Trade and Social Development: The case of Asia

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Executive Summary

Although, some of the Asian economies, like, China, India and Viet Nam, are growing at a faster pace they are not doing well in terms of development of basic capabilities in terms of education, health and skill formation. This we found when we ranked countries in terms of Social Development Index and compared them with ranking in terms of GDP growth rate alone. In fact, the not so fast growing economies, like the Republic of Korea, do well in terms of distribution of resources towards its average citizen and in terms of other development criteria. Much of the cause of inequality in Asia results from inability to absorb predominantly rural based population into urban centric manufacturing and services sector and not because of trade. In fact, trade helps to build capabilities in the region.

Upon regressing Social Development Index on Input Measure Index (a constituent of Trade and Development Index as developed by UNCTAD), the coefficient on the latter came out to be positively statistically significant, indicating trade having a beneficial effect in building capabilities of a region. Capabilities are synonymous with freedom – freedom from hunger, freedom from dying prematurely, freedom from getting oppressed, freedom from ignorance, freedom from crime, and freedom from ecological disaster. Poor people are concerned not only about lack of opportunities to earn income but also having access to quality education, health care, drinkable water, public transport system, financial intermediation, transparent bureaucracy and living in a less polluted environment. Trade helps to build capabilities in two primary ways. First, trade affects mean income positively. Rising income can be instrumental behind getting access to quality health, education and other attributes of good life. Second, trade also embodies flow of resources that can be used to set up both healthcare and education type services, and to build necessary infrastructure in the form of power, water supply, roads and ports.

1. Introduction

There is a difference between growth and development. While growth is a univariate concept measured purely on the basis of growth of per capita Gross Domestic Product (GDP), development is a multivariate concept and refers to achievement of quality life for the average citizen of a region. United Nations Development Program (UNDP) has a way to examine development of a country (region), and they do it through Human Development Index (HDI). The HDI is calculated as the simple average of life expectancy index, education index, and the per capita GDP index, of a country. Development is therefore a broader concept than growth.

A country with a better growth prospects but which neglects development cannot grow in the long-run. Improved standards of living cannot be ensured through increased growth rate alone. For example, during the sixties and the seventies, Brazil witnessed higher growth but as distribution of income along with other quality indicators of life, such as health and education were neglected, policymakers eventually had to follow populist policies in the fear of losing power in the parliament. Because there was a lesser element of development; the larger *have not* group was neglected, and the ruling parties in Brazil were repeatedly thrown out of power. This has put a halt to Brazil's reform programs and prevented them from achieving higher full employment level of output. So the initial reform process although resulted in higher growth during the seventies could not be sustained during the eighties. Hence rising inequality can actually stall economic liberalization, further limiting the ability of economies of benefits from globalization.[1]

Hence, the growth rate of per capita real income is not the only criterion for development; although it is necessary to enable distribution of resources in a meaningful way (that is, increase average well-being). Lucas (1988) stresses the importance of the growth of per capita real income as the primary determinant of human welfare. Lucas's paper begins, 'By the problem of economic development I mean simply the problem of accounting for the observed pattern across countries and across time, in levels and rates of growth of per capita income' (p.3). Lucas admit that this definition of economic development is narrow but when he considers the implication of diverse rates of growth of real per capita GNP over sustained periods he finds stark differences in the average well being of the people across countries. For example, India experiencing 1.4 per cent growth rate for the period 1960-80 whereas people of South Korea experiencing a growth of 7 per cent during the same period. It means, 'Indian incomes will double every 50 years; Korean every 10' (p.4). But to say, an Indian will on average, be twice as well as his grandfather, a Korean five times is to presume a strong positive casual relation between the growth of income per capita and the consequent increase in well-being. The observed positive correlation between the growth of GNP per head and the average quality of life may not be as strong as it appears to be.

Sen (1999) argues, 'it would indicate that the connection tends to work particularly through public expenditure on health care, and through the success of

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[1] For more on the effects about income inequality see, Alesina and Perotti (1996), Roine and Waldenstrom (2008), and Barro (2000).

poverty removal. The basic point is that the impact of economic growth depends much on how fruits of economic growth are used' (p.44). So HDI came into being as partial fulfillment of Sen's ideology. However, merely taking into account the simple average of life expectancy, education and the per capita GDP, might hide some richer information in the context of well-being. For example, South Africa is ranked in the group of middle income countries with a per capita gross national income of 3562 USD in 2006 (World Bank Atlas Method), but the income distribution is very unequal - the poorest 10 percent of the population account for 1.4 percent of national income, and the richest 10 percent for 44 percent (Human Development Report, UNDP, 2006, p. 29).

There is therefore a need for constructing a Social Development Index (SDI) by considering income distribution as a separate variable in addition to the other variables that are considered in HDI. Comparing countries without considering income distribution as a separate variable might be problematic for three reasons. First, comparison between the HDI rank and per capita GDP rank draws conclusion on income distribution of a country. Income distribution, as a distinct measure, does not enter the inter-country comparison of development performance. Second, per capita GDP, being an average, can be best interpreted as an end income for an average citizen, not the society as a whole. It suppresses too many information whether the fruits of economic growth indeed reach the bottom portion of the population. In fact, all the three indicators of the HDI are in average terms. Addition of income distribution with other three indicators of HDI captures the inter-country difference in income distributions. Countries with higher SDI have done better job in terms of income distribution compared to countries with lower SDI. Last and importantly, people usually feel content considering that they are better off, or at least similar, in terms of their well-being (happiness) compared to their peers. The utilitarian approach to measure happiness is in terms of life-ability of the person. Life-ability of the person refers to capability of one self to fight against, disease, illiteracy and lesser opportunities to earn (Sen, 1992). [2]

It is therefore important to consider income distribution and more importantly understanding factors leading to a more skewed income distribution. So what leads to more skewed income distribution? An initial effort in this direction, trying to examine relationship between growth and inequality, was undertaken by Simon Kuznets (Kuznets, 1955). Better known as the Kuznets-U hypothesis, it states that when beginning from a low level of economic development as measured by per capita income, income distribution tends at first to become less equal and then more equal as income levels rise (Kuznets, 1955; Kakwani, 1980).

