

The Imperative Priority to Stop Debilitation

How Capacity Impairment Cripples Nations



The Experts Development Foundation (Mahara)

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Mahara is an independent, not for profit, human development organisation based in the UK. It was founded and is run by experts from a spectrum of professional specialities. It aims to help communities in developing nations to advance their levels of performance in areas that are pivotal to development; namely education, civil administration and the health sector.

At Mahara, we believe that the best form of aid is to help people acquire enhanced skills, and to work to high professional standards; enabling them to contribute in a more balanced way towards true sustainable development, which is felt across society.

Mahara Foundation's area of focus is the provision of programmes, which aim to edify and educate individuals in how to increase their capacity, improve their performance and reinforce the developmental impact of their occupational role.

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Introduction

The world has experienced different models of development¹ in which people have always played a key role in shaping outcomes, however the prominence of the role that individuals could play became more evident as the size of the economic impact of knowledge became clearer². Despite the historical head start that some countries benefited from, global discrepancies in development are being gradually eroded as many are trying to catch up, causing significant changes in the development landscape. Multinational corporations are taking advantage of componentization and outsourcing³, whilst emerging economies are betting on technology transfer and lower cost structures⁴. As a result, human performance, either at an individual or national level, can no longer remain insulated from competitive pressures or measures of comparison. However, not everyone has fared equally; as many parts of the world are yet to benefit from the new dynamics of competition and collaboration⁵. The historical lead, accelerated progression and competitive tactics that countries at forward positions have employed are making it increasingly difficult for others to catch up, unless they can build strong enough momentum to compensate for the difference.

This increasing challenge to people's present and future prospects is a topic which requires thoughtful consideration, particularly in less-developed nations. This is notwithstanding local variations in people's perceptions, ambitions or potential, and is independent of the wide discrepancies in values they believe in. One of the most serious consequences however, of living in an underdeveloped environment for extended periods of time is the accumulation of statistical odds against any reasonable chances of catching up⁶⁻⁷. Although some countries have demonstrated that rapid development is possible⁸, economic growth rates have well-known historical limits and many development efforts suffer from isomorphic mimicry, which raises serious doubts about the future prospects of countries at lower ranks of development⁹⁻¹⁰. After all, development is a complex human endeavour which requires a generational effort that is difficult to sustain, especially against internal adversities and external challenges. Sometimes, the process can benefit from prudent exogenous help but it cannot be accomplished via proxies, and no matter how many phantasmagorical accomplishments are extolled and accepted, or how much isomorphic mimicry is imposed, long-term positive outcomes are difficult to conceal.

For any development effort to succeed it is essential to carefully assess the available human capital; by measuring it up against credible international standards, and in turn assessing the adjustments required. Building human capabilities however can prove to be the most formidable of development tasks; especially in cases where extended periods of debilitation have deprived countries of internationally

competitive skill capacity. It is hence essential to contemplate upon the broader picture of a country's performance through a chronological, analytical perspective, which can identify areas of strength, tackle points of weakness, and help to avoid failing policies. The primary focus of this monograph is human capacity building in cases where protracted underdevelopment has impaired the capacity of individuals, creating a chasm between the capabilities available and the level of skills required to achieve significant developmental progress.

When Growth Falters For Too Long

The economic prosperity stemming from development has been much sought after by almost all models of polity. In free democratic countries, elected administrations work towards it for reasons of public accountability and political competition, whilst incumbent elites in authoritarian regimes require it to shore up their acceptance and sustain their grip on wealth and power. A very recent economic study of the average workers' productivity- as real GDP - in 189 countries between 2003 and 2007, showed that workers in countries at the 90th decile of global income distribution are more than fifty-three times as productive as workers in countries at the 10th decile. This huge difference in economic productivity was attributed to differences in the quality of human capital; as shaped by quality of schooling and on-the-job training. The analysis of the data suggested that a large fraction of cross-country differences in output were due to differences in the quality of human capital; as individuals in some countries not only acquire fewer years of schooling, but also gain less human capital per year of education¹¹. Of course the concept of genuine wealth is much more comprehensive¹²⁻¹⁴ than the crude monetary picture that GDP paints, the latter remains however as the standard parameter which reflects national economic performance. A recent development accounting study further confirmed that cross-country differences in the quality of education are "roughly as important as cross-country differences in years of schooling in accounting for (GDP) output per worker differences"¹⁵. The research explained that the impact of education was greater than previously thought, and had risen "from 10% to 20% of output per worker differences"¹⁵. In other words, the economic analysis confirmed a direct link between the aggregate skill competence of individuals - as shaped by education- and national economic performance.

A 2010 economic study further provided some concerning information about the collective macroeconomic performance of so called 'developing' countries, in comparison to advanced economies¹⁶. The detailed study charted the real per capita GDP in 156 countries over a 135 year period (1870-2005). Figures from the study revealed that the per capita GDP achieved by 136 countries in Asia (excluding Japan), Africa, and Latin America in the year 2005 was similar to that achieved in 1929 by only twenty predominantly Western European OECD countries. The real per capita GDP that Latin America was able to achieve in 2005, was similar to that achieved by the twenty countries in the early 1950s, whilst Asia achieved in 2005 what the twenty had attained in 1929. Finally real per capita GDP in Africa in 2005 was similar to that seen in the mid-nineteenth century by the twenty OECD nations. Furthermore, the income per head of the OECD countries in 1913 was not reached in Latin America until the late 1960s, in Asia up to 2000, and not achieved in Africa within the time frame of the study¹⁶. Unfortunately,

another recent study highlighted that the situation is not much improving in Africa; as human development indices have shown that development in the continent continues to fall short of achievements in Asia or Latin America. In addition, data analysis between 1870 and 2007 confirmed that the gap between the continent and the rest of the world has actually widened since the continent stopped catching up in 1980¹⁷.

