# RIS A Think-Tank of Developing Countries

RIS is a New Delhi-based autonomous policy think-tank supported by the Government of India and devoted to trade and development issues. Its work programme focuses on policy research and capacity building on multilateral trade and financial negotiations, regional economic cooperation in Asia, South-South cooperation, new technologies and development, and strategic policy responses of developing countries to globalization, among other issues. The work of RIS is published in the form of research reports, books, discussion papers, policy briefs and journals.

RIS has networked effectively with other prominent policy think-tanks, government agencies, industry bodies and international organizations in Asia and other parts of the world for collaborative research and joint activities. It has a consultative status with UNCTAD, and has been accredited to the Summit Meetings of NAM and WTO Ministerial Conferences. It has conducted policy research and other activities in collaboration with other agencies, including UN-ESCAP, UNCTAD, UNU, Group of 77, SAARC Secretariat, Asian Development Bank (ADB), the World Bank, and the South Centre.

For more information about RIS and its work programme, please visit its website: www.ris.org.in.

**— Policy research to shape the international development agenda**


RIS
Research and Information System for Developing Countries

Core IV-B, Fourth Floor
India Habitat Centre
Lodhi Road
New Delhi-110 003, India.
Ph. 91-11-2468 2177-80
Fax: 91-11-2468 2173-74-75
Email: dgoffice@ris.org.in
Website: http://www.ris.org.in
Website: http://www.newasiaforum.org


# RIS Discussion Papers

## Demographic Complementarities and Outsourcing: Implications and Challenges for India


**Mukul G. Asher**
**and**
**Amarendu Nandy**



**RIS-DP # 111**



RIS
Research and Information System for Developing Countries

# Demographic Complementarities and Outsourcing: Implications and Challenges for India

**Mukul G. Asher**
**and**
**Amarendu Nandy**

**RIS-DP # 111**

July 2006

**RIS**
**Research and Information System for Developing Countries**
Core IV-B, Fourth Floor, India Habitat Centre
Lodhi Road, New Delhi – 110 003 (India)
Tel: +91-11-2468 2177/2180; Fax: +91-11-2468 2173/74
Email: dgoffice@ris.org.in

# Demographic Complementarities and Outsourcing: Implications and Challenges for India

**Mukul G. Asher*** **and Amarendu Nandy****

***Abstract:*** This paper analyses the implications of differing global demographic trends for India's competitiveness in outsourcing and offshoring. It also briefly notes the implications of differing demographic trends among the Indian states. The paper argues that demographic complementarities with high-income countries provide India with one-time opportunity to sustain its growth rate and occupy all segments of global outsourcing and offshoring activities. India has used the labor cost advantage to gain reasonable market share in these activities. It however faces serious internal and external challenges in sustaining its international competitiveness, particularly with respect to labor cost. With sustained focus on human resource development, diversification and upgradation policies India can continue to atleast maintain its global market share, and help nurture globally competitive companies.

***Keywords***: Outsourcing, Offshoring, India, Demographic Trends, Globalization.

## I. Introduction

Outsourcing has been among the most extensively debated public policy issues during the past few years.[1] Economists and business analysts have demonstrated strong economic justifications for outsourcing;[2] but the insecurity endangered by spread of manufacturing and service jobs around the world has inevitably led to political and social dimensions being introduced in the debate (Rajan and Srivastava, 2005).

The authors would like to thank anonymous referees, Sanjeev Sanyal, Amlan Roy, Anantha Nageswaran and R. Swaminathan for their useful comments. The usual caveat applies.

* Professor, LKY School of Public Policy, National University of Singapore and an Adjunct Senior Fellow at RIS. E-mail: sppasher@nus.edu.sg

** Research Scholar, Department of Economics, National University of Singapore. E-mail: amarendu@nus.edu.sg

The outsourcing phenomenon is generally referred to as a practice of subcontracting of business processes to an outside supplier, often to foreign companies, with the primary aim of reducing operating, administrative, and transaction costs. Globalization has necessitated companies to be cost-competitive while being innovative in the delivery of products and services; to engage in greater specialization of their human resources and other assets on a global basis; and in general, to focus on achieving economies of scale and scope. In the process, the companies and organizations have had to examine their complete structures and workflows. This has been an important by-product of outsourcing and offshoring decision-making process.

The global application of outsourcing is offshoring that potentially offers greater and wider benefits. Initially the focus of offshoring was on taking advantage of lower-cost of labor abroad.[3] The term offshoring does not necessarily imply that the tasks will be necessarily performed abroad. Complex strategies which involve bringing foreign professionals to domestic shores to undertake the task are possible (Figure 1). While outsourced processes are handed off to third-party vendors, offshored processes can be handed off to third-party vendors or remain in-house. The definition of offshoring includes organizations that build dedicated captive centres of their own in remote, low-cost locations (Ho *et al*., 2004).

**Figure 1: Offshoring Strategies**

| | | |
|---|---|---|
| **Market-based (Externalized)** | Outsourced to third-party provider (***Onshore Outsourcing***) | Outsourced to third-party provider (Local firm or subsidiary of other MNE) (***Offshore Outsourcing***) |
| **Hierarchy-Based (Internalized)** | Internal Domestic Service Provision (***In-House At Home***) | Within MNE Subsidiary of Firm (***Captive Offshoring***)<br><br>-Equivalent to FDI |
| | **National** | **International** |

*Source:* Bartels (2005).



In addition to labor cost savings, one of the important motivations for companies to engage in outsourcing or offshoring is to access workforce in different time zones across the globe so as to enable them to work round the clock, and consequently meet worldwide customer needs. Commonly, the developing countries, particularly those in Asia, have been beneficiaries of such a model, also sometimes referred to as *follow-the-sun*[4] development model.

Offshoring non-core functions also enable companies to focus their resources more productively in areas of their mainstream activities. By offshoring non-core functions to overseas firms that specialize in them, businesses may be able to benefit from the efficiency of scale and scope. Indeed, many executives are discovering that offshoring is really about corporate growth, making better use of their in-house staff, and domestic job creation, not just relatively lower wages abroad (*BusinessWeek*, 2006). The enormous gains in efficiency, productivity, quality, and revenues by leveraging offshore talent are far more substantial than labor cost savings.

The key question has therefore changed from 'where will it be the cheapest?' to 'where is the ability?'.[5] For Multi-National Enterprises (MNEs), the new buzzword is *transformational outsourcing* as the perception among old-line multinationals seems to be changing. Offshoring is now seen as a catalyst for a broader plan to overhaul outdated office operations; liberate expensive analysts, engineers, and salesman from routine tasks to more productive ones; and prepare for new competitive battles (*BusinessWeek*, 2006). C.K. Prahalad has observed that the changed perceptions are still not universal as "…many companies don't understand yet that outsourcing isn't about exporting jobs, it is about importing innovation" (*BusinessWeek*, 2006).

Offshore outsourcing may be in the areas of manufacturing, information technology (IT), and back office operations. India has emerged as the global IT and back office service provider, particularly catering to Business Process Outsourcing (BPO) activities that include call centres, finance and accounting, human resources, and transaction processing. India is also developing capabilities in Knowledge Process Outsourcing (KPO)[6] and Knowledge-

enabled Products and Services (KEPS). It thereby hopes to occupy outsourcing space in all segments at all skill levels (*Business India*, 2005). The prime location for offshored manufacturing activities, however, has been China.[7]

The current trend in offshoring and outsourcing has been in response to increased competition due to globalization, willingness to concentrate more on mainstream activities, to reduce fixed and variable costs, to make processing more efficient, and to enable the staff employed in affluent in rapidly ageing countries to concentrate on higher value added activities.

This paper analyzes the premise that demographic trends will increasingly be among the key factors influencing the dynamics of competitive advantage in outsourcing and offshoring. It is therefore essential to analyze the dynamics of demographic trends in countries (and companies) which are outsourcing and offshoring activities to other parts of the world; as well as countries (and companies) competing to attract such activities. Offshoring could help diminish the effects of demographic trends in countries (or states) where the ratio of the working population to the total is expected to decline, and median age is expected to rise. This is especially the case for countries which are reluctant to permit physical in-migration of workers on a long-term basis.