The basic Kuznets formulation, about incorporating income as the basic explanatory variable behind explaining inequality was augmented by various researchers. The idea was to try and figure out influence of other variables, besides

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[2] In this context it is worth mentioning that equality of income distribution always might not lead to equity. Equality is a positive concept that describes a state of distribution without commenting about whether this distribution is 'good' or 'bad'. On the other hand, equity is value judgment made on distributive mechanisms and outcomes using principle of justice. Thus, a 'fair' income distribution usually refers to an income distribution that conforms to a commonly accepted principle of justice. Henceforth, commenting about distribution of income the implicit assumption is that we are talking about a 'fair' income distribution.

income, that might contribute to inequality. Ahluwalia (1976), regressed inequality on a number of explanatory variables including logarithm of per capita income and its square, the primary and secondary school enrollment rates, the rate of growth of population, the rate of growth of GNP, agriculture's share in GDP, and dummy variables for developed country and socialist country. In this study, income variables, education variables, and the socialist country dummy, was found out to be significant. Inequalities can also vary according to geographical location.[3] For example countries in Latin America and sub-Saharan Africa are more unequal (World Bank, 1999). Other things remaining equal, even with similar level of income, countries in Latin America are more unequal compared to Asian countries (Schultz 1998; Barro 1991). The significance for Latin American dummy is explained by unequal distribution of land, inadequate infrastructure investments, misallocation of government spending, poor economic and cultural integration, insufficient productive employment and excessive populism.

These above mentioned studies did not incorporate the effect of trade on inequality. However, there might be a link between trade and inequality, and it might happen because trade has an effect on autarkic level of income. It has been widely established that countries that open up, and hence trade more, have better economic performance in terms of growth rate of GDP than others (Srinivasan and Bhagwati, 1999).[4]

Recently, many economies in Asia – China, India, and Viet Nam, in particular – are growing at a fast rate. The reason for this faster growth is attributed to reforms. One major aspect of economic reforms is globalization and this is usually reflected in terms of higher value of trade.[5] For example, countries that have started globalizing (mainly, through tariffs reduction) during seventies have experienced an increase in their GDP growth rate from 2.9 per cent during the seventies, to 3.5 per cent in the eighties, and further to 5 per cent during the nineties. This is in contrast to the countries which didn't undertake the path of globalization – experiencing a fall in their GDP growth rate from 3.3 per cent in the seventies, to 0.8 per cent in the eighties and recovering only to 1.4 per cent during the nineties (Dollar and Kraay, 2004).

In the present context, as both growth of per capita income and distribution of income, enter as components for constructing SDI, it makes sense to examine how trade affects SDI. This aspect has not been examined in the current literature. So besides ranking countries in term of SDI we also examine interaction between SDI, and trade and development index (TDI) developed by UNCTAD. As some studies have pointed about the importance of physical infrastructure in explaining variations in income and export growth among countries (Hall and Jones, 1999; Banik, 2007), we consider trade index – a combination of a country's infrastructure capabilities and trade openness. The rest of the paper is structured as follows: (a) understanding

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[3] Most of the studies have taken differences in wage rates as a measure of income inequality. The problem with aggregate measures of income is that income is understated, and also coverage of income sources and taxes tend to varies across countries.

[4] For example, Srinivasan and Bhagwati (1999) argue, 'in-depth analysis of country experiences in major OECD, NBER, and IBRD projects during the 1960s and 1970s have shown plausibly, and taking into account numerous country specific factors, that trade does seem to create, even sustain higher growth' (p. 6).

[5] Other components of reforms, namely, fiscal adjustment, macro economic stabilization, strengthening private property rights and exchange rate reform also have an important bearing on growth of trade.

income inequality, and the case with China and India – the two fastest growing economies in Asia; (b) comparing Asian economies in terms of SDI; (c) examining relationship between trade and SDI; and finally, (e) conclusion.

2. Understanding Inequalities

Inequality (in terms of income earned) can primarily be because of circumstantial reasons, or due to policy failure. Circumstantial reasons are exogenous and cannot be controlled by policy measures. Examples about circumstances led poverty may be because of: (a) caste, (b) natural disaster, (c) gender, and (d) wars. For instance, people taking birth in some lower castes in India (schedule tribes, or castes) are most likely to start with limited opportunities and hence have a lower steady state level of income (read, poor). Similarly, considering case of Bangladesh, which many times are frequented by natural disasters, like flood and tornados - witness a loss in physical capital/assets and hence tend to be poor. Gender inequality is another classic case. While 200 million women entered the global workforce in the decade before 2003, 60 per cent of the one billion poorest people are women (Human Development Report, UNDP, 2007). Lastly, war has an effect in terms of loss of human and physical capital. Much of the poor GDP growth rate in Viet Nam during eighties and more recently the fall in per capita income in Iraq, is because of wars, and political and economic isolation that followed.

Fortunately, much of the other causes of inequality are endogenous and can be addressed. Most Asian economies have a majority share of their population dependent on the agriculture sector. Persistence of equal or unequal income distribution depends much on how policy makers in the region are focusing on their agriculture sector. For example, in Viet Nam the impact of doi moi (reform process) beginning in 1986, have benefited the rural workers by linking domestic coffee and rice market with the international market (Klump, 2006). The close integration of rural and urban labor market, facilitated by rural financial market intermediation has made economic growth pro-poor in Bangladesh (Timmer, 2006).

However in recent times, as reported by publications from two major multilateral organizations – International Monetary Fund (IMF) and Asian Development Bank (ADB) – inequality is on rise in Asia. For example, IMF Regional and Economic Outlook has this to comment, 'Over the last ten years or so, 13 out of 18 Asian countries for which data are available have recorded increases in income inequality, ranging from around 5 to 35 per cent' (IMF Regional and Economic Outlook, 2006, p. 63). ADB, in its latest 2007 report titled, 'Inequality in Asia', writes that the story of rising income inequality in Asia can be best portrayed as rich getting richer faster than the poor are getting richer – although there has been a stark fall in poverty (by head count measures) in the Asian region.