This serious underdevelopment is particularly pronounced in the Middle East and North Africa. During the 1990s, the region scored one of the lowest ratios of exports to GDP (excluding oil) and foreign direct investment (FDI) among all regions of the world other than Sub-Saharan Africa¹⁸. In 2002, the World Economic Forum (WEF) issued its first report about the Arab region with an overall analysis of the economic situation. The report warned that, despite some fluctuations, the growth rate across the region over a forty year period (1960-2000) followed a clear negative trend. In fact, the data showed that GDP per capita in the region as a whole was lower in the year 2000 than in 1980, and investment had not translated into growth, as much of it was directed into unproductive activities¹⁹. In one case between 1984 and 2000, an estimated 18 percent (\$85 billion) of one country's revenues from oil exports were spent on a single project that was environmentally damaging, financially unviable, achieved none of its ostensible goals and was eventually abandoned²⁰. Overall, the benefits from non-renewable hydrocarbon revenues have failed to generate a sustained growth dynamic or even bring about regional economic integration²¹. All subsequent editions of the WEF Arab region report have emphasized the need to strengthen competitiveness in order to create jobs, and to absorb the large numbers of young people coming into the workforce. However, more than 10 years later, the 2013 edition of the report concluded that "growth in the region has not been sufficient to create an appropriate number of jobs, thus leading to high levels of youth unemployment despite efforts to enhance education"²². Unfortunately, more specialized economic studies come to similar conclusions. For example the performance of the Middle East was far from satisfactory when long-term aggregated GDP per capita growth records of the region between 1820 and the year 2000 were put into a global comparative framework. Data confirmed that oil was the single most important factor contributing to increases in per capita income in the region. Despite the sharp rise in oil production and revenues however, the gap between the Middle East as a whole, and the high income economies of the USA and Western Europe was roughly the same in 2000 as it was in 1913; the approximate time oil was discovered in the region²³. The study revealed that the differences in per capita incomes between the region and high income equivalents, had widened significantly since the nineteenth century, and did not exhibit any tendency for convergence in the twentieth.

Despite most countries in the Middle East and North Africa obtaining their 'independence' from colonial powers by the middle of the twentieth century, the 2014 Global Employment Trends report, from the

International Labour Organization (ILO) concluded that

The region (MENA) is struggling in both addressing historical problems and offering a clear path of political stability and economic growth for its current and future generations...growth has decelerated sharply falling to 2.2 per cent in 2013 (well below the global average)...youth unemployment remains the highest in the world, reaching 27.2 per cent in the Middle East and more than 29 per cent in North Africa in 2013²⁴

Unfortunately, the situation does not seem to be getting any better; the ILO 2015 World Employment Social Outlook Report reads similar to the 2014 version and stated that

Unemployment rates in the region continue to be the highest in the world, with the youth unemployment rate at a staggering 29.5 per cent in 2014 and expected to rise to 29.8 per cent in 2015...around 23.4 per cent of Arab people were living below the national poverty line in 2012, up from 22.7 in 1990²⁵.

The roots of contemporary economic performance in the region can be traced back to the beginnings of the nineteenth century²⁶⁻²⁷, however the long-term debilitation of development well into the second decade of the twenty-first century is baffling. It seems to support the suggestion that “the energy necessary to escape the gravitational pull of underdevelopment and to enter an evolutionary trajectory dependent on the gravitational pull of development is unintelligible in economic terms”²⁸. Nonetheless, this ‘gravitation’ of underdevelopment has attracted the attention of many curious minds seeking less metaphoric interpretations²⁹⁻⁴⁴.

More Serious Faltering

A recent review attempted to summarise the positive achievements of the past forty years of human development in the MENA region as

Life expectancy across the region is comparable with developed countries...falling child mortality, rapid decline in fertility and rising education have transformed family structures, changing the relationship between men and women and between parents and children. As women's education has caught up with men's, families have become more balanced in the bargaining power between husband and wife, and their specialization has evolved from procreation to production of human capital. Parents no longer view children merely as a source of work in the field or support for their old age⁴⁵.

However the review goes on to say that "structural problems in MENA societies...inhibit youth and women from leading productive and creative lives in accordance with their full potential". The "structural problems" referred to in the report were mainly of an economic nature, relating to high rates of youth unemployment, and the modest participation of women in economic activities. However careful examination of the wider environment reveals that notwithstanding the severity of the economic situation present, these economic problems may be some of the easiest to solve. In contrast, many specialized studies have revealed dangerous levels of social, behavioural and developmental debilitation across the region, all indications of problems that present far greater challenges.

The Weighted Index of Social Progress (WISP)⁴⁶ combines statistically weighted indicators to assess the status of social development in countries, covering the ten areas of education, health, the military, the economy, demographics, the environment, society, politics, culture and welfare. The maximum score for each of the WISP's ten sub-indices is set at 10.0, thus the theoretical range of WISP scores is 0.0–100.0; albeit owing to some unusual conditions that exist in certain countries, achievement scores can fall outside the theoretical range⁴⁷.

In 2010, WISP scores across 160 countries ranged from a high of 98 in Sweden and Denmark to a low of -14 in Afghanistan⁴⁸. In a very recent study, WISP figures for a cohort of fifty-three countries across the world, were used to analyse the link between social development trends over a forty year period, and ideology-inspired militancy (loosely described as "terrorism"). Results revealed that sixteen countries in the MENA region with predominantly Arabic-speaking populations were amongst a subset of twenty-seven nations described by the study as "closely associated with acts of 'terrorism' directed at either their

own governments or peoples, those of other nations, or typically both". The WISP scores for these sixteen countries averaged 38 in 2000 when the world average (WA) was 48.5 and 46 in 2011(WA 48.7, 2010)⁴⁹. Tracing back the WISP figures for these nations shows that in 1970 only ten had WISP records; averaging 32 (WA 43.6) while in 1980 and 1990 eleven had WISP records; averaging 38.4 and 43 respectively (WA 43.4 & 48.1)⁵⁰. By observing that the WISP scores for the world's most socially developed regions (Australia-New Zealand, Europe, and North America) averaged 77.8 in 1970, 79.8 in 1980 and 91.2 in 1990, it becomes clear that over a forty-year period (1970-2010), the predominantly Arabic-speaking populations of the MENA region consistently averaged deficient social development trends.