The paper also briefly touches on the implications of differing demographic trends among various states in India for outsourcing, an area which has received scant attention in the literature. The implications of these are both for businesses and governmental organizations as well as for the human resource development policies and strategies.

The rest of the paper is structured as follows. Section II discusses the dynamics of demographic trends in the global perspective. The following section (Section III) discusses the Indian context. Section IV provides a brief overview of India's position in the world's outsourcing and offshoring activities. Section V analyses the major implications and challenges of the demographic trends for outsourcing and offshoring for India. The final section provides the concluding remarks.



## II. Global Demographic Dynamics

There are three major demographic trends which are evident. *First*, fertility rates are dropping nearly everywhere. *Second*, life expectancy is rising in many, though not all parts of the world. *Third*, developed countries are well advanced with respect to the above two trends, reflected in their declining share in world population. The non-developed countries are farther behind, though variation among them is large (Roy, 2005).

Table 1 provides selected demographic indicators for the ten selected countries, and the world, on the basis of which the following observations may be made:

(1) World population is projected to rise by 2.6 billion in the next 45 years, from 6.5 billion in 2005 to 9.1 billion in 2050. Almost all the growth will take place in the less developed countries. India and China's collective share in world population will decrease from 37.4 percent in 2005 to 32.9 percent in 2050, though in terms of absolute numbers these are going to be substantial.

According to UN estimates, during 2005-2050, eight countries are expected to account for half of the world's projected population increase, namely - India, Pakistan, Nigeria, Democratic Republic of the Congo, Bangladesh, Uganda, United States of America, Ethiopia, and China, listed according to the size of their contribution to population growth.

(2) Population growth rate will decline by mid-century in all the countries. The average annual rate of change in population for a 5-year period from 2045-2050 hits negative domain in China, and most of the OECD economies, excluding United States and the UK. The total fertility rate currently is below the replacement rate in practically all industrial countries and in many parts of the developing countries, such as China.

(3) In 2000-2005, fertility at the world level stood at 2.65 children per woman, about half the level it had in 1950-1955 (5 children per women). In the medium variant, global fertility is projected to decline further to

**Table 1: Demographic Indicators in Selected Countries**

| Country | Total population *Medium Variant (Millions)* | | Average Annual rate of change in population(%) | | Total Fertility Rate | | Median Age (yrs.) | | Life Expectancy at Birth (both sexes) (yrs.) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2005** | **2050** | **2000-2005** | **2045-2050** | **2000-2005** | **2045-2050** | **2005** | **2050** | **2000-2005** | **2045-2050** |
| **India** | 1103.4 | 1592.7 | 1.55 | 0.32 | 3.07 | 1.85 | 24.3 | 38.7 | 63.1 | 75.9 |
| **China** | 1315.8 | 1392.3 | 0.65 | -0.35 | 1.70 | 1.85 | 32.6 | 44.8 | 71.5 | 78.7 |
| **Philippines** | 83.1 | 127.7 | 1.84 | 0.37 | 3.22 | 1.85 | 22.2 | 37.9 | 70.2 | 78.6 |
| **Vietnam** | 84.2 | 116.6 | 1.37 | 0.18 | 2.32 | 1.85 | 24.9 | 41.3 | 70.4 | 78.9 |
| Others: | | | | | | | | | | |
| World | 6464.8 | 9075.9 | 1.21 | 0.38 | 2.65 | 2.05 | 28.1 | 37.8 | 65.4 | 75.1 |
| **Japan** | 128.1 | 112.2 | 0.17 | -0.49 | 1.33 | 1.85 | 42.9 | 52.3 | 81.9 | 88.3 |
| **Korea** | 47.8 | 44.6 | 0.44 | -0.85 | 1.23 | 1.77 | 35.1 | 53.9 | 76.8 | 84.4 |
| **Germany** | 82.9 | 78.8 | 0.08 | -0.17 | 1.32 | 1.85 | 42.1 | 47.4 | 78.6 | 83.7 |
| **France** | 60.5 | 63.1 | 0.41 | -0.13 | 1.87 | 1.85 | 39.3 | 45.5 | 79.4 | 84.8 |
| **US** | 298.2 | 394.9 | 0.97 | 0.38 | 2.04 | 1.85 | 36.1 | 41.1 | 77.3 | 82.4 |
| **UK** | 59.7 | 67.1 | 0.34 | 0.17 | 1.66 | 1.85 | 39.0 | 42.9 | 78.3 | 83.5 |

*Source*: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2004 Revision and World Urbanization Prospects: The 2003 Revision, http://esa.un.org/unpp, 11 February 2006; 3:50 PM.



2.05 children per woman by 2045-50. The total fertility rate is below the replacement rate in practically all industrial countries and in many parts of the developing countries, such as China.

(4) Global life expectancy at birth, which is estimated to have risen from 46 years in 1950-1955 to 65 years in 2000-2005, is expected to keep on rising to reach 75 years in 2045-2050. In the more developed regions, the projected increase is from 75 years currently to 82 years by mid-century. Among the least developed countries, where life expectancy today is just under 50 years, it is expected to be 66 years in 2045-2050 (United Nations, 2005).

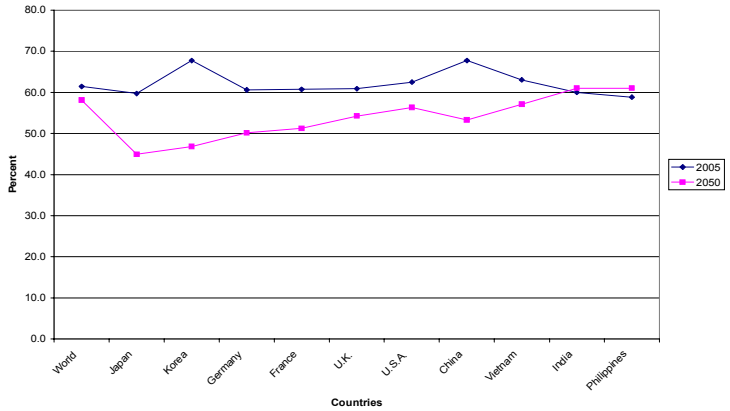
(5) The primary consequence of fertility decline, combined with increases in life expectancy, is population ageing, whereby the share of older persons in a population increases relative to that of younger persons. Globally, the number of persons aged 60 plus years is expected almost to triple, increasing from 672 million in 2005 to nearly 1.9 billion by 2050 (United Nations, 2005). The share of elderly living in developing countries will increase from 60 per cent in 2005 to 80 per cent by 2050.

In developed countries, 20 per cent of current population is aged 60 years or over, and by 2050 that proportion is projected to be 32 per cent. The elderly population in developed countries has already surpassed the number of children (persons aged 0-14), and by 2050 there will be two elderly persons for every child. In the developing world, the proportion of the population aged 60 or over is expected to rise from 8 per cent in 2005 to close to 20 per cent by 2050 (United Nations, 2005).

(6) Increases in the median age, the age at which 50 per cent of the population is older and 50 per cent younger than that age, are also indicative of population ageing. The median age in the developed countries has already reached mid-30s to early 40s; Japan, Germany and France being on the higher side of the band. In contrast, the Asian countries having a relatively young profile, with the median age in mid-20s, except in China (32.6 in 2005). However, population ageing is also inevitable in the developing world and will occur faster in those countries, though it will only touch the current levels of the developed world after four decades.

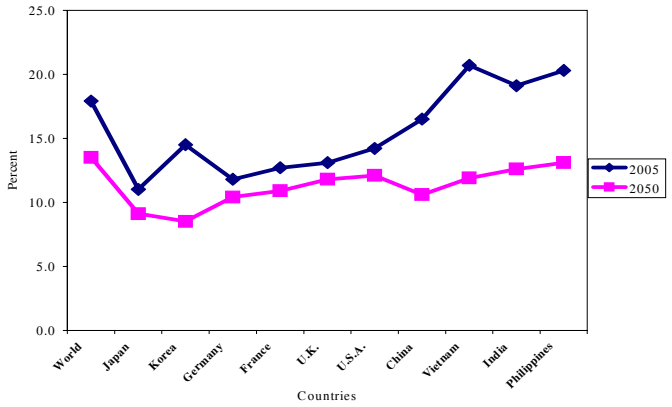
Figures 2 and 3 provide the share of working-age population (15-59 years) to total population and the share of the 15-24 age group in total population respectively. Figure 4a and 4b provides dynamics of working-age population in selected Asia-Pacific and OECD countries respectively. On the basis of these figures, the following observations may be made:

**Figure 3: Working Age Population (16-69 yrs), Current and Projections, Selected Countries**




*Source*: Calculated from UN database, http://esa.un.org/unpp, Last Accessed: 11 February 2006.