Table 1: Gains in the battle against poverty

| Economy	$1-a-day		$2-a-day		Survey Year	
	Initial	Final	Initial	Final	Initial	Final
China	28.3	10.8	64.5	37.8	1993	2004
Cambodia	25.5	18.5	76.5	61.6	1993	2004
India	41.8	35.1	85.1	79.6	1993	2004
Indonesia	17.4	7.7	64.2	52.9	1993	2004
Lao PDR	47.8	28.8	89.9	74.4	1992	2002
Malaysia	0.0	0.0	19.2	9.8	1993	2004
Philippines	18.1	13.2	52.7	43.6	1994	2003
Thailand	6.0	0.0	37.5	25.8	1992	2002
Viet Nam	27.3	8.4	73.5	43.2	1993	2004

Note: Poverty Index = percentage of population under poverty line.
Source: Inequality in Asia, ADB, (2007)

Despite the fall in poverty the benefit of growth is unequally shared by people. The ADB report (Inequality in Asia, 2007) attributed the reasons for growing inequality to a number of factors. In China the reasons for unequal income distribution has to do with market-oriented reforms where coastal areas have a greater concentration of investment, and hence growth, compared to rural hinterlands. In India disparity in attainment of education has given skilled workers more opportunities compared to the less educated/unskilled workers in a newly globalized environment. In Viet Nam income disparity has been more on the basis of circumstances, where mass exodus of ethnic Chinese from industrially developed South Viet Nam to predominantly agriculture prevalent North Viet Nam, has created spatial inequality. In general, people living in rural areas in China and India, have less earning potential compared to their urban counterparts because of slow growth of agriculture vis-à-vis industry and services sectors. Chaudhuri and Ravallion (2007) argue that post-reform growth in both China and India has not been pro-poor.

A way to measure the extent of inequality is through Gini coefficient index which takes value between 0 and 1. The higher the value the more unequal is the income distribution. Figure 1 describes changes in the Gini coefficient for 21 developing market economies in Asia over a roughly 10-year period (a little less or a little more in some cases). As may be seen, an increase in inequality is registered for a majority of the developing member countries, although countries like, Thailand, Armenia, Kazakhstan and Malaysia, in particular has reported a reduction in inequality. For two of the fastest growing economies in Asia, namely, China and India, there has certainly been an increase in inequality.

Figure 1: Change in Gini-Coefficient for the emerging economies in Asia
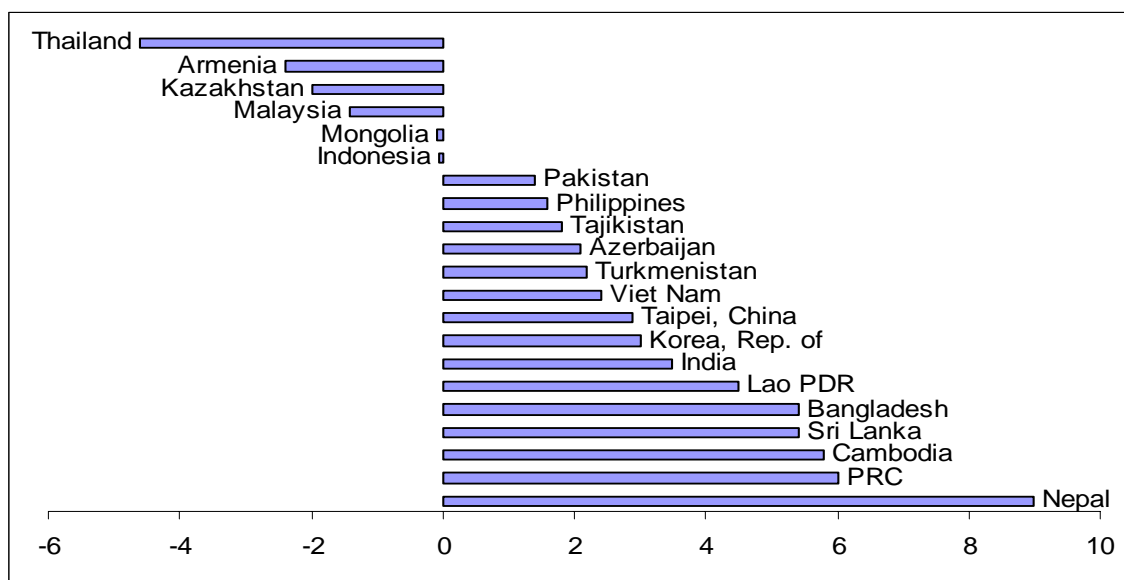
Notes: Years over which changes are computed are as follows: Armenia (1998-2003); Azerbaijan (1995-2001); Bangladesh (1991-2005); Cambodia (1993-2004); People's Republic of China (1993-2004); India (1993-2004); Indonesia (1993-2002); Kazakhstan (1996-2003); Republic of Korea (1993-2004); Lao PDR (1992-2002); Malaysia (1993-2004); Mongolia (1995-2002); Nepal (1995-2003); Pakistan (1992-2004); Philippines (1994-2003); Sri Lanka (1995-2002); Taipei, China (1993-2003); Tajikistan (1999-2003); Thailand (1992-2002); Turkmenistan (1998-2003); and Viet Nam (1993-2004); Income distribution for Republic of Korea and Taipei, China; expenditure distribution for the rest.
Source: Inequality in Asia, ADB, (2007, p. 6).