The specific examples of unfavourable social development across the region are too numerous to list. The schooling sector however is a classic example which does not appear to have largely benefited from modern advancements; its pre-university sector having serious, well-documented and longstanding problems with structure, policy and performance⁵¹. The university and academic sectors do not fare much better, their many challenges epitomized by the status of one of their presumed top achievers; where in the "Middle East's powerhouse for doctoral studies" endemic limitations in funding and structural problems are causing in the words of one publication

Shortages in equipment and materials, a lack of qualified teaching staff and poor compensation for researchers. (this) also means that more of the funding burden is falling on the students. The squeeze takes a toll on the quality of research, and creates tension between students and supervisors⁵².

Unfortunately, this already deteriorating situation does not seem to be getting anything but worse, and future prospects remain uncertain⁵³.

Inequality is similarly widespread across the region where upper and middle-class families live lifestyles not dissimilar to their Western peers; involving cafes, malls and vacations, whereas lower income families struggle with high unemployment, poor quality education and failing health services. In addition,

child labour and female-headed house hold are on the increase. Women who are divorced or widowed, or whose husbands have migrated or been imprisoned, have no option but to take their children out of school to work, while they themselves also work, often in unacceptable conditions⁵⁴.

Furthermore, the region's polity has long running, fundamental problems. For example, using data taken over thirty years from a cohort of forty-seven countries across the world, early studies showed that all of the sixteen predominantly Arabic-speaking countries mentioned previously, suffered from "electoral deficiency"⁵⁵⁻⁵⁶. Multiple subsequent studies revealed that governance across the region was

predominantly nondemocratic or “electoral authoritarian”; where regular multiparty elections are staged, yet actual governance violates basic democratic standards in serious and systematic ways⁵⁷⁻⁵⁹. The most recent analysis of trends in governance across the world showed that, until mid-2014, none of the sixteen countries mentioned qualified to be described as democratic; rather they were classified either as autocratic, anocratic or failed⁶⁰⁻⁶¹. It also seems that for decades some nations often described as ‘democratic’ super powers have had well-documented, active alliances and institutional collaboration with incumbent authoritarianism in the region; to prevent genuine democracy from ever taking root there⁶².

The public sector also appears “virtually impervious to efforts of improving professional competence and achieving acceptable standards of ethical conduct regardless of various reports and recommendations by international consultants and local management pundits”⁶³. In actual fact, “incapacitation is disabling the effective role of administration and rendering it as a separate entity that is tightly connected to the dictation of the political branch and its whims than becoming a true guardian for public affairs”⁶⁴.

One could argue that “social development is a measure of communities’ abilities to get things done in the world,” and that it is “not a measure of the worth of different societies”⁶⁵. It is well-established however that prolonged exposure to socioeconomic adversities brings about lasting impacts on health, behaviour and attitudes⁶⁶⁻⁶⁷. For example, a recent study from 2014 showed that the current frequency and level of political violence in the MENA region is affecting the actual behaviour of children, and not only those directly affected by it, but also those exposed to it via media coverage⁶⁸. Despite the limited geographical coverage of the study, it exemplifies the case of millions of children across troubled parts of the region who suffer from traumatic stress symptoms and aggressive behaviour. Even with extensive research detailing the negative impact of mass trauma upon children’s development, there remain limited intervention protocols available to tackle this crisis⁶⁹.

Such complex and dynamic cross-border crises can obviously only be tackled via concerted collaborative efforts at a global level⁷⁰. Without identifying and tackling the core of the problem however, any reform efforts will join a long list of past attempts that have gone in vain. Peoples’ suffering across the region should be reason enough to hasten efforts towards putting an end to such unnecessarily protracted debilitation, not to mention the other direct consequences that are affecting the peace and stability of the world at large. For some financially minded observers this might be seen as an investment opportunity, whereas development specialists may see it as an interesting developmental challenge, but for the immiserated millions across the region it is an imperative existential necessity.

Capacity Procurement

It has long been established among top economists that the most significant factor that explains the differences in income between nations, is the variation in their economic policies and institutions⁷¹⁻⁷². This is notwithstanding the well documented role of colonial powers, extractive activities, groups with vested interests and corruption in the underdevelopment of many parts of the world^{37, 73-77}. Policies and institutions however, are a pair of structural and operational embodiments of the collective capacity of individuals in society (i.e. human capital⁷⁸) known to account for some of the large income variations between rich and poor countries⁷⁹⁻⁸⁰. Productivity differences between economies are also known to be largely dependent upon the collective capacity of workers to obtain and accumulate advanced knowledge⁸¹.

In the words of a 2005 report “ the productivity of modern corporation or nation lies more in its intellectual and systems capabilities than in its hard assets-raw materials, land, plant, and equipment”⁸². In terms of strategic resource management, human capital is recognized as the “most important asset” which may be measured by individuals’ aggregate knowledge, skills, abilities and other characteristics⁸³. As an asset, human capital has a fiscal value that can be measured empirically via recognised methods⁸⁴⁻⁸⁶. Very recently, the financial analysis of this value, within an investment context, has shown that for one of the most advanced economies it had an estimated arithmetic weight of about 93% of aggregate wealth⁸⁷.

Economic and psychological evidence explains how human capital is produced in societies⁸⁸⁻⁹⁰. Starting at a very young age, and in the presence of appropriate social milieu, self-reinforcement and cross fertilization result in dynamic complementarity and self-productivity of skills to build human capital through multiplier effects; the mechanisms through which skills beget skills and abilities beget abilities. In this process “higher stocks of non-cognitive skills promote the self-productivity of cognitive skills; cognitive skill stocks promote the self-productivity of non-cognitive skills”⁹¹.