**Figure 3: Population Aged 15-24, Current and Projections, Selected Countries**

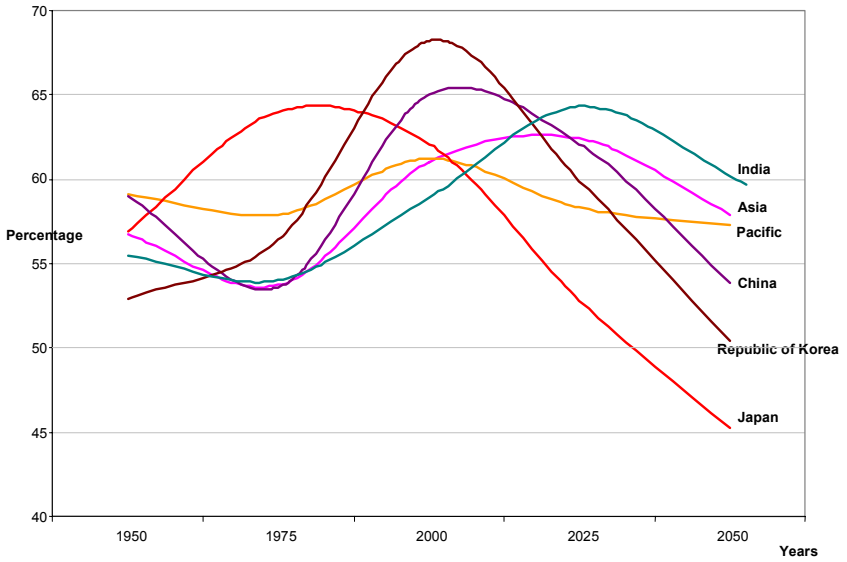



*Source*: Calculated from UN database, http://esa.un.org/unpp, Last Accessed: 11 February 2006.



**Figure 4a: Dynamics of working age population in selected economies**

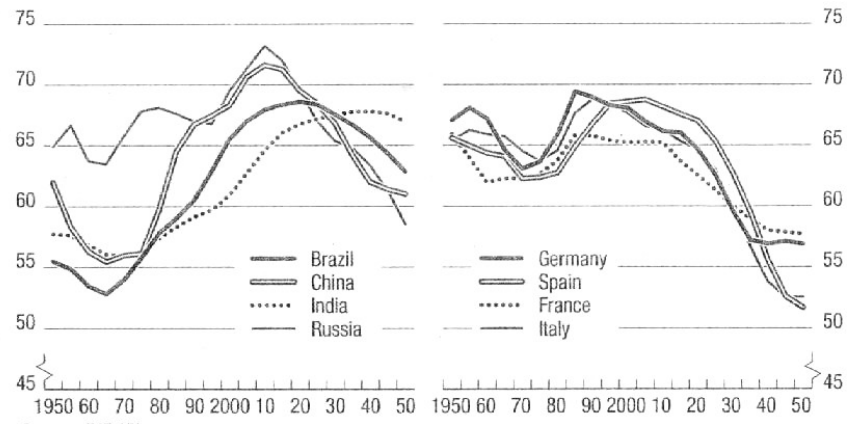
Population aged 15-59 for selected Asia-Pacific economies 195-2050




*Source*: United Nations (2002).

**Figure 4b: Working age population share**

In selected developing and developed countries (% of total population)




*Source*: IMF (2004).

(1) In all sample countries (except India and Philippines), the share of working-age population in total population will decline significantly between 2005 and 2050. In 2005, in only India and the Philippines, the share of working-age population was 60 per cent or below; but by 2050, only these two countries will have the share above 60 per cent. In 2050, Japan, Korea, Spain, Italy[8] and Germany will have less than half of the population in the working-age category, while in other sample countries, the share will range between 50 and 60 per cent.

(2) The largest declines will occur in Japan, Korea, and China. The case of Japan illustrates how rapidly the demographic trends translate into working-age population share. Thus, in 1990 Japan's working-age population share at 70 per cent was substantially higher than that of US and UK; but by 2010, Japan's share is expected to be much lower and the gap is likely to widen significantly (Sanyal, 2005). By 2020, Italy France, and Japan will have ratio of population aged over 65 and over to the labor force of over 50 percent (implying one retiree for less than two workers), as compared to the OECD average of 36 per cent (OECD, 2006). There is a strong case for the rapidly ageing northeast Asian countries to explore opportunities for expanding their economic space with countries such as India (as well as Philippines) which will exhibit rising working-age population share.

The OECD countries, particularly UK and US are already well-disposed to taking advantage of such demographic complementarities. But Japan and South Korea, and to a lesser extent Europe, requires a mindset change to find innovative yet socially and politically sustainable ways to benefit from such complementarities.

(3) The share of the youngest working cohort, i.e. those between 15-24 years old, is expected to decline in all sample countries by 2050. In 2005, four countries (China, Vietnam, India, and the Philippines) had shares of higher than 15 per cent, but by 2050 in none of the sample countries will the share exceed this level. In Japan and Korea, the share of this cohort will be below 10 per cent by 2050. Vietnam, India, and the Philippines will have the highest share among the sample countries.



The above overview of the demographic trends implies that in many countries the number of workers may decline while the median age will increase. If these countries are to sustain growth, substantial restructuring and taking advantage of demographic complementarities with countries such as India will be essential.

As an example, the US economy is projected to experience an annual GDP growth of 3.2 per cent until 2010. Given current demographic trend and business practices, the country could experience domestic labor shortage of 5.6 million by 2010. It is estimated that this could cost the economy up to $2 trillion unless innovative measures to address the labor shortages are undertaken (NASSCOM-Evalueserve, 2003).

These estimates suggest the potential economic gains from taking advantage of demographic complementarities. The benefits will be much larger if other ageing countries in Europe (including Russia), Australia, northeast Asia (including Taiwan and Hong Kong), and Singapore are included. Such ageing economies will either have to import people or export work to remain efficient and competitive. This inevitably makes outsourcing and offshoring a logical business strategy in these geographical areas as well.

Some of the sample countries, such as India, Vietnam, and the Philippines, are well positioned in demographic terms to gain from such a re-arrangement of young-old balance across the world. These countries currently are experiencing *demographic gift* phase,[9] the advantage of which will not wane away till the first quarter of this century.

## III. Demographic Trends in India

India, in particular, is favorably placed because of its relatively younger population profile, with more than 50 per cent of the population below 25 years, a sizeable number of which are graduates with requisite background in IT and in English language.[10] As Figure 4a shows, compared to other nations in the Asia-Pacific, India will continue to enjoy demographic dividend until about 2025[11] as the share of working age population to the total continue to rise. This ratio declines quite gradually; and it will still be higher than the ratio for all other sample countries.

The UN estimates India's median age of population at 24.3 years in 2005. (Table 1). At present, more than 550 million or 50 per cent of India's billion plus population is below 25 years. Khurana (2005) has reported that over the next 15 years, there will be additional 2 billion people in the developing world. During the same period, working population (age group 15-59 years) in the U.S. will have a shortfall of about 17 million, Europe about 10 million, Japan about 9 million, Russia about 6 million, and China about 10 million. In 2020, India is projected to have additional of 47 million workers, almost equal to the total world shortfall.

India has the second largest reservoir of trained manpower which is being constantly augmented by the products of its 290 universities, 1500 research institutions and over 10,000 centers of higher education (NASSCOM-McKinsey, 2005). Indian policymakers are giving a major thrust to education at all levels. Its educational infrastructure and quality are therefore expected to improve significantly. A variety of public-private partnership arrangements are being undertaken. The importance of developing the international dimensions involving the two-way flow of students and faculty is also increasingly being recognized.

