances and problems, economic and social. It describes in general term the growth of a society in which a major role is played by manufacturing industry. The Industrial Revolution of 18th century led to the unprecedented growth of industries. Industrialization is associated with the factory system of production. The family has lost its economic importance. The factories have brought down the prices of commodities, improved their quality and maximized their output. The whole process of production is mechanized. Consequently the traditional skills have declined and good number of artisans has lost their work. Huge factories could provide employment opportunities to thousands of people. Hence men have become workers in a very large number. The process of industrialization has affected the nature, character and the growth of economy. It has contributed to the growth of cities or to the process of urbanization. In many countries the growth of industries has contributed to the growth of cities. Urbanization denotes a diffusion of the influence of urban centers to a rural hinterland. Urbanization can be described as a process of becoming urban moving to cities changing from agriculture to other pursuits common to cities and corresponding change of behavior patterns. Hence only when a large proportion of inhabitants in an area come to cities urbanization is said to occur. Urbanization has become a world phenomenon today. An unprecedented growth has taken place not only in the number of great cities but also in their size. As a result of industrialization people have started moving towards the industrial areas in search of employment. Due to this the industrial areas developed into towns and cities. Modernization is a process that indicates the adoption of the modern ways of life and values. It refers to an attempt on the part of the people particularly those who are custom-bound to adapt themselves to the present-time, conditions, needs, styles and ways in general. People in the process of getting modernized give more importance to science and technology. The scientific and technological inventions have modernized societies in various countries. They have brought about remarkable changes in the whole system of social relationship and installed new ideologies in the place of traditional ones. Development of the means of transport and communication: Development of transport and communication has led to the national and international trade on a large scale. The road transport, the train service, the ships and the airplanes have eased the movement of men and material goods. Post and telegraph, radio and television, newspapers and magazines, telephone and wireless and the like have developed a great deal. The space research and the launching of the satellites for communication purposes have further added to these developments. They have helped the people belonging to different corners of the nation or the world to have regular contacts. Transformation in the economy and the evolution of the new social classes: The introduction of the factory system of production has turned the agricultural economy into industrial economy. The industrial or the capitalist economy has divided the social organization into two predominant classes-the capitalist class and the working class. These two classes are always at conflict due to mutually opposite interest. In the course of time

an intermediary class called the middle class has evolved. The problem of unemployment is a concomitant feature of the rapid technological advancement. Machines not only provide employment opportunities for men but they also take away the jobs of men through labor saving devices. This results in technological unemployment. The dangerous effect of technology is evident through the modern mode of warfare. The weaponry has brought fears and anxieties to the mankind. They can easily destroy the entire human race reveal how technology could be misused. Thus greater the technological advancement the more risk for the mankind.

Changes in social institutions: Technology has profoundly altered our modes of life. Technology has not spared the social institutions of its effects. The institutions of family, religion, morality, marriage, state, property have been altered. Modern technology in taking away industry from the household has radically changed the family organization. Many functions of the family have been taken away by other agencies. Marriage is losing its sanctity. It is treated as a civil contract than a sacred bond. Marriages are becoming more and more unstable. Instances of divorce, desertion and separation are increasing. Technology has elevated the status of women but it has also contributed to the stresses and strains in the relations between men and women at home. Religion is losing hold over the members. People are becoming more secular, rational and scientific but less religious in their outlook. Inventions and discoveries in science have shaken the foundations of religion. The function of the state or the field of state activity has been widened. Modern technology has made the states to perform such functions as -the protection of the aged, the weaker section and the minorities making provision for education, health care etc. Transportation and communication inventions are leading to a shift of functions from local government to the central government of the whole state. The modern inventions have also strengthened nationalism. The modern governments that rule through the bureaucracy have further impersonalized the human relations. The most striking change in modern times is the change in economic organization. Industry has been taken away from the household and new type of economic organizations have been set up such as factories, stores, banks, corporations etc.

Chapter 6 : Global Economic and Technological Change

Global economic and technological change: Japan and the Asia-Pacific region: hearing before the Subcommittee on Economic Goals and International States, One Hundred Second Congress, second s [United States.