Cognitive abilities are an essential determinant of human capital and because they are easier to measure than non-cognitive abilities, psychometric measurements of them are able to provide a reliable indicator of human capital at the national level. From an economic perspective, a recent study defined human capital as “the skills, attitudes and personality traits that people translate into economic activities”⁹². The study looked in detail at how cognitive human capital or ‘intelligence’ contributed to economic growth in

148 countries over a thirty-four year period to 2009. It was found that “cognitive ability, measured as IQ or school achievement, robustly predicts economic growth on a worldwide scale. These two measures can be averaged into a single measure of ‘intelligence’”. Using comprehensive analysis and correlation methods, the study’s main conclusion was that economic growth in the past four decades could be largely attributed to rising ‘intelligence’. The national ‘intelligence’ for investigated countries was measured as an average of two sets of data; IQ data collected by independent investigators and students’ school achievement data obtained from international standardised tests. It was found that IQ test results closely correlated to performance in school examinations and could similarly be used to predict economic growth. Furthermore the effects of ‘intelligence’ were observed in both developing nations as well as advanced economies. ‘Intelligence’ was demonstrated to affect economic growth through a combination of “institutional, economic, behavioural and biological variables”; including democracy and political freedom, corruption, proportion of GDP allocated to investment, technological competitiveness, population health, saving rate and prevalence of crime. The authors noted that

Strong and consistent evidence shows that in all advanced societies, for which data are available, intelligence has increased substantially during most of the twentieth century, most likely by approximately 30 IQ points during the entire century ... (the Flynn effect). Therefore the likely reason why high intelligence has promoted economic growth between 1975 and 2009 is that countries with high intelligence, measured mainly in the last third of the twentieth or the first years of the twenty-first century, have experienced strong Flynn effects during the 20th century ... Conversely, Flynn effects of varying strength have recently been described for some developing countries.⁹²

Putting the study’s results within a historical context of macroeconomic trends in the twentieth and early twenty-first centuries, the authors concluded that the establishment of widespread public education in Europe and North America following the Industrial Revolution had led to improving intelligence amongst the youth, which then gave birth to a further cycle of growth in intelligence. This cycle saw innovation leading to economic progress which in turn led to better systems of schooling that positively reinforced the cycle and improved its outcomes even further. As such, better cognitive abilities in societies acted as catalysts and gave rise to strong “Flynn effects” and an improved social and economic environment. The authors hypothesised that the biological limits of intelligence were now acting as a ceiling for intelligence in advanced societies and that this explained why it had stopped rising as in the past. They suggested however that developing nations had some way to go before they reached this ceiling, which meant that as their economies grew, they too would see Flynn effects, leading to what was termed the “Era of the Great Convergence”, which would only stop when the developing nations hit their own intelligence ceilings. The exact limits that each country would reach were not speculated upon further than to say they would likely be different for different countries⁹².

Concurrent studies have further highlighted the likely mechanisms of how national ‘intelligence’ affects national economic success. One study showed that national IQ is significantly and positively related to three of the big five universal characteristics of human behaviour; extraversion, openness to experience and agreeableness⁹³. Results showed that the Big Five traits (Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness) and IQs of various cultures statistically explained 70% of a nation’s gross domestic product (GDP) per capita. The most important predictors of economic success were intelligence and extraversion, which proved to be strongly positively related to GDP⁹³. The authors further noted that if GDP could be influenced by differences in personality between nations, then other disparities which are often attributed to ‘culture’ may also be explained by similar differences.

Following a similar approach, another study used standardised data from student scholastic results and IQ measurements from a group of 181 countries to investigate the relationship between national intelligence and GDP⁹⁴. It was found that there was a consistent positive correlation between national intelligence and per-capita GDP, which became more noticeable in countries that had greater openness and freedom in both the economic and political spheres. This combination of factors, are what in the words of the authors “enable a country to translate its cognitive capital into material wealth”⁹⁴. It was further suggested that the factors of openness, democracy and political and economic freedom are strongly related and that social attitudes are actually formed by ‘intelligence’. In other words, the politics and morality of a society are formed and shaped by individual’s intellectual capacities; whereby people that possess greater cognitive abilities form attitudes that are more open-minded and distinctive and as such more antiauthoritarian than those with less cognitive capacity. Moreover the study noted that although intelligence and personality have the capacity to transform over time, this process is slow, and “changes on a time scale of 2–3 decades are relatively small compared to the magnitude of differences between countries”⁹⁴. The authors also noted that speed of change- or rather the lack of- has led some researchers to treat national traits as stable, and this stability is also true of characteristics such as democracy, economic freedom and GDP⁹⁴. Further work has also noted the impact of “cultural amplifier effects”⁹⁵ in explaining the disparities between national traits; it was noted that differences in the culture of countries can cause small genetic variations in IQ level to transform into substantial divergences in behaviour at a national level.

A recent review in 2014 set out to demonstrate the importance of intelligence on human achievements, and in analysing research over the past twenty years it asserted that intelligence is the single most important leading indicator for achievement. The review also aimed to show that there was a far improved understanding of intelligence “in terms of etiology, experimental cognitive analysis and the

underlying neurophysiological substrate”⁹⁶. The authors concluded that “intelligence is the most universally valid trait for the prediction of success in school, education, and vocation”⁹⁶. They noted that conscientiousness and self-discipline were the only non-cognitive traits that were somewhat comparable with intelligence in power and breadth of impact.

Empirical economic studies provide further evidence to confirm the fundamental role of cognitive human capital in economic growth. A recent wide-ranging study investigated the determinants of regional development across 1569 subnational regions from 110 countries, covering 74% of the world’s surface and 97% of global GDP. The analysis covered the geographic, institutional, cultural and human capital determinants of regional development, with an examination of productivity in several thousand establishments. The empirical evidence pointed to the paramount importance of human capital in accounting for regional differences in development. Detailed analysis in the study confirmed that human capital is the most consistently important determinant of both regional income and productivity, and in particular managerial/entrepreneurial human capital. The level of education however was found to be the single most critical determinant of human capital -in any region- i.e. the quality of human capital in that region rather than the quantity, or rather than simply the number of people with *some* level of education⁹⁷.