Nevertheless, as compared with U.S., Germany, Japan, and other industrial countries, urgent attention is required to align academic training with the industry's requirements. The absolute figures therefore should not lead to complacency. India also faces an urgent and formidable challenge to manage political economy relating to access and financing of education and employment opportunities. This must be accomplished while vastly increasing the flow of skilled manpower. Ultimately it is the skills levels which determine whether the benefits of demographic advantage are actually realized.

India needs to achieve trend rate of real GDP growth of 8-10 percent if it is to play a significant role in the world economy. Policies which have the effect of reducing this rate are counter-productive for all sections of the society. Without high growth, adequate and sustainable growth opportunities will not be created.



**Internal Dynamics**

The demographic trends representing all-India averages do not capture the widely varying demographics of various states and regions in India.

Table 2 provides selected Total Fertility Rates (TFRs) for various states, on the basis of which the following observations are made:

(1) There are wide inter-state differences in fertility rates. A closer perusal reveals two demographically distinct areas within India – a North that stays remarkably young over the next two decades, and the South which faces rapid individual and population ageing in the same period. In places like Kerala, Tamil Nadu and Karnataka, median age will be approaching a level comparable to Europe's in the late 1980s, and around 9 per cent of population will be 65 or older (Japan's level in 1980).

**Table 2: Selected Population Projection Fertility Assumptions for India, Grouped by Region**

| Region/State 2001 | Population Assumed TFR (million) | Registrar General's projections 1996-01 | 2011-16 | TFR=2.1 (Year) |
|---|---|---|---|---|
| **South** | | | | |
| Kerala | 31.8 | 1.62 | 1.60 | 1988 |
| Tamil Nadu | 62.1 | 1.87 | 1.65 | 1993 |
| Andhra Pradesh | 75.7 | 2.27 | 1.78 | 2002 |
| Karnataka | 52.7 | 2.54 | 2.01 | 2009 |
| Maharashtra | 96.8 | 2.51 | 1.97 | 2008 |
| **North** | | | | |
| Gujarat | 50.6 | 2.73 | 2.11 | 2014 |
| Rajasthan | 56.5 | 3.91 | 3.06 | 2048 |
| Uttar Pradesh | 174.5 | 4.75 | 4.05 | >2100 |
| Madhya Pradesh | 81.2 | 3.99 | 3.27 | >2060 |
| Bihar | 109.8 | 3.92 | 2.93 | 2039 |
| Punjab | 24.3 | 2.65 | 2.11 | 2019 |
| Haryana | 21.1 | 3.25 | 2.47 | 2025 |
| **East** | | | | |
| West Bengal | 80.2 | 2.56 | 1.99 | 2009 |
| Orissa | 36.7 | 2.64 | 2.01 | 2010 |
| Assam | 26.6 | 2.82 | 2.17 | 2015 |
| **All INDIA** | **1027.0** | **3.64** | **2.52** | **2026** |

*Source*: Dyson (2002)

(2) The high fertility rates in the Northern states (constituting about 44 percent of India's total population) tend to increase India's weighted total TFR. For India to stabilize its population by 2020, lowering fertility rates in these states will need to be given special attention (Dyson, 2002).

The southern states like Kerala, Tamil Nadu, and Andhra Pradesh have already reached the replacement fertility rate, while other states in the South are expected to reach by 2010.

Differing demographic trends within India have important implications for domestic outsourcing strategies and opportunities. Inter-state labor mobility within India is in the right direction (from states with low income and high fertility to states with above average incomes and low fertility), though its level is low (Purfield, 2006). Urban-to-urban and rural-to-urban each account for one-fifth of inter-state migration (Purfield, 2006). So, businesses and government organizations in states with low fertility rates, as well as those with high rates, need to strategize to take advantage of domestic demographic complementarities.

This has far reaching implications for the way businesses[12] and government organizations structure their workflows, human resource development, and IT and other infrastructure.[13] The flow of professionals will impact the states from which out-migration is occurring, as well as the states receiving them. It will be important for states to create conducive conditions in which professionals can find desired living conditions and amenities, as well as room for professional and family development.

The Northern states with high fertility rates have traditionally under-emphasized investment in education; as well as the role of merit in access to education. This must change if they are to take advantage of their high fertility rates. The effectiveness with which this is done will significantly impact on the extent to which the country as a whole is able to reap economic benefits from this one-time demographic opportunity, and be able to develop more locations for competitive outsourcing and offshoring activities.



## IV. India's Position in Global Outsourcing Business

It will be useful to examine estimates for 2005 of global expenditure for outsourcing and offshoring activities by different sectors (Table 3). Most of the global spending is attributed to outsourcing and offshoring decisions by companies in the OECD countries.

**Table 3: Global Spending on Outsourcing and Offshoring, 2005**

| Sectors | Outsourced/Offshored Processes | Estimated Value (USD Billion) ( % share) |
|---|---|---|
| **Human Resources** | • Payroll administration<br>• Benefits<br>• Training Programmes | $13 **(2.9)** |
| **Engineering** | • Testing and Design of Electronics<br>• Chips<br>• Machinery<br>• Car Parts | $27 **(4.9)** |
| **Infotech** | • Software Development<br>• Tech support<br>• Web site design<br>• IT infrastructure | $90 **(16.5)** |
| **Analytics** | • Market Research<br>• Financial Analysis<br>• Risk Calculation | $12 **(2.2)** |
| **Customer Care** | • Call centres for tech support<br>• Air Bookings<br>• Bill collection | $41 **(7.5)** |
| **Manufacturing** | • Contract production of everything from electronics to medical devices | $170* **(31.1)** |
| **Finance and Accounting** | • Accounts payable<br>• Billing<br>• Financial statement<br>• Tax statement | $14 **(2.6)** |
| **Logistics and Procurement** | • Just-in-time shipping<br>• Parts purchasing<br>• After-sales repair | $179 **(32.8)** |
| ***Total*** | | **$546 (100.0)** |

*Note*: * Estimate only for electronics
*Source*: Adapted from *BusinessWeek* (2006)

As shown in Table 3, the manufacturing, logistics and information technology (IT) sectors have outsourced a variety of processes, and predictably, together has accounted for lion's share of such spending (four-fifths of the total) on a global basis. Spending on Engineering Process Outsourcing (EPO), Financial Process Outsourcing (FPO), and processes pertaining to human resources have been relatively low (around 10 per cent of the total) as these sectors have only recently begun to explore and realize the efficiency and cost benefits that outsourcing might provide. Though currently these sectors cover only a small share of the pie, they could potentially outstrip spending in traditional BPO activities like those relating to customer care as better technology will enable most of processes to be increasingly automated over the next few years.

The total global expenditure however is likely to be larger as the estimates excludes spending on emerging Knowledge Process Outsourcing (KPO) segments including Legal Process Outsourcing (LPO),[14] intellectual property (IP) research, biotech and pharma research and development (R & D), business and technical analysis, animation and design,[15] writing and content development, and data analytics. The figures for manufacturing sector include only the electronics industry, and therefore are understated. The global pie is likely to be larger and diverse, with more and more outsourcing possibilities being discovered.

A recent CAPS-A.T. Kearney report (2005) examines the short-term growth prospects for different categories. The report finds that the highest growth areas over the next few years will be in both traditional areas including manufacturing and operations, IT and call centres (ranging from 10 to 13 per cent over the levels in the current period); and relatively newer areas like procurement and supply management, product and service development, engineering and detailed design (ranging from 5 to 8 per cent from the current levels).

India has consistently been ranked as the most preferred sourcing destination by AT Kearney, McKinsey Global Institute (MGI), Forrester, Gartner Inc. from time to time. Currently, more than 50 per cent of the Fortune 500 companies offshore to India. In fact, the success of the BPO



model has been the major contributing factor in building Brand India abroad. This sector accounted for 4 per cent of India's GDP and 29 per cent of exports in 2004-05. This is further projected to grow to 7 per cent of GDP and 35 per cent of exports by 2008-09. India's software and services export sales are well on track to meet a target of $60 billion for 2010 (*Financial Times*, February 10, 2006). A research report by the Everest Research Institute found that India's labor arbitrage with work offshored from U.S. is likely to be sustained for another two decades; with Japan for another quarter of a century, and with France and UK for another 30 years (*Business Line*, February 27, 2006).