Sophisticated information technologies permit instantaneous communication among the far-flung operations of global enterprises. New materials are revolutionizing sectors as diverse as construction and communications. Advanced manufacturing technologies have altered long-standing patterns of productivity and employment. Improved air and sea transportation has greatly accelerated the worldwide flow of people and goods. All this has both created and mandated greater interdependence among firms and nations. The rapid rate of innovation and the dynamics of technology flows mean that comparative advantage is short-lived. To maximize returns, arrangements such as transnational mergers and shared production agreements are sought to bring together partners with complementary interests and strengths. This permits both developed and developing countries to harness technology more efficiently, with the expectation of creating higher standards of living for all involved. Rapid technological innovation and the proliferation of transnational organizations are driving the formation of a global economy that sometimes conflicts with nationalistic concerns about maintaining comparative advantage and competitiveness. It is indeed a time of transition for firms and governments alike. This book provides a broad overview of these issues and seeks to shed light on such areas as the changing nature of international competition, influences of new technologies on international trade, and economic and social concerns arising from differences in national cultures and standards of living associated with adoption and use of new technologies. Page 2 Share Cite Suggested Citation: The National Academies Press. On the one hand, their assessment made clear that though most technological advance occurs in industry, there are too few mechanisms for exchange of views on international technology and cooperation that involve both private and public sector representatives in a forum not constrained by the formal policies and stands of national governments. There is great need for improved and more open lines of international communication on topics where engineering and technology intertwine with trade and economic growth. The second includes relationships at the institutional level, that is, the impact of technology on the management of businesses and industries. The fourth relationship occurs at the international level. Here information flows, trade frictions, and alliances characterize technological development, its diffusion, global competition, and economic advance. At the human level a key area of change is the invisible contract between a manufacturing company and its customers and employees. In the factory, we are seeing a movement away from the expectation that workers should be organized to fit the technologies and a movement toward networking and Page 3 Share Cite Suggested Citation: As a result of this phenomenon, organizations that pursue single objectives may be less suited for survival than those that consider a broader range of issues that optimize the human, organizational, and technological elements. At the institutional level, private enterprises are the principal instruments in many countries for developing and using technology, although governments play an important enabling role. The task of private enterprises is to be knowledgeable about the current state of science and technology, to understand the needs of the marketplace, and then to create technologies, products, and services that best meet those market needs. Morris Tanenbaum pointed out that this endeavor embraces many disciplines basic science, engineering, production, distribution, marketing, and finance and individual motivations. Many participants and observers of the contemporary technological scene propose that we are going through a period of discontinuous change as the breadth of technological applications expands and the time scale of change becomes shorter. This is particularly true with regard to the information technologiesâ€”the one technology most rapidly changing other technologies. It achieves its greatest power when it is most global; where it provides the means to obtain access to the information systems of other countries and establish arrangements that promote the transfer of technology. Government plays a central role in technology issues at the national level. Technology has now become a part of almost every political discussion as politicians have realized the impact of technology on world events. Public attitudes among various countries also differ, and these differences can affect governmental technology policy. In this respect,