A paper published in June of 2014 investigated labour productivity growth in a sample of 121 countries over a period of thirty-seven years (1970-2007), in order to determine what caused disparities in per-capita income between nations in both the developed and developing world. Amongst the 121 countries studied, twelve countries from the MENA region -with predominantly Arabic speaking populations- were included. The results showed that the greatest part of global labour productivity growth was attributed to technological change (51.5 %) which was described as “the driving force of labor productivity”⁹⁸. It was also found that improvements in human capital accounted for 19.5% of measured labour productivity growth, physical capital accumulation for 12.4 %, whilst labour efficiency improvements contributed 9.8 %. In other words, higher rates of technological progress were identified to account for the high labour productivity of advanced countries. The study demonstrated that the most efficient group in terms of labour technical ability were the advanced economies (82.3%) followed by South and Central America and the Caribbean (69%), while the lowest mean labour technical efficiency scores were recorded in North Africa (57.7%) and some Sub-Saharan countries (55.0%). Data showed that the 12 MENA countries had the lowest uptake of technological changes and analysis of the results concluded that “cultural and political conditions in these countries limit the adoption of technological innovations”⁹⁸. The study also critically highlighted that human capital accumulation is more fruitful in boosting labour productivity in developing countries in comparison to the other groups’ investigated⁹⁸.

A study published in 2014 set out to further investigate the impact of cognitive skills upon economic growth and technological progress, specifically in relation to the impact of different cognitive ability groups⁹⁹. The study used data from sixty-six countries and arranged average IQ into three levels, where the “intellectual class” were those represented by the 95th percentile of cognitive ability, “average ability citizens” the 50th percentile and finally the “non-intellectual class” were represented by those in the 5th percentile. Multiple detailed analyses showed that the biggest impact on economic growth came from the ‘intellectual class’, followed by average ability citizens and finally the non-intellectual class. Moreover, the results presented evidence that showed the considerable effect of the intellectual class on technological progress, in comparison to the negligible effect of both other classes. It was shown that the intellectual class impacted technological progress to a far greater extent than even how many researchers were carrying out R&D nationally. The authors suggested that very high IQ levels were in fact more important than both experience and qualifications on technological progress, and this was particularly evident in R & D activities⁹⁹.

Additional research has come to similar conclusions; as in a recent cross-country economic analysis that examined the relationship between human capital and economic growth in 106 countries between 2002 and 2008¹⁰⁰. The results further highlighted the positive link between economic growth and human capital, however, in the case of investing in human capital, the returns varied across countries with varying income levels, where higher rates of return were observed in lower-income countries, relative to typical global returns¹⁰⁰. A further analysis studied the prospects of improving MENA economic performance through the two human capital proxies of education and health. The results showed quite simply that “if the quality of education is improved, the GDP per capita would increase”¹⁰¹.

Human capital as indicated by cognitive capabilities is not only necessary for economic success; it also has far reaching impacts upon all aspects of social development. An investigation from 2009 studied national cognitive capabilities and social development in a group of ninety countries, giving special attention to politicians as well as individuals in the top cognitive group, which it referred to as the “smart fraction”. The “smart fraction” was characterised by a within country IQ-threshold of 125 or a student assessment score of 667¹⁰². The results demonstrated that those in the “smart fraction” drove economic growth nationally by excelling in technology and science; areas deemed crucial for financial success. More interestingly, the study suggested that it was the public rather than leaders or politicians who are the key players in deciding the fate of their own countries. It explained that due to leaders largely arising out of this “smart fraction” of society, they consequently mirrored the characteristics of the nation, as well as its cognitive capacity, as opposed to dramatically influencing them.

Using average national IQ, PISA and TIMSS scores, a 2014 study investigated the relationship between national cognitive skills and the quality of institutions¹⁰³. Results revealed that the quality of a nation's institutions could be predicted through the test results of its students as well as estimates of national average IQ, through a strong positive correlation. The study agreed with many previous works that greater cognitive capacity allowed a country's inhabitants to better comprehend and tolerate the advantages of unbiased governance. Such populations were increasingly likely to apply the rule of law, despite it often requiring additional effort on their part.

The resounding message from the litany of works cited is that economic and social prosperity, as part of a sustainable development process, can only occur in the presence of a certain level of human capital, and in particular, cognitive human capital. The level of human capital is manifested in the collective capabilities of individuals in a society to think, manage and operate their lives, in a process which shapes performance at all levels; from day-to-day management of private and public matters, to political decision making. The level of human capital necessary to achieve the aforementioned prosperity is unlikely to be reached unless the social milieu present enables skills' self-reinforcement and cross fertilization to happen. This process requires not only the prudent direction of resources towards building individuals' capacity, but then also making sure to protect that capacity from impairment.

Capacity Impairment

Since human behaviour is shaped by genetic and environmental factors¹⁰⁴, individuals have an ‘inherent potential’ to acquire different levels of human capital. This acquisition is however highly dependent upon the presence of ‘enabling’ conditions, namely physical, social and operational conditions such as good health, quality education and prudent administration. In the absence of one or more of these ‘enabling’ conditions, it is likely that individuals will be deprived from the opportunity to obtain and/or accumulate the necessary levels of human capital, leaving them incapable of achieving significant developmental progress. More seriously, the persistent absence of ‘enabling’ conditions, and/or persistent presence of ‘antagonising’ or ‘damaging’ factors may not only prevent human capital levels from increasing, but could also deplete them or make them obsolete, such as when skills are not regularly updated.

In shaping individuals’ human capital, early age is particularly important, where the negative impact of an ‘antagonistic’ or ‘damaging’ environment upon the future prospects of children can be very serious. Evidence from long-standing empirical research made experts say that

We can state fairly definitively that at least some things that happen before age five have long-term consequences for health and human capital. Moreover, these effects are sufficiently large and general to shape outcomes at the population level...Mental health conditions and non-cognitive skills seem to have large, persistent effects independent of those captured by measures of child health at birth...(and) while children can be permanently damaged at this age, the damage can be remediated¹⁰⁵.

This important final conclusion also means that, in the absence of appropriate and successful remediation and/or the persistence of ‘antagonistic’ or ‘damaging’ conditions, the impairment suffered could become permanent. It is also very important to realise that late remediation is simply unable to fully reverse the effect of early disadvantage, i.e. regardless of how much late remediation is employed; it cannot return children to the levels of achievement they could have otherwise obtained in a positive environment¹⁰⁶. The consequences of such an eventuality are grim to say the least; particularly at a national level.

