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Does wealth make us rich anymore?

UBS White Paper

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Foreword

At UBS, our promise is that together we protect and grow our clients' wealth over generations. But what it means to be wealthy has been in a state of flux in recent years.

Physical and financial assets are diminishing as a sign of affluence and no longer offer the same security against environmental, political, and social challenges.

As the world's largest wealth manager, we want to go beyond finance to understand what wealth really means today. In this White Paper, we explore the changing nature of wealth for individuals, companies, and governments.

We are witnessing the gradual dematerialization of wealth, particularly in mature markets. While physical and financial assets will always be important, individuals, firms, and governments are coming to appreciate that an increasing share of their wealth is tied up in human capital, environmental capital, and intangible assets like brand, sustainability, legacy, and humanity.

For individuals, the return on knowledge and ideas is rising as the return on financial assets falls. Companies can now achieve higher valuations with less investment in physical capital. And nations with a highly skilled and educated workforce are better prepared for tomorrow's world than those with the traditional trappings of wealth, such as large foreign exchange reserves and natural resources.

What it means to be wealthy is changing. The aim of this White Paper is to shed light on some of these trends, outline potential challenges for policymakers, and offer recommendations on how together, we can protect and growth wealth over generations.

Yours sincerely,

Juerg Zeltner
President Wealth Management

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Executive summary

Wealth can be broadly defined as the stock of assets that generates future income. These assets can be tangible and measurable – like infrastructure, factories, property, mineral wealth, or financial savings – or intangible and more difficult to quantify, such as environmental sustainability, brand value, health, reputation, or skills.

A thorough consideration of what wealth means is critical in the post-financial crisis environment. High government debt and weak economic growth potentially make it harder to service debt burdens or personal goals such as retirement. At the same time, new technology is changing the way the economy operates and the means by which future income is generated.

For individuals, nations, and companies today, we find that tangible forms of wealth are diminishing in importance in favor of intangible forms. The value of education, health, brand, reputation, sustainability, and the environment is rising fast. Focus and investment in these areas will therefore be crucial.

At an individual level, wealth is now concentrated in fewer hands following the financial crisis. But technological developments are increasingly offering people access to goods and services that would have once required wealth accumulation. A new "capital-light" way of living has emerged, with on-demand access to accommodation, transportation, movies, or songs. However, accumulating sufficient financial wealth for retirement is getting harder, placing an ever greater emphasis on an individual's ability to generate sustainable income for longer. Education and health are therefore becoming increasingly crucial sources of personal wealth.

Companies are accumulating record financial wealth due to misaligned incentives and an uncertain economic environment, leading to reduced investment levels. For many companies, investment in physical plant and machinery has also become less important, thanks to cloud computing, software-as-a-service, and the sharing economy. But the value of human capital – both employees and customers – is rising fast. The most successful companies this century are those that have built strong platforms, user bases, brands and other "people structures." More companies are relying on users to create their products, and in turn the value of reputation and brand is rising too.

For governments, tangible forms of wealth – extensive energy and transport infrastructure, a large foreign exchange war chest, or abundant natural resources – may decline in value relative to human skill, as the fourth industrial revolution is placing an ever greater premium on highly trained workers. The ways in which environmental degradation destroys wealth – via air pollution, soil degradation, and the destruction of ecosystems – are also becoming more apparent, through shortened lifespans, or by forcing skilled workers to seek healthier climes.

In each case, the value associated with tangible forms of wealth is diminishing in favor of human capital and sustainability. In this White Paper, we look at this shift, its potential ramifications, and conclude each chapter with recommendations for policymakers to address these issues.

Part 1: Individual wealth

A snapshot of personal wealth
In 2015, total global household wealth amounted to USD 250trn, or about 3.5x world GDP, according to Deutsche Bank. North America and Europe account for about 67% of the total, while Asia Pacific controls about USD 46trn, 18% of the total. African and Latin American households control less than USD 10trn of wealth, or 4% of the total. The high concentration of wealth in advanced economies becomes even more apparent when looking at net financial wealth per adult. In North America, wealth per adult was on average USD 342k and in Western Europe USD 128k; in Asia Pacific, it was USD 40.5k per adult and in China only USD 22k per adult.

Two trends have been dominant in the aftermath of the financial crisis.

First, it has become increasingly difficult to accumulate and grow financial wealth, as incomes have stagnated. Median real annual wealth growth rates fell from 3.9% in 2000–05, the golden years of wealth accumulation, to 0.5% in 2005–10 – a period negatively impacted by the global financial crisis. In 2010–15, the wealth growth rate recovered somewhat (1.1%) but did not return to pre-crisis levels.

Second, global wealth inequality has risen. The share of global wealth held by the top 1% had fallen steadily since 2000, with a cumulative drop of nearly 5%, bottoming out at 44.2% in 2009. But loose monetary policies and quantitative easing have boosted financial asset prices while failing to boost incomes. This has concentrated wealth, since wealthier individuals hold a much larger share of their wealth in financial form. At a global level, the trend toward greater inequality has been exacerbated by slowing growth in emerging markets: in the past five years, China was no longer featured among the top 10 countries for wealth growth, with Russia in the bottom 10 with a negative growth rate of –7.4%.

The development of these trends in wealth has the potential to play an important role in shaping future policy.