multinational corporations, responsibly managed and sensibly treated by the countries in which they invest, Page 4 Share Cite Suggested Citation: From an international perspective, the main issue is to sustain and improve world growth and improve growth per capita. This breaks down into the problems of Western Europe, Japan, the United States, Eastern Europe and the Soviet Union, and the problems of the more and less advanced developing countries. Robert Malpas noted that it becomes essential for all these players to harness technology for growth; however, this effort is frequently constrained by protectionism, concerns about intellectual property, the demands of international marketing and finance, and, of course, national security. The net result appears to be that emerging nations, with a few exceptions, have even more difficulty achieving the growth necessary to close the gap with leading nations. Among the trends at the international level that can help sustain and improve world growth: As evidenced by the papers in this volume, these four relationships at the human, institutional, national, and international levels permeate discussions on the globalization of technology. In his keynote paper, Simon Ramo maintains that technological issues lie at the heart of most of the social, economic, and political issues of today, sometimes causing problems but more often offering possibilities for their solution. From this perspective, Ramo goes on to make several intriguing predictions about the role of technology in the future. Particularly powerful influences on the diffusion of new technological processes and products will be governments, corporations, national security concerns, and the rate of advances in scientific research. Technological discovery will become a global rather than an individual or national endeavor. As a result, new mechanisms will be developed to facilitate the flow of technology, despite protectionist-nationalist tendencies to stem the free exchange of information. One of these influences impeding the flow of technology is national security concerns. Ramo, however, is optimistic about the direction of the two superpowers, predicting that offensive forces will be reduced, thereby lessening interference with the flow of advanced technology and allowing the application of military technologies to peacetime applications in manufacturing, transportation, and services. Since the role of government in setting a national direction for technology is so pervasive, its relationship to the private sector in the Page 5 Share Cite Suggested Citation: Yet, Ramo argues, it is only the government that can perform the regulatory functions necessary for the smooth operation of free enterprise activity that makes use of new technologies. It is also the government, he says, that will be the primary obstacle to diffusion of the benefits of technology to world society. As experts on the costs and benefits of developing technology, engineers are in a key position to contribute to policy formation of these issues. For engineers to better prepare themselves for the future, Ramo suggests that engineering education place more emphasis on the links between engineering and its societal applications. The result, he says, will be engineers equipped to play a broader role in influencing government policies and practices regarding technological advance. He compares manufacturing to agriculture—“although it will no longer dominate the economy or provide the majority of jobs, it will continue to perform an important function even in a service-oriented society. Certain key technologies are bringing about this transition, both creating new industries and rejuvenating mature ones, and in the process are changing patterns of development throughout the world. The rapid spread of innovation makes it imperative that firms quickly exploit any competitive advantage. Moreover, their increased ability to operate in the global marketplace reinforces the importance of cooperative agreements to advance innovation. Another force driving the trend toward cooperation is the increasingly scientific nature of technology, which requires that firms take a cross-disciplinary approach to solving problems. Despite their influence in shaping a new pattern of global competition, each has unique problems. The United States, though a leader in developing emergent technologies, is facing the double threat of enormous budget and trade deficits as well as deindustrialization of traditional economic sectors. Japan, which has demonstrated enormous success in commercializing new technologies, has an economy excessively dependent on exports. Western Europe has the cultural tradition and core of excellent research groups to facilitate its leadership in the technology arena, yet it lacks the cohesion necessary to develop strategic initiatives in important sectors. Colombo optimistically concludes that globalization will bring the emergence of many small and medium-size multinational firms that will rely on Page 6 Share Cite Suggested Citation: Governments will provide oversight and strategic direction. The impact on developing countries will be enormous. With the help of new technologies, Third World countries can

transform their raw materials and energy into value-added commodities and thereby accelerate economic development without dysfunctional effects. It is the responsibility of developed countries, Colombo concludes, to see that this happens. Though desirable, the alliances proposed by Colombo are not easily established. As Gerald Dinneen points out in his paper on trends in international technological cooperation, international arrangements, whether they be international marketing organizations, joint ventures, or creation of subsidiaries, are necessary if industries are to get a proper return on investment and remain competitive. Despite these barriers, Dinneen says, international labs and exchanges of scholars and students in schools of engineering have been effective mechanisms for fostering international cooperation. Western Europe, he says, faces the unique difficulties posed by its diversity and nationalistic tendencies. George Pake describes a number of key advances in software: The creativity so evident in software technology today is not in danger, Pake says, despite the trend toward greater standardization and the possibility that ossification of the development system could occur in the future. Pierre Aigrain addresses several provocative questions about materials, particularly pertaining to the rate at which discoveries are made, the extent to which applications are found, and the impact of these discoveries on industry and society. Citing the influence of the market and the continued interaction between science and materials research, Aigrain predicts that the rapid trajectory of materials discovery will continue. The development of superconductors illustrates this point, and he concludes with a description of the impact these new materials in particular will have on industry and society. Lars Ramqvist provides insight on several of the cutting edge technologies that have had a major impact on information technologies. These include VLSI technology, computers, software and artificial intelligence, fiber optics, networks, and standards. In addition, he looks at three main applications of information technologies—normal voice telephony, mobile telephony, and data communications—assessing, first, the current state of the art and, second, projections for the future. Ramqvist concludes that because information technologies allow for the dissemination of information, and thus understanding, they will form the basis for a more equitable, humane society. Hiroshi Inose examines the telecommunications sector from a different angle—the effect of globalization on the entire industry. Particular technological advances, for example, the convergence of service modes and the microelectronics revolution, provide economies of scale but also require rapid inputs for capital investment. Among the problems and challenges Inose addresses are the software crisis, or the high cost of developing more sophisticated and diversified software; structural changes in industry, particularly in job design and labor requirements; standardization and maintaining interoperability between systems and equipment; reliability and security of systems against both external and internal disturbances; and integrity of information and protection of privacy. Like Ramqvist, Inose views telecommunications technology as the means to promote mutual understanding and cultural enrichment worldwide. Perspectives on the impact of technology on another industrial sector—construction—are presented by Alden Yates who describes the most significant trends in the areas of construction-related design, construction equipment and methods, automation and expert systems, and construction management. Computer-aided design has, among other things, improved communication between designer and supplier and speeded up the design development process. Increases in productivity are being achieved through off-site fabrication and assembly and robotics. Logistics practices, skill requirements, and labor-management relations are also changing as a result of these new technologies. In the long run, however, the effectiveness of management will determine success. Pehr Gyllenhammar makes a complementary point about the importance of management practices in his paper on the manufacturing industry. To claims that the manufacturing sector is on the decline in an increasingly Page 8 Share Cite Suggested Citation: One of the most influential changes has been the new technologies employed in the automotive sector, including new engineering materials, computer-aided design, robots, and microcomputers. These new technologies mean that decision making can become decentralized and that small-scale manufacturing can be cost-effective. Another important factor changing the manufacturing industry has been new demands from employees and customers, what Gyllenhammar refers to as the invisible contract between them and the corporation. In fact, the new technologies have brought about important changes in the way work is organized. Less desirable tasks have been taken over by robots; light, flexible technologies allow workers to organize themselves so that they