Important empirical evidence has recently confirmed that adverse socioeconomic circumstances also have a direct negative impact upon individuals’ cognitive capacity; where a seminal 2013 study investigated the causal relationship between poverty and mental function. The research used laboratory and field settings to test the cognitive abilities of rich and poor participants, using standard methods which measure the capacity to think logically and solve problems in novel situations - independent of

acquired knowledge- in order to measure “fluid intelligence”¹⁰⁷. The detailed experimental analysis simply concluded that “poverty impedes cognitive function”. In explanation, the authors noted that

Being poor means coping not just with a shortfall of money, but also with a concurrent shortfall of cognitive resources. The poor in this view, are less capable not because of inherent traits, but because the very context of poverty imposes load and impedes cognitive capacity¹⁰⁷.

Comparing the adverse impact of poverty on cognitive abilities to that known to result from sleep deprivation, the authors commented that “evoking financial concerns has a cognitive impact comparable with losing a full night of sleep.” More importantly, they also pointed out that the adverse effects of poverty observed in the study were equivalent to dropping approximately thirteen IQ points, and warned that the large effect of poverty on cognitive capacity could have very serious, long term repercussions. Commenting on the study findings, a prominent expert compared poverty to chronic pain by noting that

These findings suggest that decisions requiring many trade-offs, which are common in poverty, render subsequent decisions to favouring impulsive, intuitive, and often regrettable options... (and) imply that there may be entire segments of people who, like the poor and those chronically in pain, suffer constant self-control depletion...Simply put, being poor taps out one’s mental reserves¹⁰⁸.

A later comment on the study however highlighted some concerns about the methods used to examine poverty’s impact, concluding that “effects of financial worries are not limited to the poor”¹⁰⁹.

More serious impacts of adverse socioeconomic circumstances include not only ‘impeding’ cognitive functions through the depletion of cognitive power, but also damaging brain structure. It has long been established by neuro-structural research that differences in brain structure are partly responsible for individual differences in intelligence. However, following on from previous analysis¹¹⁰, an influential empirical study published this year further confirmed the lasting negative impact of ‘antagonistic’ socioeconomic circumstances upon human capital. The research investigated the impact of socioeconomic differences on brain morphometry; comparing the brains of more than 1000 individuals between the ages of three and twenty to their parent’s education and income. The study highlighted a startling result, that

Parental education and family income account for individual variation in independent characteristics of brain structural development in regions that are critical for the development of language, executive functions and memory... (and the evidence) showed that parental education was linearly associated with children’s total brain surface area, implying that any increase in parental education, whether an extra year of high school or college,

was associated with a similar increase in surface area over the course of childhood and adolescence. Family income was logarithmically associated with surface area, implying that, for every dollar in increased income, the increase in children's brain surface area was proportionally greater at the lower end of the family income spectrum. Furthermore, surface area mediated links between income and children's performance on certain executive function tasks¹¹¹.

The authors finally stressed that the results did not show children's brain development to be absolutely or exclusively a product of their socioeconomic environment, and that interventions made through the education system or by parents at home had proven successful in improving cognitive capacity and behaviour for children in difficult socioeconomic environments. However it is important to note that for any gains to mediate such serious adversity, they would need to be well planned and effectively executed. In the absence of appropriate interventions, the affected individuals would be at serious risk of suffering from permanent impairment to their cognitive abilities. i.e. their human capital potential could become permanently diminished.

Certainly, one of the most common intervention mechanisms in modern societies is education. Early psychometric studies suggested that education was responsible for developing cognitive skills, which were in turn the basis for success in IQ tests. As such, missed years of school were related to drops in IQ points, thought firstly to be between "0.25 to 6 IQ points per year"¹¹². More recent studies have also reported decrements between 2.9-3.5¹¹³ to 3.7 IQ points per year¹¹⁴. The impact of such losses can have profound negative impacts at the national level, where some reports mention that in certain cases, a drop of only 5 IQ points can predict a 35% decline in GDP¹¹⁵.

Although exposure to education has the potential to improve cognitive abilities, new research published this year concluded that "extended durations of education do not have domain-general effects on ability, but might still have the potential to raise some of an individual's specific cognitive capabilities"¹¹⁶. The research analysed over 1000 people spanning a period of approximately sixty years, measuring cognitive ability at a young and older age. The results led to an understanding of education as a vehicle by which intellectual capacities can be built, however not one that could implant "more fundamental capacities such as the efficiency of cognitive operations". However, if educational programmes are to be designed for 'training' fluid intelligence i.e. "the ability to reason and solve new problems independently from previously acquired knowledge", empirical evidence has showed that specific forms of challenging memory exercises are able to provide this 'training' for fluid intelligence¹¹⁷. This research highlights the missed opportunities when education systems fail to provide this 'training' function. This is however not restricted to fluid intelligence, as specialised tallies have revealed that some current national education

systems are inefficient in raising even the basic cognitive abilities of students, further demonstrating the magnitude of the crisis in these countries.

A growing set of evidence has shown that if an education system fails to develop the right balance of cognitive to non-cognitive skills, human and social capital are likely to be compromised across society. A startling example of how underperforming education systems can debilitate human capital can be seen in the Middle East and North Africa; where in 2008 a comprehensive report from the World Bank detailed the state of education across the region, and provided proposals for necessary reforms⁵¹. The core message from the report was very clear; “education systems are not ready for new economic, demographic, and financial challenges”¹¹⁸. The latest OECD Programme for International Student Assessment (PISA) report, in 2014, further provided a bitter reality check for the state of education in the MENA region¹¹⁹. The study analysed sixty-five countries and the four Arab nations which took part occupied ranks 48, 60, 61 and 63 respectively; with a top score of 434 and a bottom score of 376, compared to an OECD average of 494. More importantly, the share of low achievers in these four countries was 46.3, 67.7, 68.6 and 69.6 respectively, compared with an OECD average of 23. Such meagre performance can only lead to poor outcomes for human capital. When the 2015 WEF Human Capital Report¹²⁰ analysed data from 124 countries, it summarized the situation in the Middle East and North Africa by noting that

(the) region comprises 12 countries that had enough data for coverage in the Index. Out of these, only three (two Arab states) ... make it into the upper half of ranked countries in the Human Capital Index ... It is also one of the most disparate regions in the Index, spanning three income group levels and ranging from age group averages in line with other high-income economies in Europe and elsewhere to those more in line with the worst-performing countries in the Sub-Saharan African region¹²⁰

Two of the wealthiest countries in the region (Arab states) perform comparably to two nations whose GDP is at least five fold lower in comparison (also Arab States), showing quite clearly that financial resources alone are not sufficient in producing achievements in the realm of human capital. The report also emphasized the dire situation faced by many of the region’s young; where some nations exhibit over 30 & 40% unemployment amongst 15-24 year olds.