While China's GDP grew at around 11.5 per cent during 2006-07, the corresponding GDP growth rate for India was 8.8 per cent. Considering India first, the contribution of services sector to national income (GDP) is around 55 per cent followed by industry (26.4 per cent of GDP) and agriculture sector (18 per cent of GDP). A more equitable income distribution would require a scenario with more people earning their livelihood from agricultural sector and less people earning their livelihood from the services sector. The present situation however is quite the opposite. Around, 58.6 per cent of the Indian population earns their livelihood from agricultural and agricultural related allied activities (like, cooperatives, fishing, dairies, etc.) compared to 22.9 per cent dependent on services sector. What is more worrying is that this inequality is going to increase, as presently agricultural sector is growing at an annual rate of 2.6 per cent (from a lower base of 18 per cent growth) compared to services growing at a rate of 11 per cent (from a higher base of 55 per cent growth). There are too many people locked in the agricultural sector (with lower productivity and hence lower income), and there is an urgent need to absorb them either into industry or into services sector. In fact whatever expansion is happening in the Indian manufacturing sector it mostly relates to capital intensive mode of production (Panagariya, 2008). The reason is India's rigid labor law.

Table 2: Structure of Output in India

Components	1980-81	1990-91	1995-96	2004-05	2006-07
Agriculture and allied activities	38.86	31.27	28.24	21.13	18.5 (2.6%)!
Industry	24.50	27.64	28.12	27.15	26.4 (10.4%)
Services	36.64	41.10	43.64	51.72	55 (11%)
Addendum table: Sector wise share of employment[*]					
	Agriculture and allied activities		Industry		Services
2006	58.60		18.50		22.90

Source: Reserve Bank of India and Central Statistical Organization, Government of India.
! Percentage growth during fiscal 2006-07.
[*] employment ratios as a percentage of total employment

Table 3: Structure of Output in China

Components	1980	1990	1995	2004	2006
Agriculture and allied activities	29.9	26.9	19.8	13.1	11.3
Industry	48.2	41.3	47.2	46.2	48.7
Services	21.9	31.8	33	40.7	40
Addendum table: Sector wise share of employment[*]					
	Agriculture and allied activities		Industry		Services
2006	42.6		25.2		32.2

Source: Development Research Center, The State Council, People Republic of China.
[*] employment ratios as a percentage of total employment

Almost similar is the case with China - the only difference being here the industry is contributing more to GDP relative to its services sector. However in terms of employment generation agriculture sector still lacks behind the industry sector. The contribution of industry sector is 48.7 per cent of the national income, followed by services sector contributing 40 per cent of GDP and agriculture sector contributing the least which is only 11.3 per cent of GDP. Match with this the employment figures and the story of income inequality emerges. During 2006, in China, 42.6 per cent of the population earned their livelihoods from the agriculture sector, the corresponding figures for industry and services are 25.2 and 32.2 per cent, respectively.

Unlike India having problems related to rigid labor laws, China faces problem relating to labor market segmentation. China's hukou system of permanent registration - leading to restriction in migration from rural to urban areas are partly responsible for increase in wage differential in China. Whalley and Zhang (2007) provide numerical simulation evidence showing how the removal of migration barriers would reduce inequality in China.

Hence, labor market reform and increase focus on agriculture is necessary. There is a need to develop the agricultural sector - both in terms of sustainability of agricultural production (i.e., reducing volatility of agricultural output) and increasing agricultural productivity. Lack of rainfall linked insurance schemes; cold storage facilities; irrigation system; dams and tanks and connectivity of rural market to urban market, have contributed more towards this volatility and lower productivity of agricultural output, particularly with respect to India.

3. A Social Development Ranking of Asian countries

Given the discussion in our last section it makes sense to consider both growth and the resultant income distribution, to comment about well-being of any particular nation. This we do by ranking Asian economies on the basis of SDI. We construct SDI by adding distribution of income to the existing three dimensions of human welfare, namely, income, education and health. As we are using Principal Component Analysis (PCA), distribution of income is captured through *equality coefficient*. Our interpretation of *equality coefficient* is straightforward. Further away is the Lorenz curve from the line of perfect inequality (the perfect inequality line represents a distribution where one person has all the income and others have none), more equal is the distribution of national income across population. In other words, we define *equality coefficient* as one minus Gini coefficient (measure of inequality).

The Data for SDI

The data on the life expectancy index, education index, GDP index, and the Gini index, are obtained from the UNDP online databases. A long and healthy life is measured by life expectancy at birth. Life expectancy index is used as a proxy for other health indicators, like infant mortality, under-five mortality, maternal mortality, etc. Education index is measured in terms of adult literacy rate and gross primary, secondary and tertiary enrollment ratio. Starting 1995, mean years of schooling has been replaced by a combined primary, secondary and tertiary gross enrolment ratio because of easier data availability. The weights attached to the adult literacy and gross

enrolment ratios are 2:1. A decent standard of living is measured by GDP index (PPP USD). Income is used as a proxy for a bundle of goods and services needed for best use of human capabilities. Starting 1997, log (GDP per capita) is used as the variable to reflect decent standard of living. Finally, Gini index, gives an idea about the extent of income (expenditure) distribution in a country. The data is accessed from Human Development Report database (URL http://hdr.undp.org/statistics/data).

Results

Table 4 summarizes the weights assigned to life expectancy index, education index, GDP index and equality index – the four major components used for constructing SDI. UNDP construct HDI by assigning equal weights to life expectancy, education and per capita GDP. This is reported in column 2 of table 4. In column 3 we report principal component weights considering life expectancy index, education index and GDP index, as the component indexes for development. We refer this as principal component HDI (PCHDI). Principal component weights are calculated on the basis of the characteristic vector corresponding to the largest characteristic root of the covariance matrix of the constituent variables and then rescaled so that the sum of the weights equal one.[6] Column 4 indicates the weights assigned on the basis of simple averaging to the distribution augmented HDI (DAHDI). Here we included equality index as another additional variable. Accordingly, the weights are 0.25 for each of the four component variables. Finally in column 5, we report the weights obtained by using PCA for the component variables, namely, life expectancy, education, income and equality. This we are referring as DAPCHDI, that is, distribution augmented principal component HDI.