command the technology instead of vice versa; and new materials-handling mechanisms permit the layout of equipment to fit particular work organizations. The challenge for managers lies in organizing production so that they can develop their workers through both technical and leadership training. Gyllenhammar concludes that a viable manufacturing industry is necessary but not sufficient to solve the problems of unemployment and slow growth. The manufacturing industry is also the subject of the paper by Emilio Carrillo Gamboa; however, he discusses the issue of production sharing as both a result and a means of globalizing industry. By moving production facilities abroad to low-wage developing countries, firms manufacturing products that have entered the downside of the product cycle can maintain a competitive cost advantage. Mexico, in particular, has become an important production-sharing partner for the United States because of proximity, demographic factors, and the Mexican economic crisis which has resulted in lower wage levels that are competitive with labor costs in the developing countries of Asia and government programs that support production-sharing. The maquiladoras, or production sharing sites, have been the subject of debate in Mexico for a number of reasons:

Chapter 7 : Is technological change creating a new global economy? | World Economic Forum

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Here is a guide to the 10 challenges, and why they matter to the world. Food security and why it matters By , the world must feed 9 billion people. The United Nations has set ending hunger, achieving food security and improved nutrition , and promoting sustainable agriculture as the second of its 17 Sustainable Development Goals SDGs for the year To achieve these objectives we will need to address a host of issues, from gender parity and ageing populations to skills development and global warming. Agriculture sectors will have to become more productive by adopting efficient business models and forging public-private partnerships. And they need to become sustainable by reducing greenhouse gas emissions, water use and waste. The risks if we fail? Malnutrition, hunger and even conflict. Why should growth be inclusive? The push for economic growth in recent decades has led to substantial increases in wealth for large numbers of people across the globe. But despite huge gains in global economic output, there is evidence that our current social, political and economic systems are exacerbating inequalities, rather than reducing them. A growing body of research also suggests that rising income inequality is the cause of economic and social ills, ranging from low consumption to social and political unrest, and is damaging to our future economic well-being. In order to boost growth and counter the slowdown in emerging markets, we need to step up efforts around the world to accelerate economic activity and to ensure that its benefits reach everybody in society. What will the world of work look like? The scale of the employment challenge is vast. The International Labour Organization estimates that more than 61 million jobs have been lost since the start of the global economic crisis in , leaving more than million people unemployed globally. Nearly million new jobs will need to be created by to provide opportunities to those currently unemployed and to the young people who are projected to join the workforce over the next few years. At the same time, many industries are facing difficulty hiring qualified staff. Put simply, we need jobs for the hundreds of millions of unemployed people around the world, and we need the skilled employees that businesses are struggling to find. Insurers estimate that since the s weather-related economic loss events have tripled. Under the agreement, every country will implement its own climate action plan that will be reviewed in and then every five years to ratchet up ambition levels. Wealthier countries also committed to deliver significant flows of money and technical support to help poor countries cope with curbing their greenhouse gas emissions and adapt to climate change. The world has agreed what is to be done. Now it is time for implementation. The global financial crisis revealed significant weaknesses in the financial system and some of the vulnerabilities that can result from having such an interconnected global market. Several years after the crisis, the world economy is still struggling with slow growth, unconventional monetary policy in major economies, and constrained government budgets. It is vital that we find ways of making the financial system more resilient and able to withstand shocks in the market. The crisis also caused a significant drop in levels of public trust and confidence in financial institutions. To function efficiently, the system needs to re-establish that trust. Providing access to credit and savings is a major challenge in the battle against global poverty – yet 2 billion people do not have access to high-quality, affordable financial services. Additionally, there are million small and medium-sized enterprises worldwide that have no access to formal financial services. The challenge is to create a resilient, accessible financial system that people trust. The internet is changing the way we live, work, produce and consume. With such extensive reach, digital technologies cannot help but disrupt many of our existing models of business and government. We are entering the age of the Fourth Industrial Revolution , a technological transformation driven by a ubiquitous and mobile internet. The challenge is to manage this seismic change in a way that promotes the long-term health and stability of the internet. Within the next decade, it is expected that more than a trillion sensors will be connected to the internet. If almost everything is connected, it will transform how we do business and help us manage resources more efficiently and sustainably. But how will this affect our personal privacy, data security and our personal relationships?