A quick look at the overall ranking of the eleven Arab countries covered by the 2015 WEF Human Capital report shows that whilst two did make it into the upper half of the overall country ranking, one occupied the bottom position, two were amongst the bottom eleven, while the rest had other positions in the lower half of the table. More importantly, all of the eleven countries could not make it into the upper half of the

table in the 15–24 age group, who are the ‘youth’ according to UN definitions. Such underperformance not only indicates large scale debilitation of cognitive capabilities across societies, but unless this trend is stopped or reversed, it can be expected to continue to result in economic faltering, restricted income distribution and the promotion let alone the sustenance of autocratic polity¹²¹.

When faced with lopsided development, societies fail to acquire and/or maintain the necessary social milieu for nurturing and protecting the constructive capabilities of individuals, causing atrophy, impairment, or suppression. Inevitably, this leads to them then lacking the critical mass of both physically and intellectually capable individuals that can initiate and sustain real development. More seriously, protracted underdevelopment diminishes the statistical odds of restoration over time, because debilitation not only suppresses and impairs constructive capabilities, it also nurtures obstructive ones that sustain lopsided development as part of a vicious circle. In such critical situations, the ultimate priority ought to be stopping debilitation and collectively restoring the capability of individuals, which is a prerequisite for any significant development to ever happen. This restoration can only occur as part of a carefully orchestrated human development process, guided by the most pressing of local needs and adjusted to international performance measures. Without this restoration a rentier economy will dominate, real production will remain absent or restricted, well-connected incumbents will always retain wealth and power, the numbers of the poor will continue to rise, cronyism and corruption will aggravate and the abyss between individuals’ capabilities and admirable global standards will widen.

Capacity Regainment

It is widely accepted that the economic prosperity and well-being of countries is largely dependent upon the availability of human *and* social capital¹²²⁻¹²⁶ because institutional stability, business productivity and innovation not only require cognitive skills, but also an enabling social environment¹²⁷⁻¹²⁸. The development of human capability is a complex multistage process, which starts at an early age and is influenced by a myriad of familial and environmental factors¹²⁹⁻¹³¹. From a socioeconomic perspective, cognitive and non-cognitive skills are the two pivotal constituents of human capital that determine the potential of individuals to play a role in development. Empirical evidence has demonstrated that non-cognitive skills are as important, if not more important, than cognitive skills in determining social and economic success¹³²⁻¹³⁶. Cognitive skills likewise have a long-established role in economic development¹³⁷⁻¹⁴¹, and recent empirical data, from 90 countries, provided conclusive evidence that cognitive abilities of individuals are the decisive element of human capital which allows societies, nations and cultures to work in an economically effective way¹⁴².

For any society to sustain socio-economic development it must first have mechanisms that enable individuals to freely develop a balanced set of cognitive and non-cognitive skills. In other words it needs to create a nurturing environment for people to acquire and develop human capital. Such an environment would benefit from structured enabling systems, such as education, but would still require a number of additional key elements; namely the rule of law, political freedom, transparency, and health care. In lopsided development situations, education as a structured enabling system may represent a reasonable place to begin stopping capability debilitation, and improving the prospects of future generations. In the words of a study published this year “The education system in modern society is supposed to... equip individuals with knowledge that allows them to take part in social, economic and political life (and) confer access to valuable credentials independent of individuals’ socio-economic background”¹⁴³. The acquisition of a balanced set of constructive skills will undoubtedly help individuals think logically and find innovative solutions to life challenges, however it is important to emphasize that empowering people to lead meaningful lives exceeds the mere acquisition and development of skills for employment, rather it should also encompass the fulfilment their rights, increasing their prosperity and caring for their overall well-being¹⁴⁴⁻¹⁴⁵.

Recognition of schooling’s socioeconomic impact is usually influenced by the method of measurement used¹⁴⁶, whilst the circumstances and stakeholders in each country influence the size of the role that

education can actually play¹⁴⁷⁻¹⁴⁹. That being said, psychometric studies have confirmed the vital role of education in shaping the cognitive competence of individuals^{114, 150-152}. In fact, the education system has been described as the largest single cognitive artifact involved in the development of cognitive abilities¹⁵³. Education is undoubtedly not limited to the development of cognitive abilities¹⁵⁴⁻¹⁵⁵, however the relative ease in measuring cognitive skills has made them a common indicator of educational outcomes.

The role of education in influencing the economy through its impact upon human capital was highlighted in an early economic study which used average schooling duration to measure human capital. Results revealed a strong correlation between education and per capita output where physical and human capital disparity predicted 80% of the income variation across countries¹⁵⁶. Many further studies followed suit in evaluating the economic impact of education through its effects on human capital. Measurement of schooling's influence upon human capital however, was refined to the specific impact of schooling on the cognitive performance of students; i.e. cognitive abilities of students were used as a proxy to measure schooling's impact on economic growth. This approach was used to study the link between labour force quality and economic growth in a total of eighty countries within a thirty year period¹⁵⁷. Detailed analysis revealed that labour force quality had a consistent, stable and strong relationship with economic growth; where schooling quality, and not necessarily the mere resources devoted to schooling, had causal impact upon growth and not the other way round. The results clearly indicated that productivity differences between countries were related to differences in schooling quality, rather than other variables such as culture, family support and social attitudes.