Table 4: Weights assigned to different components for development index

Component	Weight for HDI	Weight for PCHDI	Weight for DAHDI	Weight for DAPCHDI
Life Expectancy Index	0.33	0.33	0.25	0.29
Education Index	0.33	0.33	0.25	0.30
GDP Index	0.33	0.34	0.25	0.29
Equality Index	0.00	0.00	0.25	0.13

Source: Human Development Report, UNDP, 2007 and author's own calculation

Comparing weights for HDI with weights for PCHDI, we find that the principal component weights are nearly similar to the weights used for calculating simple HDI. This is not surprising given high correlation between income with health and education indicators. The correlation coefficient between GDP index with education and life expectancy index are 0.79 and 0.80, respectively. The high correlation reflects the fact that wealthy people have better access to health and education. In India, for example, around 5 per cent of children are severely underweight among the richest 20 per cent households. In the case of the poorest 20

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[6] For doing Principal Component Analysis we have used EViews 5, Quantitative Micro Software, Irvine CA, USA.

per cent households, this share is as high as 28 per cent (Inequality in Asia, ADB 2007, p. 4).

Now let us analyze what happens when we add equality index as another additional component indicator for development. In case of computing SDI, the first principal component captures about 73 per cent of the variation in the four indicators.[7] This variation seems reasonably good considering the modest correlations (0.50, 0.28 and 0.32) of the equality index with education index, GDP index and life expectancy index. The modest correlation also rules out possibility of near perfect collinearity where it is possible to drop one of the variables. In other words, each one of these variables is important for constructing SDI.

Comparing DAHDI with DAPCHDI reveal principal component weights on life expectancy index, education index and GDP index is around 20 per cent higher in the latter (that is, 0.29, 0.30 and 0.29, respectively, instead of being 0.25) while that for the equality index it is lower by around 45 per cent (that is, 0.13 instead of 0.25). Thus weighting on the basis of simple average (that is, 0.25 as weight for each one of the four variables) is not technically appropriate when equality index is considered. Ranking has to be done using principal component weights.[8]

Table 5: Ranking of countries

Country	Growth Rank[!]	HDI Rank	DAPCHDI Rank
Japan	21	1	1
Hong Kong , China	8	2	3
Republic of Korea	7	3	2
Malaysia	17	4	5
Thailand	9	5	7
Kazakhstan	2	6	4
Philippines	19	7	8
Azerbaijan	1	8	9
Jordan	16	9	6
Turkmenistan	11	10	17
China	3	11	10
Sri Lanka	13	12	14
Iran	10	13	12
Uzbekistan	12	14	16
Kyrgyzstan	18	15	15
Indonesia	15	16	13
Viet Nam	5	17	11
Tajikistan	4	18	18
India	6	19	19
Bangladesh	14	20	21
Nepal	22	21	22

[7] SDI is derived by assigning 0.29, 0.30, 0.29 and 0.13 as weights to life expectancy index, education index, GDP index and equality index, respectively (Refer to fifth column of Table 4).
[8] The lower correlation between GDP, health and education index with equality index is because of noise in the data relating to measurement of poverty which can either be based on consumption, or income related data.

| Pakistan | 20 | 22 | 20 |

! Countries are ranked on the basis of average GDP growth between the year 2001 and 2006.
Source: World Development Indicators, World Bank and author's own calculation.

Table 5 brings out some interesting observations. The fastest growing economies in Asia, like, India, China, Hong Kong China, Viet Nam, – growing on average at a rate more than 8 per cent during 2005 and 2006 – are not doing well in terms of well-being of their average citizen. Since we have sourced data from World Development Indicators, 2006 is the latest GDP growth data available for our sample countries.

When ranking of these countries are done on the basis of growth rate of GDP; India, China, Hong Kong China and Viet Nam take the first six positions. However, when we do ranking in terms of well-being of average citizens (that is, in terms of DAPCHDI), these countries lags behind – Viet Nam (11), India (19) and China (10). Hong Kong, China however does well occupying third position. Japan and Republic of Korea do well in terms of distribution of resources towards its average citizen and in terms of other development criteria. In the other extreme we have countries, like, Bangladesh, Indonesia and Nepal, which are not only growing slowly but also are performing bad in terms of income distribution.

4. Does Trade Matter?

Under condition when rising income inequality across Asia is a cause of concern among policy makers, it might be interesting to study the impact of trade on income inequality. There are detail studies in the literature that has commented about how trade in goods and services might affect distribution of income in a region.[9] Primarily, trade induced change in distribution of income can happen through: (a) income channel, and/or (b) consumption channel. Trade policy influences household welfare by changing relative prices of goods, which in turn affect labor income and consumption. Because households typically differ in terms of their composition of consumption bundle and education endowment, a change in relative prices and demand for labors resulting from external sector reform (read, increase in trade), will have an impact on income distribution. For instance, poor households generally spend a higher share of budget on basic food items, and are less educated than the richer households. If trade leads to higher price of food items and lower the price of technology intensive luxury items, then richer tend to benefit relative to the poor households. Similarly, product quality upgrading in response to trade openness increase demand for more educated (read, skilled) laborers, and hence increase their payoffs relative to the less skilled labors. Another channel through which trade may affect industry wages is suggested by models of imperfect competition and bargaining power of trade union. If industries enjoying profits from protection, share part of their rents with workers because of union bargaining power, tariff cuts in these industries may lead to lower wages, as industry rent disappear from globalization (Grossman, 1984).

A recent study considering impact of various subcomponents of trade and financial globalization on inequality among 51 countries (20 advanced, and 31

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[9] For an overview about the literature on globalization and inequality see Goldberg and Pavcnik (2007).

developing and emerging market countries), has found that there is small net adverse impact of globalization on inequality. For the period 1981-2003, while globalization of trade has in aggregate tended to reduce inequality, financial globalization, and foreign direct investment in particular, has tended to exacerbate the trend towards rising inequality (Jaumotte, Lall and Papageorgiou, 2008). In fact, the impact of trade on inequality is rather ambiguous. While Barro (2000) has found a positive relationship others such as Dollar and Kraay (2004) have found no such effect. While examining impact of trade on inequality for a sample of 80 countries, Dollar and Kraay (2004) found, 'Some have had increases in household inequality over the past 20 years, most notably China. But it is not true in general that the liberalizing economies have had increases inequality. Costa Rica's and Philippines' income distributions have been quite stable. Inequality has declined in Malaysia and Thailand' (p. F29).