Table 4 summarizes major players (companies) in the outsourcing industry. Only those companies with atleast 500 million in turnover have been short listed. A perusal of companies, mostly US based, and their activities would reveal that India figures in most of the cases as their favorite offshore destination. The major Indian companies that figure in the list have also set up their offshore locations in a drive to move closer to the market, to take advantage of talent elsewhere and in general to expand their scale and scope of operations to become truly global companies. The foreign professionals are also increasingly finding India an attractive place to work, thereby helping to augment India's pool of professional manpower.[16]

Table 4 also suggests that India has had a degree of success in operating in all sectors and at all levels of business processes, ranging from basic data processing and call centre operations to sophisticated functions like software development, research and design of engineering processes, demand management, mortgage processing, healthcare operations, and banking among others.

India is all set to emerge as the global KPO hub. *Business India* (2005) reports estimates that puts India's share at 71 per cent of the world KPO market worth $17 billion by 2010, from the current share of 56 per cent of the world market worth $1.2 billion. The compounded annual growth rate (CAGR) to 2010 for India will be close to 50 per cent. The BPO segment will also grow, albeit at a more moderate rate of 30 per cent. The number

## Table 4: India and the Major Players in Outsourcing

| Company [a] | Headquarter | Specialty | Location[b] | Est. Total Revenue, (USD billion) |
|---|---|---|---|---|
| Accenture | US | Software Development, Network Support, Finance & Accounting (F&A), Human Resources (HR) Procurement, Insurance Operations, General Banking | **India**, Philippines, Spain, China, Czech Republic, Slovakia, Brazil, Australia | > $5 |
| ACS | US | F&A, HR, Payroll, Procurement. Telecom, Transportation, Healthcare Operations; General Banking, Mortgage Processing | **India**, China, Dominican Republic, Ghana, Guatemala, Jamaica, Malaysia, Mexico, Spain | $1-$5 |
| Capgemini | France | Software Development | Canada, Mexico, Spain, Poland, **India**, Australia | $ 1-$5 |
| Cognizant Technology Solutions | US | Software Development, Network Support | **India**, China, and Canada | $0.5-$1 |
| Convergys | US | Call Centres | **India**, China, Indonesia, Malaysia, Philippines, Sri Lanka, Taiwan, Thailand, Argentina, Brazil, Colombia, Mexico, Australia, Canada | > $1 |
| CSC | US | Software Development, Insurance Operations, Demand Management | Canada, Bulgaria, Ireland, **India**, Mexico, Malaysia, South Africa, Spain | > $5 |
| EDS | US | Software Development, Network Support; F&A, HR, Payroll, Demand Management, Procurement, Insurance, General Banking, Telecom, Transportation, Health Care Operations | Canada, Mexico, Brazil, Argentina, **India**, Australia, South Africa, Spain, Hungary | > $5 |
| HCL Technologies | India | Software Development, Network Support, R&D/Engineering, Financial Services | India | $0.5-$1 |
| Hewitt Associates | US | HR, Payroll, Procurement | India, China, Philippines, Thailand, Malaysia, Czech Republic, Poland, Hungary, Brazil, Mexico, Argentina, Chile | > $5 |

*Table 4 continued*



*Table 4 continued*

| Company [a] | Headquarter | Specialty | Location[b] | Est. Total Revenue, (USD |
|---|---|---|---|---|
| Hewlett-Packard | US | F&A, Payroll, Procurement | India | > $5 |
| IBM | US | Software Development, Network Support, F&A, HR, Payroll, Procurement, Insurance Operations | India, Brazil, China, Mexico, Belarus, Philippines, South Africa, Romania, and Argentina | > $5 |
| Infosys s Technologie | India | Software Development, Network Support, Banking, Mortgage Processing | India, Czech Republic, China, Australia | $1-$5 |
| Patni Computer Systems | India | Software Development, Network Support, R&D/Engineering | India | $0.5-$1 |
| Satyam | India | Software Development, Network Support, R&D/Engineering | India, China, Hungary, Brazil, Australia | $0.5-$1 |
| SITEL | US | Call Centres | India, Philippines, Brazil, Spain, Mexico, Panama | $0.5-$1 |
| SR.Teleperformance | France | Call Centres | Philippines, Indonesia, Mexico, Brazil, Argentina, Spain | > $1 |
| Tata Consultancy Services | India | Software Development, R&D/Engineering, F&A, Telecom, Transportation, Hospitality Operations | India, Hungary, Brazil, Uruguay, Chile, China | $1-$5 |
| TeleTech | US | Call Centres | India, Philippines, Malaysia, China, Northern Ireland; Spain, Mexico, Argentina, Brazil | > $1 |
| Wipro Technologies | India | Software Development, R&D/Engineering, Demand Management, Mortgage Processing, Transportation Operations, Healthcare Operations, Banking, Mortgage Processing | India, Canada | $1- $5 |

*Notes*: [a] The companies represented here include outfits that do over $500 million in offshore business a year and giants that take in billions through global outsourcing. The ranking is based on the frequency of queries from Gartner's 10,000 clients.

[b] Arranged in order of current importance to the outsourcing company, which may well change in future.

Source: Compiled from data by Gartner Inc., Available electronically at: http://www.businessweek.com/go/outsourcing

of KPO employees will increase tenfold from an estimated current level of 25,000 to 250,000 in 2010 (*Business India*, 2005).

Indian companies that can develop domain expertise with clear focus on high-end space, and create a proactive solution oriented and collaborative mindset will have an edge in capturing larger share of this market with high growth potential.[17]

India's position is strengthened by the relative availability of skilled labor forming one of the largest pools of knowledge workers. India produces 2 million English-speaking graduates, 15,000 law graduates, and about 9000 PhDs every year. Nearly 300,000 engineering graduates are added to the existing pool of 2.1 million. As of March 2002, India had 840 business schools, which produced 85,000 MBAs. International comparison with regard to skilled workers show that while just over 5,000 IT graduates enter the labor market in Germany and 25,000 in the US each year on average, 120,000 enter the labor force in India (*Business India*, 2005).

India's relatively abundant skill profile could also work to its advantage in the second wave of manufacturing offshoring that is expected to be more skill-intensive, as opposed to the first wave, which consisted of mostly labor intensive areas.

## V. Implications and Challenges

This section analyzes implications of global and domestic demographic trends for outsourcing and offshoring opportunities for India. It also enumerates main challenges facing India if it is to continue to be globally competitive in this area.

### Implications

The analysis in previous sections suggests the complex inter-relationship between global and Indian demographic trends on one hand, and outsourcing/ offshoring activities on the other. Some of the implications have been indicated in the earlier sections and are therefore not repeated here.

The demographic gift (opportunity) phase which India is expected to enjoy for the next few decades does not confer automatic advantage. The opportunity



is unique and time-bound. Therefore it needs to capitalize on this one-time opportunity by productive use of the young labor force. To achieve this, reforms in many areas will be essential. This include devising sustainable macroeconomic policies, developing world-class physical infrastructure, aligning education systems with the requirements of the businesses, educational reforms, labor market reforms favoring jobs-creation, productivity and mobility, and establishment of appropriate social safety nets.

By the same token, demographic burden phase does not confer automatic disadvantage. Thus, as technology gets better and cheaper, some of the current low-end business processes will no longer be outsourced. Emergence of code-generating tools, reliable and cost-effective automated voice recognition and response systems, automated network monitoring and maintenance systems will imply that business infrastructure management will become less labor intensive.

Moreover, some countries in demographic burden phase (such as China) can sustain labor cost and other advantages because of the large labor pool. Other countries (such as Singapore, Australia and Thailand) can import significant proportion of the labor force to help sustain competitiveness, while acquiring niche advantages.

**Health Care:** Increased life expectancy, particularly at age 60 in the OECD countries[18] have significant implications for health care outsourcing and offshoring. Health resources consumed per person increase significantly after 65 years of age. For the old-old population (i.e. those above 75 years of age), the healthcare needs required are likely to be more labor intensive as these individuals may need help in performing the daily functions. However, newer technologies, such as telemedicine could help in reducing the labor intensity, and permit some health services to be provided from India to the rest of the world.[19] Some aspects of such technology could be outsourced or offshored. Advances in medical technologies have potential to raise life expectancy even above 100 years,[20] thus requiring health care for longer period.