Will the future be gender equal? Equality between men and women in all aspects of life, from access to health and education to political power and earning potential, is fundamental to whether and how societies thrive. For the past decade, the World Economic Forum has been measuring the pace of change through the Global Gender Gap Report, and at current rates, it would take the world another years " or until " to close the economic gap entirely. There has been a significant increase in awareness of the importance of gender parity and much has been done by international organizations, civil society, governments and business. However, often the work centres on single-issue awareness-raising campaigns. Existing work also frequently involves either cooperation between different public bodies or different private bodies. More needs to be done to bridge the gap and facilitate cooperation between the public and private sectors. International trade and investment are vital drivers of economic growth. With the size and shape of the world economy changing dramatically in recent years, traditional patterns of trading and investing have had to rapidly evolve alongside it. The challenge is to ensure that the regulatory framework keeps up. There have been so many changes in the way we do business. The growth of the digital economy, the rise of the service sector and the spread of international production networks have all been game-changers for international trade. As well as this, foreign direct investment has become a key element of trade between different countries. Rather than simply trading with international partners, more and more companies are buying controlling stakes in foreign enterprises. Despite fundamental changes in the way business is done across borders, international regulations and agreements have not evolved at the same speed. In addition, negotiations to reach a new global trade agreement have stalled. While there have been a string of bilateral deals struck between countries and regions, there is a pressing need to reform the global trade framework. We also need to address the growing unease over globalization, which is evident from the number of questions being asked about the power of corporations and the adequacy of the regulations governing employment, environmental issues and taxation. Investing for the long term is vital for economic growth and social well-being. But seven years after the global financial crisis, the world is still facing sluggish economic growth and constrained government budgets. As a result, there is an overall lack of long-term investment, which has serious implications for global growth. The challenge is to find ways of funding the basic systems and services that countries need to function in a difficult financial climate. How can we make healthcare fit for the future? Over the past few decades, the world has seen major advancements in health and largely as a result, people are generally living longer, healthier lives. However, serious challenges to global health remain, ranging from dealing with pandemics to the rise of noncommunicable diseases NCDs to the prohibitive costs of care, particularly in developing countries. The number of people on the planet is set to rise to 9. The global health system will need to adjust to this massive population growth, which will be concentrated in the poorest countries, and increasing numbers of elderly. This will mean shifting the current focus on treating sick people towards preventing illness and preserving the health of populations. To cope with this huge demographic shift and build a global healthcare system that is fit for the future, the world needs to address these challenges now.

Chapter 8 : Global Risks Report - Reports - World Economic Forum

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Chapter 9 : What are the 10 biggest global challenges? | World Economic Forum

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