But none of these studies have examined the relationship between trade and SDI. So it is worth examining this relationship. To comment about the relationship between SDI and trade we start with basic Kuznets formulation, that is:

$$sdi_j = \beta_0 + \beta_1 \hat{y}_j + \beta_2 \hat{y}_j^2 + \delta_j$$

where, sdi_j represents SDI of country j and $\hat{y}_j$ represents estimated per-capita income (in logs) of country j. To overcome problem associated with endogenity we use estimates of y_j obtained from an instrumental variable and auto regressive time series structure for instrumentation purposes. We use per capita GDP data for individual countries between 1991 until 2006. As income rises inequality in terms of capability increases initially and subsequently falls as income increases further. The term δ_j represents the deviation of individual country observations from the Kuznets-U hypothesis. For the purpose of this study, we augment the above formulation in the following fashion:

$$sdi_j = \beta_0 + \beta_1 \hat{y}_j + \beta_2 \hat{y}_j^2 + \beta_3 imi_j + \delta_j$$

where, imi_j stands for input measure index component in the Trade and Development Index (TDI) of country j. It is to be noted that TDI measure is developed by UNCTAD and provides an analytical framework to identify how well trade and development are integrated in an individual country. Testing hypothesis on the sign and significance of β_3 will reveal whether trade leads to social development. Since *imi* scores are not available for all the 122 countries for which we have calculated SDI we have to drop 17 countries.[10] In total we have 105 data points which are accessed from the UNCTAD report titled, 'Developing countries in international trade', 2007 (available at: http://www.unctad.org/en/docs/ditctab20072_en.pdf, p. 54-56), and

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[10] Countries for which *imi* scores were not available are: Hong Kong China, Croatia, Trinidad and Tobago, Macedonia, Bosnia and Herzegovina, Kazakhstan, Turkmenistan, Gambia, Lao People's Democratic, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, The Netherlands, Namibia, Swaziland and Nepal.

Human Development Report database, 2007 (URL http://hdr.undp.org/statistics/data).[11]

Input measure index component of TDI

Ideally it would be interesting to see the effect of TDI on SDI. However, TDI is an aggregate measure computed as a simple average of two broad set of measures, namely, input measure index (*imi*) and output measure index (*omi*). *imi* is computed using two broad sets of determinant falling under two broad categories. The first one is structural and institutional index, and comprise of data on physical infrastructure, financial intermediation, domestic finance, international finance, institutional quality, economic structure, macroeconomic stability, environmental sustainability and human capital. The second component of *imi* is trade policies and process index, and comprise of data on openness to trade and market access. Countries that are more open to trade and have easier access to foreign market have, ceteris paribus, higher imi scores. Likewise, *omi* is constructed taking into account a country's trade performance, and economic social well being of it's average citizen.[12]

Results

The dependent variable is SDI and the independent variables are *imi*, log of per capita income and log of per capita income square. The result reported in table 6 shows that log of income square and input measure index are statistically significant. Given our sample, the log of income coefficient is not statistically significant. Since, equality index is one component indicator of SDI, positive significant coefficient associated with log of income square indicates that income inequality might eventually falls as income grow. Also, the *imi* has come out statistically significant coefficient suggesting trade helps to build capabilities in terms of opportunities to earn income and hence, better access to health and education.

Table 6: Results from the model

Variables	Estimates
Constant	-0.33793*** (0.095005)
Log of Income	1.897996 (0.208238)
Log of Income Square	0.84082** (0.049967)
Input Measure Index	0.08075*** (0.085255)
Adjusted R^2	0.693442

*Indicates significance at 1 percent level; ** Indicates significance at 5 percent level; *** Indicates significance at 10 percent level.
[a] *P-value* are reported in parenthesis.

5. Conclusion

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[11] Although UNDP has very recently (18th December, 2008) updated its database, the database about *imi* as released by UNCTAD is yet to be updated. Hence, we had no option but to go with 2007 year database, as it is the most recent available data from both these sources.

[12] For details regarding as to how these measures are calculated see UNCTAD trade and development report available at: http://www.unctad.org/en/docs/ditctab20072_en.pdf.

Much of the cause of inequality in Asia results from lack of inability to absorb predominantly rural based population into urban centric manufacturing and services sector. From the policy perspective, there is a need for: (a) urbanization – which is expected to remove part of the spatial inequality that exists mainly in China and in parts of India; (b) increase agricultural productivity; (c) investment in rural infrastructure; (d) investment in health and education; and (d) labor market reforms along with removal of restriction on migration – to reduce wage gap between organized and unorganized sector.

In fact Governments, in both India and China, has diverted fund through budgetary allocation towards rural areas and less developed regions (IMF Regional and Economic Outlook, 2006). However, these programs which are generally run in partnership with, the State governments or local state bodies, lack accountability. Teacher absenteeism in public schools; absenteeism of medical professional; unavailability of medicines in government hospitals; lack of sanitation and availability of clear drinking water; are something which are still prevalent in India. The problems with public project executions are higher administrative cost in terms of implementation and corruption. Both, can be minimized through a carrot and stick based strategy where the performers, it can be any particular Non Governmental Organization (NGO) or States enterprises at the grass root level (like, *Panchayats* in India), can be rewarded/penalize in terms of fund allocation during the next budgetary period. Decentralizing of government functions to local authorities can give the poor more voice and improve delivery of basic services (Shah and Chaudhry, 2004). This has happened during the last two decades – swiftly in some countries, such as Indonesia; more slowly in others, such as Philippines and Viet Nam.