In the OECD countries, the ratio of total health expenditure to GDP ratio ranged from 8 to 10 per cent (in 2003, the OECD average was 8.7)

(OECD, 2005). In 2002, for the US, the corresponding figure was 15 per cent, or US$1600 billion. This is expected to increase considerably. Any possible savings through health care outsourcing and offshoring by affluent and rapidly ageing countries is therefore likely to have substantial fiscal and financial benefits to these countries while providing considerable commercial opportunities to India. The National Health Service (NHS) of UK has, for example, been sending some of its patients to France and South Africa[21]. Training of nurses and other personnel, and diagnostic services can also be outsourced or offshored. Recognition of such training in India needs to be encouraged.

The global offshoring potential in life sciences and healthcare is estimated to be about $220 billion, with an annual growth rate of 8 to 10 per cent. India currently accounts for only $0.3 billion, but hopes to increase it to $12 billion by 2015. In 2003, India attracted only 150,000 patients for medical care; a tiny share of the global healthcare tourism of US$40 billion (*Business India*, 2005).[22] Some of the health care tourism concerns cosmetic surgery, rather than traditional medical procedures. But this category is nevertheless of considerable commercial benefit.

India has cost-advantage (with same quality) in many medical procedures. As an example, a bone marrow transplant costing about US$200,000 in US and UK costs only one-tenth in India (*Business India*, 2005). India also has cost advantage over Singapore, and Thailand, though the margin is smaller at around 25-30 per cent.

Another area in which India could benefit is from attracting clinical research[23]. India has clear cost advantage in the realm of contract research and clinical trials. It is estimated that the cost of doing clinical research in India is 40 to 60 per cent lower than in developed countries. Since clinical trials constitute about 70 percent of the total costs of a new drug, India could bring down the average cost of $800 million for a new drug development by around $200-$250 million.

India exhibits considerable biodiversity in its gene pool due to its heterogeneous mix of population. Besides, it also has a huge proportion of



uncontaminated or naïve patients who are required for testing of certain drugs. These enhance India's attractiveness as a location for clinical trials and research activities.

India can cooperate with UK and others in meeting their health care infrastructure requirements. India should integrate Ayurveda and alternative medicine in providing health care services. It should endeavor to have such treatment to be included in the health insurance policies in other countries.

India will need to work on international perceptions through aggressive international marketing, improve tourism infrastructure, and make visa and other formalities for those seeking medical treatment in India much more friendly and efficient.

**Movement of Natural Persons:** The analyses in the previous sections suggest that global demographic complementarities provide win-win opportunities for affluent and rapidly ageing countries as well as to India. Some countries, such as U.S. have been more open to in-migration, but Europe and Japan have been particularly reluctant to welcome in-migrants.

There are however other avenues than long-term in-migration in taking advantage of demographic complementarities. The World Trade Organization (WTO) already has on its agenda facilitating the movement of natural persons on a short-term basis (Paragraph 1(d) of Article 1 of the General Agreement on Trade in Services). However there has been little progress within the multilateral set-up due to stringent criteria applied to the four modes, particularly those pertaining to cross-border supply (Mode 1), commercial presence (Mode 3) and presence of natural persons (Mode 4). This has particularly proved to be disadvantageous to the developing countries in availing of outsourcing and offshoring activities. India has a particular interest in this area and it needs to help build a majority coalition to facilitate the appropriate arrangements.

India has entered into bilateral economic partnership with several countries and regional organizations. India should use the extent to which

its professionals get access to labor markets of its economic partners, and the extent to which these partners are willing to take advantage of demographic complementarities through outsourcing and offshoring, as among the criteria to determine the success of such arrangements.[24] It should build these areas into any future agreements as well.

**Challenges**

Gartner Inc., specialized IT research and advisory firm, has estimated that offshore infotech and BPO amounted to $34 billion in 2005, and this could double by 2007. India share in global total is estimated to be 60 per cent. India has a major challenge in maintaining this share. It needs to address internal challenges of rising wages, job turnover, shortage of professionals in certain segments, and physical infrastructure inadequacies. Externally, it needs to adjust to competition from China, Russia, Brazil and Mexico who aim to take a greater share of the total by offering costs and skills at par with India, plus advantages such as closer proximity to U.S. and European markets (*BusinessWeek*, 2006). India must also meet challenges from niche players such as Singapore, Ireland, and Hungary, and cost-competitive countries such as Vietnam, and the Philippines.

Therefore, the key to survival of the Indian firms in the outsourcing business would be to invest in new, innovative technologies and services that will not be marginalized by automation or by the inevitable narrowing of the country's cost advantage.

To maintain India's current global share, the country will need 2.3 million professionals by 2010. According to McKinsey's calculations, India may face a deficit of 500,000 workers with 70 percent of the shortage arising in call centers and other back-office businesses, where proficiency in English is the most important prerequisite. By end of financial year 2005-06, the employment in the IT industry was estimated to be 1.3 million, a small proportion of the total labor force of 450 million. The IT industry expects to spend US$ 2.6 billion to train 1 million professionals in the next 3 years to meet the growth targets.

In early 2006, NASSCOM established the National Skills Registry (NSR) providing centralized database of employees and employers in the



IT industry in India. It has partnered with All India Council of Technical Education (AICTE) and ITC Infotech with a view to focusing on employability of the graduates. It also aims to expand the geographical scope of the It industry in India. Currently, Tier I cities (e.g. Mumbai, Delhi, Bangalore, and Hyderabad) contribute around 90 per cent of the country's IT exports. Nasscom aims to increase this share of Tier II cities through industry, academia, and government partnership. This could help in cost competitiveness while providing more human resources to be equipped with appropriate skills.

No export industry can sustain itself in the long run without a strong domestic market. A strong domestic IT industry is needed to enhance India's own competitiveness, particularly in the government sector. State and market are complimentary institutions. Currently, productivity in the state sector services requires to be improved, and so does the delivery mechanism for government sector. Appropriate use of IT can assist in this regard, raising the competitiveness of India's economy.

## VI. Concluding Remarks

India has a one-time demographic opportunity for the next two to three decades which it must utilize to sustain its growth rate and occupy all segments of global outsourcing and offshoring activities. Rapid ageing of the OECD countries provides India with significant commercial opportunities. India must ensure that these opportunities are used to significantly advance its economic space. India's internal demographic challenges, with Southern states having low fertility rate and northern states having high fertility rates must also be addressed. This area requires much more attention of the researchers than it has received so far.

India has had a degree of success in attracting outsourcing and offshoring business activities. But it faces many internal and external challenges. The internal challenges include increasing the supply of internationally competitive manpower, improving physical infrastructure, and broadening and deepening of domestic IT market to help improve overall competitiveness of the economy. The external challenges concern emergence of several competitors in all segments of the outsourcing and offshoring chain; the need to improve branding and marketing of India; and the need for more

skilful commercial diplomacy to expand India's economic opportunities in this area.

Indian IT industry association, NASSCOM and policymakers are aware of the challenges. With appropriate policies and focus India can continue to be globally competitive in outsourcing and offshoring, and continue to nurture globally competitive products and companies.

## Endnotes

[1] This has given rise to extensive literature of varying quality. Representative references include Kirkegaard (2005), Click and Duening (2005), Kobayashi-Hillary (2005), and Hira and Hira (2005), Vashistha and Vashistha (2005).

[2] See Bhagwati *et al*. (2004), *BusinessWeek* (2006), and Hira and Hira (2005).

[3] Labor is an expensive factor of production, particularly in affluent and rapidly ageing societies. A profit-maximizing firm, operating in a competitive market can expect to benefit by employing a lower cost form of labor providing the same service, assuming comparable and compatible labor quality, and laws that are not prohibitive in doing so. The cost savings from offshoring are primarily the difference between the unit cost of labor, and the workers compensation that must be paid to produce one unit of good or services. Different studies suggest that the offshore outsourcing model can bring cost savings which are too large to ignore.