This conclusion was supported by further work which quantified the impact of human capital on global development, and attempted to identify what leads to human capital accumulation. When human capital was measured as student performance on cognitive achievement tests, results revealed that "international differences in quality-adjusted human capital can account for about half the global dispersion of development levels and for virtually all the development dispersion among OECD countries"¹⁵⁸. It was consequently concluded that in order to find the underling 'ultimate' causes behind economic development in any society, one should look at what leads to the acquisition of human capital, namely the structures of education systems. The differences in the organisational landscape of education systems, rather than variations in educational spending, were found to be the root cause of differences in human capital between countries¹⁵⁸.

Further detailed analysis has investigated the economics of schooling quality and concluded that improvements made to it may not always produce the economic growth desired in instances where key complementary factors are lacking; namely the legal and governmental institutions and structures that

support economic wellbeing. This is due to a country's workforce only being a single component within a broader network of factors, that come together to create economic growth¹⁵⁹. It was shown that improving teachers' quality- and not necessarily their qualifications or school resources - was the decisive element in raising student performance. The investigation used arithmetic modelling to show that, in an established education system, the time required to improve students' performance by only 0.5 standard deviation in cognitive skills tests (via raising teachers' abilities) could take 10 years. The same approach was followed in an OECD report to show the long-term economic gains that countries could achieve by improving the cognitive skills of their work force, via education¹⁶⁰. The report presented a scenario of cognitive skills improvement based upon actual educational improvements already achieved by an OECD country in six years (29 point improvement on the PISA scale). The economic model in the scenario instead assumed a very modest 0.25 standard deviation improvement of cognitive performance (25 points on PISA scale) within a twenty year period would be achieved by all students in a country, and would remain at that level for subsequent students. Calculations showed that initially, there would be no economic impact felt "until higher-achieving students start becoming more significant in the labor market". However, in thirty years from the start of the successful educational reform, the country's GDP would have increased by 3% more than it otherwise would have. This initial 3%, which may look small, equates to \$111 billion in the case of one average OECD country. The impact of the enhanced cognitive skills however, would continue to be felt as time went on, so that GDP would be expected to increase by 5.5% in forty years, 14.2% in sixty years and 24.3% in eighty years. In other words, by the end of the average expected life of a person born at the beginning of the successful educational reform, the country's GDP would be expected to be about 25% above the "education as usual" level. The report calculated that, using 2010 USA dollar GDP values, this 25% equates to \$115 trillion for the OECD countries alone.

The close relationship between educational quality and economic growth is one that has been demonstrated time and again, and these calculations show in stark terms the everyday harm of underdevelopment and what has been termed "the high cost of low educational performance"¹⁶⁰. They clearly emphasize that any initiative to drive improved cognitive performance via education will take time in implementation, and also for its effects to be felt, particularly as this requires the students who have gained the improved skills to firstly join the labour force¹⁶¹. This important result clarifies the observed truth that increasing scholastic attainment is no assurance of better economic performance; simply because the decisive elements in economic development are the cognitive and non-cognitive skills of graduates, not their mere numbers or any formal schooling credentials they have obtained¹⁶¹. The same conclusion was reiterated in a detailed 2012 economics study

Cross country growth regressions generate a close relationship between educational achievement (not attainment) and GDP growth that is remarkably stable across extensive sensitivity analyses of specification, time period and country sample¹⁶².

What is really important for countries that have suffered from lopsided development for decades is the time frame in which debilitation can be stopped and when the outcomes of development can be expected to reach wider sections of the population. It is important to note however, that in cases of lopsided development, scholastic skills improvement would certainly go some way towards bettering the situation, but it may not always be the panacea to endemic political and socio-economic problems. In 2012, the ILO and the UNDP jointly issued a report about economic growth in the Arab world. Like many similar accounts, the report recognized the expansion yet continued underperformance of the education systems in the region, yet it highlighted the crucial point that educational performance is dependent upon the needs of the market for labour, and how many jobs are being created¹⁶³. The work stressed the importance of labour demand and that improving educational structures and institutions in the region, through creating better schools and universities would not be the driver for macroeconomic growth and job creation. This is because the requirements of employers in terms of the jobs they make available, are what drives individuals to acquire specific skills in order to get those jobs. The key to human capital development is then the transformation of the tenets, the polity and the economies in the region from their present state, to free, advanced industrialised societies that create a sufficient demand for labour, which in turn drives forward investment in human resources. This transformation can only be achieved through intelligent policy making, which correctly balances the needs of business and industry, with those of the population at large, and nurtures the type of innovative enterprises that create the demand for people with high human capital¹⁶³.

There is an imperative priority to stop debilitation, yet for development initiatives to avoid falling into the traps of isomorphic mimicry and the pursuit of phantasmagorical achievements, careful consideration of capacity procurement, impairment and regainment ought to guide their design and execution. Despite the huge importance of such a responsibility and the enormous effort required, the formula for success is relatively simple. If people can live freely and develop a healthy balance of cognitive and non-cognitive skills, not only will they acquire the human capital that can stop debilitation, they will also build and sustain prosperity.

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The Imperative Priority to Stop Debilitation

How Capacity Impairment Cripples Nations

In an increasingly globalised world nations can no longer remain insulated from competition or comparison. A growing body of evidence has shown that countries often referred to as 'developing' are in fact debilitated both economically, socially and intellectually. Despite troubling other parts of the world, debilitation is particularly pronounced in the Middle East and North Africa (MENA), where the chasm between the region and the world's advanced economies continues to widen. The underlying cause of this debilitation has been a protracted capacity impairment epidemic, which has diminished the capabilities of generations in the region. The only way to reverse this trend is via a carefully orchestrated capacity regainment process, aiming to emancipate individuals by empowering them with the tools necessary to freely advance their capacity. If education is fundamentally restructured to build and develop a balance of cognitive to non-cognitive skills rather than mere formal certification, it could provide a reasonable place to begin this process. In the absence of a fundamental review however of the tenets and systems which have supported, favoured or ignored the capacity impairment epidemic, neither education nor anything else is likely to correct the tailspin.

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