From the demand side perspectives, any Government also needs to design human development related programs so that there are takers for the same. For instance, to address problems associated with school dropouts, or target group not participating in development programs, like the immunization program, there is a need to supplement or provide incentive for the participants. It is important to recognize while teacher absenteeism might be a reason for students not showing up in school another equally important reason can be loss in income that poor student sacrifice (opportunity cost) for showing up in school. Hence there is a need to supplement these capability building programs with freebies. Schemes like, mid day meal for school children and offering freebies in the form of food grains like, pulse or rice, to everyone who participate in the development program are welcome move. Actually, the latter policy has been quite successful in State of Rajasthan in India, where government officials found that the per unit cost of immunization has actually fallen (despite providing freebies in terms of a kilo of lentils as supplement) as more people showed up to participate in the child immunization program.

Finally, trade is not necessarily contributing to inequality. Although external sector reforms and liberalization *creates* and *destroy* certain markets, this paper point out overall trade has beneficial effect in terms of development of capabilities. Upon regressing SDI on *imi*, the coefficient on the latter came out to be positively statistically significant, indicating trade having a beneficial effect in building capabilities of a region. Capabilities are synonymous with freedom – freedom from hunger, freedom from dying prematurely, freedom from getting oppressed, freedom from ignorance, freedom from crime, and freedom from ecological disaster. Poor

people are concerned not only about opportunities to earn income but also having access to quality education, affordable health care, drinkable water, public transport system, financial intermediation, transparent bureaucracy and living in a less polluted environment. Sen (1999) uses the example of a rich slave – who while materially wealthy, is in an undesirable position – to illustrate the fact that income must be supplemented by other forms of freedom to result in real development. Trade helps to build capabilities in two primary ways. First, trade affects mean income positively. Rising income can be instrumental behind getting access to quality health, education and other attributes of good life. Second, trade also embodies flow of resources that can be used to set up both healthcare and education type services, and to build necessary infrastructure in the form of power, water supply, roads and ports.[13]

One limitation of this present exercise is that we have worked with macro level data. What has not been examined is to understand the rate at which trade or finance related shocks affect allocation of resources, or how much time it takes for the economy to adjust to such shocks. Understanding the dynamics will help us to understand the persistence of inequality in these economies. As trade presently happens mostly between firms, it will be interesting to consider firm level data, and study the reallocation of resources within the successful firms. Also, since income data are hard to access, to better understand inequality and to compare it across region there is a need to develop uniform data based on consumption expenditure data. All these can be the agenda for any future research.

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Dataset used for this study

Countries	Education Index	GDP index	Life expectancy index	Gini Index	Equality index	SDI (Author's Calculation)
Norway	0.991	1	0.913	25.8	0.977823	0.97
Sweden	0.978	0.965	0.925	25	0.993952	0.96
Canada	0.991	0.97	0.921	32.6	0.840726	0.95
Netherlands	0.988	0.966	0.904	30.9	0.875	0.94
Australia	0.993	0.962	0.931	35.2	0.788306	0.94
Belgium	0.977	0.963	0.897	33	0.832661	0.93
United States	0.971	1	0.881	40.8	0.675403	0.92
Japan	0.946	0.959	0.954	24.9	0.995968	0.96
Ireland	0.993	0.994	0.89	34.3	0.806452	0.94
Switzerland	0.946	0.981	0.938	33.7	0.818548	0.94
Austria	0.966	0.971	0.907	29.1	0.91129	0.94
United Kingdom	0.97	0.969	0.9	36	0.772177	0.92
Finland	0.993	0.964	0.898	26.9	0.955645	0.95
Denmark	0.993	0.973	0.881	24.7	1	0.96
France	0.982	0.954	0.919	32.7	0.83871	0.94
New Zealand	0.993	0.922	0.913	36.2	0.768145	0.92
Germany	0.953	0.949	0.902	28.3	0.927419	0.93
Spain	0.987	0.935	0.925	34.7	0.798387	0.93
Italy	0.958	0.944	0.922	36	0.772177	0.92
Israel	0.946	0.927	0.921	39.2	0.707661	0.90
Singapore	0.908	0.95	0.907	42.5	0.641129	0.89
Greece	0.97	0.91	0.898	34.3	0.806452	0.91
Hong Kong, China (SAR)	0.885	0.977	0.949	43.4	0.622984	0.90
Portugal	0.925	0.888	0.879	38.5	0.721774	0.88
Slovenia	0.974	0.902	0.874	28.4	0.925403	0.92
Korea (Republic of)	0.98	0.9	0.882	31.6	0.860887	0.91
Czech Republic	0.936	0.889	0.849	25.4	0.985887	0.90
Argentina	0.947	0.828	0.831	51.3	0.46371	0.82
Estonia	0.968	0.842	0.77	35.8	0.77621	0.85
Poland	0.951	0.823	0.836	34.5	0.802419	0.86
Hungary	0.958	0.866	0.799	26.9	0.955645	0.89
Slovakia	0.921	0.846	0.821	25.8	0.977823	0.88
Lithuania	0.965	0.831	0.792	36	0.772177	0.85
Chile	0.914	0.799	0.889	54.9	0.391129	0.81
Uruguay	0.942	0.768	0.848	44.9	0.592742	0.82
Costa Rica	0.876	0.772	0.891	49.8	0.493952	0.80
Croatia	0.899	0.813	0.839	29	0.913306	0.86
Latvia	0.961	0.821	0.784	37.7	0.737903	0.84
Mexico	0.863	0.781	0.843	46.1	0.568548	0.80
Trinidad and Tobago	0.872	0.832	0.737	38.9	0.71371	0.80
Bulgaria	0.926	0.752	0.795	29.2	0.909274	0.84
Malaysia	0.839	0.783	0.811	49.2	0.506048	0.77
Russian Federation	0.956	0.782	0.667	39.9	0.693548	0.79