[4] For example, a nine-and-a-half-hour difference from the Eastern Standard Time puts India in a perfect position to enable 24-hour, around-the-clock development for the U.S. companies, thereby drastically reducing deployment times.

[5] Google's R&D center in Bangalore in India reflects this new mindset. The company considered recruiting only the best graduates from country's top schools. The company's move was motivated by availability of requisite engineering talent pool in the country, and was not necessarily a cost cutting move.

[6] There is a very fine distinction between BPO and KPO. In general terms, KPO provides value to the client through domain expertise, rather than process expertise. In case of KPO, the service provider executes judgment-intensive and high-expertise processes for its clients (*Business India*, 2005).

[7] India and China are economies with large labor force. India's labor force is about 450 million, while China's labor force is about 650 million. The countries realize the need to have balanced sectoral development. Therefore, at the margin, India is emphasizing manufacturing activities, and China is emphasizing services.

[8] In Italy, there are more people receiving pension (22 million) than people working (21 million) (IBM, 2004).

[9] More accurately this may be termed as demographic opportunity phase. This is because having large share of younger workers in the total population also increases the responsibility for providing jobs to them. If this task is not taken satisfactorily, social cohesion and other challenges may emerge. The positive impact of the phase is not automatic but the potential opportunities need to be secured by appropriate public policies.

[10] Even the states such as Gujarat, Bihar, West Bengal, Uttar Pradesh and Karnataka, which have traditionally emphasized regional languages, have begun to emphasize English. Private sector and business organizations are increasingly pro-active in providing English proficiency training to all age groups.

[11] IMF (2004) projection shows that the share of working-age population to total population will not decline until 2045, and even then the decline will be quite gradual.

[12] There are encouraging initiatives by the Indian businesses in expanding access to primary and secondary education. As an example, The Bharti Foundation plans to spend Rs. 2 billion, to set up a few hundred primary schools in Northern and Eastern states by 2008. Such initiatives are also being taken by other business groups across the country. These, along with the initiatives in higher education by government and private institutions, could help prepare the states to deal with their demographic challenges.

[13] Detailed analysis of these implications is however beyond the scope of this paper. But nevertheless, it is an important area for further research.

[14] There has been recent controversy about how lucrative the LPO segment is for Indian firms engaged in this sector. While a NASSCOM-Forrester report suggested that as high as 79,000 US lawyer jobs will move to other countries by 2015 (India's share being 60 to 70 per cent), an Evalueserve report suggests that it might not be as rewarding, especially when compared to outsourcing in IT streams. Evalueserve predicts that Indian companies providing legal services will command only 1.2 per cent share of the US legal industry, which is projected to stand at $480 billion by 2015.

[15] India has made a quiet entry into high-end creative work concerning visual effects for Hollywood movies, such as "The Chronicles of Narnia" which was nominated for Oscar in 2006 (*International Herald Tribune*, March 13, 2006, pp. 9-10). India's animation and gaming market is also expected to quadruple to $1.3 billion by 2009, and employ about 30,000 animators (*The Financial* Express, April 7, 2006). Indian companies such as UTV Software Communications, Toonz Animation, Pentamedia Graphics, Crest Communications, DQ Entertainement and JadooWorks have tied up with firms such as Walt Disney, NBC Universal and Mattel to share copyrights and profits. The other countries with movie and gaming industries, particularly in Asia-Pacific could also find mutually beneficial opportunities with Indian firms in this area.

[16] According to the US Secretary of State, Condoleeza Rice about 65, 000 American professionals live in India (*Washington Post*, March 13, 2006, p.A15).

[17] According to a study by global market research firm, Frost and Sullivan, India is set to witness substantial growth in offshoring revenue (from US$ 3.25 billion in 2005 to US$ 14 billion by 2010) from designing computer-embedded products which contain microchips (*Business Standard*, February 24, 2006).

[18] For example, life expectancy at age 60 for Japan for 1995-2000 period was 21 years for males and 25 years for females. In contrast, for India the corresponding figures were 16 and 17 years respectively (Chakraborti, 2004, p.56).

[19] Indian companies are making progress in providing Teleradiology services involving a wide range of services from simple X-ray scans to complex 64-slice CT scans, MRI and ultrasound scans, to the rest of the world, particularly the US, and Singapore.

[20] This has implications for annuity markets. Insurance companies would be reluctant to provide life-time annuities if there is uncertainty concerning longevity.

[21] Indian businesses in health care are making efforts to attract UK patients. The healthcare working group, coordinated by FICCI (Federation of Indian Chamber of Commerce and Industry) is to discuss cooperation in this area at the Indo-U.K. Joint Economic and Trade Committee (JETCO) in early 2006. India should aim to promote similar working groups with US, Germany, and other OECD countries.

[22] It is essential that in the process domestic health care needs are not ignored. This is an issue which the industry and policymakers must address.

[23] India is keen on establishing new areas in offshoring competitiveness. This is indicated by the initiatives of Joint Working Group (JWG) on Biotechnology of India and the U.S. These include working of protocols of the transfer of bio-materials and clinical trials of medicine in India by the U.S. companies. India is also exploring similar arrangements with France and Canada. There is also potential for such partnership with Japan, and Korea.

[24] India should closely monitor these areas in assessing Comprehensive Economic Cooperation Agreement (CECA) with Singapore.

## References


Bartels, F.L. (2005), "Outsourcing Markets in Services: International Business Trends, Patterns and Emerging Issues", *Working Paper IWPS 002/05*, Vienna: United Nations Industrial Development Organization (UNIDO).

Bhagwati, J.N., Panagariya, A. and Srinivasan, T.N. (2004), "The Muddles over Outsourcing", *Journal of Economic Perspectives*, 18, pp. 93-114.

*Business India* (2005), "From BPO to KPO: The Changing Face of India's Outsourcing Industry", August 29 – September 11 Issue.

*BusinessWeek* (2006), "The Future of Outsourcing", McGraw Hill Companies, January 30.

CAPS-AT Kearney (2005), Outsourcing Strategically for Sustainable Competitive Advantage, Tempe: CAPS Research.

Chakraborti, R.D. (2004), The Greying of India: Population Ageing in the Context of Asia, New Delhi: Sage Publications.

Click, R.L. and Duening, T.N. (2005), Business Process Outsourcing: The Competitive Advantage, Hoboken, N.J.: John Wiley & Sons.





Drezner, D. W. (2004), "The Outsourcing Bogeyman", Foreign Affairs, May/June.

Dyson, T. (2002), "On the Future of Human Fertility in India", Country Paper UN/POP/CFT/2002/CP/6, United Nations: Department of Economic and Social Affairs, Population Division.

Evalueserve (2006), "Legal Process Outsourcing (LPO) – Hype vs. Reality", Available electronically at: http://www.evalueserve.com/Media_Center/mediacenternew.asp, Last accessed: February 13, 2006.

Hira, R. and Hira, A. (2005), Outsourcing America: what's behind our national crisis and how we can reclaim American jobs, New York: American Management Association.

Ho, L., Torres, M., and Vu, P. (2004), "Dynamics of Outsourcing: Offshoring, Insourcing, and A Case Study – India", Electronically accessed at: http://depts.washington.edu/gttl/StudentPapersAbstracts/2004/DynamicsofOutsourcing.pdf, Last accessed: February 6, 2006.

IBM (2004), "Addressing the challenges of an aging workforce: A human capital perspective for firms operating in Asia Pacific", IBM Business Consulting Services.

International Monetary Fund (IMF) (2004), *World Economic Outlook*: *Advancing Structural Reforms*, Washington DC: IMF, April.

Kirkegaard, J.F. (2005), "Outsourcing and Offshoring: Pushing the European Model Over the Hill, Rather Than Off the Cliff", *Working Paper Series, No. WP 05-1*, Institute for International Economics, Washington DC.

Khurana, D.N. (2005), "Leveraging India's Demographic Position", Asian Management Review, October-December, pp. 40-43.

Kobayashi-Hillary, M. (2005), Outsourcing to India: the Offshore Advantage, New York: Springer.

Rajan, R. and Srivastava, S. (2005), "An Overview of the Economics of Outsourcing", ARTNeT Policy Brief, Brief No. 3, United Nations ESCAP, September.

NASSCOM-Evalueserve (2003), "The impact of global sourcing on the US economy, 2003 – 2010", NASSCOM Publications, October.

NASSCOM-McKinsey (2005), "The NASSCOM-McKinsey Study 2005", NASSCOM Publications.

Purfield, C. (2006), "Mind the Gap – Is Economic Growth in India Leaving Some States Behind?", *IMF Working Paper*, No. 06/103, Washington DC: International Monetary Fund.

Roy, A. (2005), "Demographic Changes and Investment Implications", *CSFB 4th Annual Forex Conference*, Gleneagles, September 30-October 2.

Sanyal, S. (2005), "Demographics, Savings & Hyper-Growth", *Deutsche Bank Global Markets Research*, July.

United Nations (2005), World Population Prospects: The 2004 Revision, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2005, http://esa.un.org/unpp, Last Accessed: 13 January 2006; 11:13:55 PM.

United Nations (2002), World Population Aging 1950-2050, Sales No. E. 02. XIII. 3, Department of Economic and Social Affairs, Population Division, New York: United Nations Publications.

Vashistha, A. and Vashistha, A. (2005), The Offshore Nation: Strategies for Success in Global Outsourcing and Offshoring, New York: McGraw-Hill.

Wilder, R. and Anand, P. (2006) *India's Secret Weapon*, Asian Wall Street Journal, May 8, 2006.



## RIS Discussion Papers

*Available at* http://www.ris.org.in/risdiscussion_papers.html

DP#110-2006 *Reinventing UNCTAD: Some Proposals for the UNCTAD Mid-term Review* by Muchkund Dubey

DP#109-2006 *Trade Facilitation Priorities in India and Commitments at WTO: An Overview of Current Trends* by Sachin Chaturvedi

DP#108-2006 *Towards Comprehensive Economic Co-operation between India and Central Asian Republics* by Dr. Ramgopal Agarwala

DP#107-2006 *Monetary and Financial Cooperation in Asia: Emerging Trends and Prospects* by Ramkishen S. Rajan

DP#106-2006 *Japan and an Asian Economic Community* by Masanori Kondo

DP#105-2005 *India-Vietnam Trade:Current Relations and Prospects* by Rajesh Mehta

DP#104-2005 *Trade in IBSA Economic Cooperation: The Role of Transportation Linkages* by Prabir De

DP#103-2005 *Trade and Environment in the WTO: Negotiating Options for Developing Countries* by Sanjay Kumar and Nupur Chowdhury

DP#102-2005 *Prospects for Environmental Trade under the Regional Process in South Asia: Evidence from SAPTA and Proposals for SAFTA* by S. K. Mohanty and Sachin Chaturvedi

DP#101-2005 *Emergence of China and India in the new Millennium: Will it facilitate Market Access for LDCs and Developing Countries?* by S. K. Mohanty and Sachin Chaturvedi

DP#100-2005 *Towards a Broader Asian Community: Agenda for the East Asia Summit* by Nagesh Kumar

DP#99-2005 *Biosafety Protocol, International Trade and Agricultural Biotechnology: Policy Inferences for India* by Sachin Chaturvedi and Lian Chawii

DP#98-2005 *The WTO Negotiations on Industrial Tariffs: What is at Stake for Developing Countries?* by Yilmaz Akyüz

DP#97-2005 *Non-tariff Barriers Affecting India's Exports* by Rajesh Mehta

DP#96-2005 *Advancing the ASEAN-India Partnership in the New Millennium* by Ong Keng Yong

DP#95-2005 *The Search for Regional Architecture: The Role of ASEAN as Strange Attractor* by Djisman S. Simanjuntak

DP#94-2005 *India-Central Asia Economic Relations: A Report of RIS/CII Seminar*

DP#93-2005 *Asian Energy Outlook to 2020: Trends, Patterns and Imperatives of Regional Cooperation* by Kokichi Ito, Li Zhidong and Ryoichi Komiyama

DP#92-2005 *Regional Trade and Investment Architecture in Asia-Pacific: Emerging Trends and Imperatives* by Tiziana Bonapace

DP#91-2005 *India-East Asia Integration: A Win-Win for Asia* by Mukul G. Asher and Rahul Sen

DP#90-2005 Strategic Relevance of Asian Economic Integration by Eric Teo Chu Cheow

DP#89-2005 *China's Role in the Asian Economic Unification Process* by Yao Chao Cheng

DP#88-2005 *Strategic Approach to Strengthening the International Competitiveness in Knowledge Based Industries: Electronics Industry* by K. J. Joseph

DP#87-2004 *Regional Cooperation for Poverty Alleviation and Food Security in South Asia* by Sachin Chaturvedi

DP#86-2004 *Towards a Free Trade Area in South Asia: Charting A Feasible Course for Trade Liberalisation with Reference to India's Role* by Indra Nath Mukherji

DP#85-2004 *Industrial Restructuring and Export Competitiveness of the Textiles and Clothing Sector in SAARC in the Context of MFA Phase-Out by* Ram Upendra Das

DP#84-2004 *India's Export by Countries and Commodities: On the Estimation of a Forecasting Model Using Panel Data by* Rajesh Mehta and Parul Mathur

DP#83-2004 *Strategic Approach to Strengthening the International Competitiveness in Knowledge Based Industries:Indian Chemical Industry* by Vijay Kumar Kaul

DP#82-2004 *Strategic approach to Strengthening the International Competitiveness in Knowledge Based Industries: The Case of Indian Automotive Industry* by Neelam Singh

DP#81-2004 *Strategic approach to Strengthening the International Competitiveness in Knowledge Based Industries: Non-electrical Machinery Industry* by M. Padma Suresh

DP#80-2004 *Strategic approach to Strengthening the International Competitiveness in Knowledge Based Industries: The Indian Pharmaceutical industry* by Aradhna Aggarwal

DP#79-2004 *Complementarities and Potentials of Intra-regional Transfers of Investments, Technology and Skills in Asia* by Saikat Sinha Roy



DP#78-2004 *Towards Formation of Close Economic Cooperation among Asian Countries* by S K Mohanty, Sanjib Pohit and Saikat Sinha Roy

DP#77-2004 *Transaction Costs as Barriers to Economic Integration in Asia: An Empirical Exploration* by Prabir De.

DP#76-2004 *Transforming Digital Divide into Digital Dividend: The Role of South-South Cooperation in ICTs* by K J Joseph.

DP#75-2004 *Transport Cooperation in BIMST-EC: Issues and Way Forward* by Prabir De.

DP#74-2004 *WTO Market Access Negotiations and Indian Small Scale Industry* by Rajesh Mehta and Pooja Agarwal.

DP#73-2004 *ASEAN-India Economic Relations: Current Status and Future Prospects* by Rahul Sen, Mukul G. Asher and Ramkishen S. Rajan.

DP#72-2004 *National Innovation Systems and India's IT Capability: Are there any lessons for ASEAN Newcomers*? by Nagesh Kumar and K J Joseph.

DP#71-2004 *Monetary Cooperation in South Asia: Potential and Prospects by* Sweta Chaman Saxena and Mirza Allim Baig

DP# 70-2004 *India-ASEAN Cooperation in Information and Communication Technologies: Issues and Prospects by* K.J. Joseph and Govindan Parayil

DP# 69-2004 *Issue Related to India's Energy Trading with Central Asian Countries* by Barnali Nag.

DP# 68-2004 *Biotechnology in South Asia: Issues, Concerns and Opportunities* by Sachin Chaturvedi.

DP# 67-2004 *Environment Issues in Free Trade Agreements in Asia and the Post-Cancun Challenges: Issues and Policy Options* by Sachin Chaturvedi

DP# 66-2003 *How Do Infrastructure Facilities Affect Regional Income? An Investigation with South Asian Countries* by Prabir De.

DP# 65-2003 *Liberalization, Foreign Direct Investment Flows and Economic Development:The Indian Experience in the 1990s* by Nagesh Kumar.

DP# 64-2003 *India's Monetary Integration with East Asia: A Feasibility Study* by Sweta Chaman Saxena.

DP# 63-2003 *Rise of Service Sector Outward Foreign Direct Investment from India: Trends, Patterns, and Determinants* by Jaya Prakash Pradhan