Country						
Macedonia (TFYR)	0.875					
		0.714	0.814	39	0.711694	0.79
Panama	0.878	0.723	0.836	56.1	0.366935	0.76
Belarus	0.956	0.73	0.728	29.7	0.899194	0.82
Albania	0.887	0.663	0.853	31.1	0.870968	0.81
Bosnia and Herzegovina	0.874					
		0.71	0.825	26.2	0.969758	0.83
Venezuela (Bolivarian Republic of)	0.872					
		0.7	0.804	48.2	0.52621	0.76
Romania	0.905	0.752	0.782	31	0.872984	0.82
Ukraine	0.948	0.705	0.711	28.1	0.931452	0.81
Brazil	0.883	0.74	0.779	57	0.34879	0.74
Colombia	0.869	0.716	0.788	58.6	0.316532	0.73
Thailand	0.855	0.745	0.743	42	0.65121	0.77
Kazakhstan	0.973	0.728	0.682	33.9	0.814516	0.80
Jamaica	0.792	0.627	0.787	45.5	0.580645	0.72
Armenia	0.896	0.651	0.779	33.8	0.816532	0.78
Philippines	0.888	0.657	0.767	44.5	0.600806	0.75
Turkmenistan	0.903	0.609	0.627	40.8	0.675403	0.71
Paraguay	0.853	0.641	0.771	58.4	0.320565	0.70
Peru	0.872	0.684	0.761	52	0.449597	0.73
Turkey	0.812	0.74	0.773	43.6	0.618952	0.76
Azerbaijan	0.882	0.653	0.702	36.5	0.762097	0.75
Jordan	0.868	0.67	0.782	38.8	0.715726	0.77
Tunisia	0.75	0.739	0.808	39.8	0.695565	0.76
China	0.837	0.703	0.792	46.9	0.552419	0.75
Georgia	0.914	0.587	0.761	40.4	0.683468	0.75
Dominican Republic	0.827					
		0.736	0.776	51.6	0.457661	0.74
Sri Lanka	0.814	0.639	0.776	40.2	0.6875	0.74
Ecuador	0.858	0.629	0.828	53.6	0.417339	0.73
Iran (Islamic Republic of)	0.792					
		0.731	0.754	43	0.631048	0.74
El Salvador	0.772	0.661	0.772	52.4	0.441532	0.70
Uzbekistan	0.906	0.505	0.696	36.8	0.756048	0.71
Algeria	0.711	0.711	0.778	35.3	0.78629	0.74
Kyrgyzstan	0.917	0.494	0.676	30.3	0.887097	0.72
Indonesia	0.83	0.609	0.745	34.3	0.806452	0.74
Viet Nam	0.815	0.572	0.812	34.4	0.804435	0.74
Moldova	0.892	0.508	0.724	33.2	0.828629	0.73
Bolivia	0.865	0.557	0.662	60.1	0.28629	0.64
Honduras	0.771	0.59	0.739	53.8	0.413306	0.66
Tajikistan	0.896	0.435	0.689	32.6	0.840726	0.70
Nicaragua	0.747	0.601	0.782	43.1	0.629032	0.70
Mongolia	0.91	0.509	0.682	32.8	0.836694	0.72
South Africa	0.806	0.786	0.43	57.8	0.332661	0.63
Egypt	0.732	0.629	0.761	34.4	0.804435	0.72
Guatemala	0.685	0.638	0.746	55.1	0.387097	0.65
Morocco	0.544	0.637	0.757	39.5	0.701613	0.65
Namibia	0.783	0.723	0.444	74.3	0	0.57
India	0.62	0.591	0.645	36.8	0.756048	0.64
Botswana	0.773	0.804	0.385	60.5	0.278226	0.61
Ghana	0.555	0.536	0.568	40.8	0.675403	0.57

Country						
Cambodia	0.691	0.552	0.55	41.7	0.657258	0.61
Papua New Guinea	0.518	0.541	0.532	50.9	0.471774	0.52
Lao People's Democratic Republic	0.663	0.503	0.637	34.6	0.800403	0.63
Swaziland	0.73	0.647	0.265	50.4	0.481855	0.54
Bangladesh	0.503	0.504	0.635	33.4	0.824597	0.58
Nepal	0.518	0.458	0.626	47.2	0.546371	0.54
Cameroon	0.66	0.523	0.414	44.6	0.59879	0.54
Pakistan	0.466	0.528	0.659	30.6	0.881048	0.59
Lesotho	0.768	0.585	0.293	63.2	0.22379	0.51
Uganda	0.655	0.447	0.412	45.7	0.576613	0.52
Zimbabwe	0.77	0.503	0.265	50.1	0.487903	0.51
Kenya	0.693	0.42	0.451	42.5	0.641129	0.54
Yemen	0.545	0.372	0.608	33.4	0.824597	0.55
Madagascar	0.67	0.371	0.557	47.5	0.540323	0.53
Nigeria	0.648	0.404	0.359	43.7	0.616935	0.49
Mauritania	0.493	0.519	0.637	39	0.711694	0.57
Gambia	0.45	0.493	0.563	50.2	0.485887	0.50
Senegal	0.394	0.482	0.622	41.3	0.665323	0.52
Guinea	0.347	0.524	0.497	38.6	0.719758	0.49
Tanzania (United Republic of)	0.631					
CÃ´te d'Ivoire	0.457	0.335	0.434	34.6	0.800403	0.51
Zambia	0.655	0.468	0.373	44.6	0.59879	0.45
Malawi	0.638	0.388	0.259	50.8	0.47379	0.44
Central African Republic	0.423	0.317	0.355	39	0.711694	0.47
Ethiopia	0.38	0.418	0.311	61.3	0.262097	0.37
Mozambique	0.435	0.393	0.446	30	0.893145	0.47
Guinea-Bissau	0.421	0.421	0.296	47.3	0.544355	0.41
Burundi	0.522	0.353	0.347	47	0.550403	0.40
Mali	0.282	0.325	0.391	42.4	0.643145	0.44
Burkina Faso	0.255	0.39	0.469	40.1	0.689516	0.42
Niger	0.267	0.417	0.44	39.5	0.701613	0.41
		0.343	0.513	50.5	0.479839	0.39

Source: World Development Indicators, World Bank and author's own calculation.