The notion that the financially wealthy have seen gains in both wealth, income, and consumption, at a time when growth has broadly stagnated, has contributed to social malaise, opposition to free trade and globalization, and soaring anti-immigration sentiment. Meanwhile, slower income growth also has the potential to drive intergenerational tension between baby boomers, who sit on the bulk of global wealth, and Generation Y and the Millennials, who are finding it more difficult to generate wealth amid stagnant incomes and low interest rates.

History shows that political or economic intergenerational tensions can often erupt into more radical confrontations, leading to disruption and discontinuity with the past.

Financial wealth – more limited returns ahead
There is growing evidence that expected returns on financial assets are likely to be lower than in the past. This is not only due to the gradual normalization of monetary policy and rises in interest rates but also the impact of some important structural factors, such as aging, lower productivity growth, and lower growth in emerging markets.

According to McKinsey Global Institute, real annualized total returns on US and Western European stocks averaged 7.9% between 1985 and 2014, 140 and 300 basis points (bps) above the 100-year average. US and Western European real government bond returns averaged 5% and 5.9% respectively over the same period, exceeding long-run average returns by 330bps and 420bps.

According to UBS Wealth Management's capital market assumptions for the next five years and beyond, US and Eurozone equities should produce average nominal annual returns (before taking inflation into account) of 7.5% and 8.5% respectively. However, prospective returns for high grade bonds (of which highly-rated government bonds are a subset) should be significantly lower (1.8–2.1% in the US, and 0–0.4% in the Eurozone, depending on duration) following years of ultra-accommodative monetary policy. Meanwhile, UBS' annual study of global real estate markets found that house prices appear to be overvalued in 12 out of 15 surveyed cities.

Personal wealth has grown at a slower pace in recent years and is concentrated in fewer hands.

More limited returns from financial markets could slow the growth in wealth inequality.

Capital accumulation will remain difficult, but the growth of the sharing economy means greater access to goods and services, contributing to greater "experience equality."

A major drawback of the capital-light world is lower retirement savings.

The level and sustainability of income will become a more important aspect of wealth in a "capital-light" world.

Health and education will become critical components of personal wealth.

A less material world – doing more with less

Economic growth is likely to remain slow, limiting the scope for significant income gains or capital accumulation. But technological developments are increasingly offering people access to goods and services that would have once required wealth accumulation – a new "capital-light" way of living.

With Zipcar, for example, urban residents can enjoy many of the benefits of car ownership at a lower overall cost, and with only a minor sacrifice in terms of convenience. A wide range of material goods that used to be owned in a physical form – notably music on CDs and movies on DVDs – are now stored in a digital format. Subscription models – such as Netflix or iTunes – offer an alternative to lifelong ownership.

The site Rentything enables people to rent out everything from ladders and drills to sports equipment or musical instruments and cameras. In addition to being a more efficient use of capital for individuals, it is also more sustainable for the environment. Such connectivity raises the possibility that rich societies will eventually reach "peak stuff" – the point at which demand to own physical goods starts to plateau.

Even higher-income individuals are willing to forgo full ownership in favor of the convenience of rental. The surge in Airbnb usage might limit the relative necessity of ownership of a vacation home. The Financial Times reported in April 2016 that the number of letting deals on homes worth more than USD 10m had more than doubled since 2011, based on figures from estate agent Knight Frank. And Victor, an Uber for private jets founded just five years ago, has enjoyed average annual sales growth of 142%.

Funding retirement – an increasing challenge
Lower levels of capital accumulation raise important questions about retirement. Without accumulating assets to fund their standard of living during retirement, individuals will need to more actively consider the sustainability of their personal income over an extended working life.

Even if wealth accumulation were strong, low risk-free interest rates mean that more financial wealth than before is required to generate a meaningful income in retirement. The interest rates on inflation-linked annuities have plunged alongside the yields on long-dated government debt – a 65-year-old male in the US now needs to save at least 1.5 times as much as in 2008 to guarantee the same inflation-linked income. The real amount may be even higher if we consider that inflation for goods that the elderly tend to purchase has been higher than the overall inflation index in recent years.

In response, Millennials appear to be bracing for longer working lives. A ManpowerGroup survey showed that 32% of those between 20 and 34 expect to still be working beyond age 70, with 12% saying they anticipate working until they die. The trend toward later retirement has been in place already for some time. Almost 20% of Americans over the age of 65 are now in the labor force, versus 13% in 2000.

Sustainability of income – Health and education as wealth
Health and education will be key factors in sustaining longer working lives.

Poor health is citied as being "very important" in the decision to retire for 35% of people between 55 and 59, according to a survey by the US National Institute on Aging. The need for longer working lives could make good health an even greater necessity and even a form of wealth in itself.

Meanwhile, individuals graduating from top-tier schools can now expect an annual return of 10–18% p.a. for 20 years, according to research by PayScale, even accounting for tuition fees. And this return on education is likely to grow.

The pace of technological change also increases the rate at which skills or knowledge can become redundant, making it more important for workers to be able to adapt and continue to learn. As described in our previous White Paper on "The fourth industrial revolution," individuals and businesses that fully utilize the power of extreme automation and connectivity can see a significant return on skills. For example, at the time of its sale to Facebook, messaging company WhatsApp had an enterprise value per employee of USD 400m.

According to a Brookings study, over 60% of men and over 50% of women in the US with professional degrees and PhDs were still economically active between 62 and 74 years old, compared to 30% and 25% respectively for male and female workers with just a high school diploma.

Policymaker challenges
- Financial wealth inequality has the potential to fuel intergenerational and intra-societal conflict, and fuel political turbulence.
- Median incomes remain stagnant – policymakers are charged with boosting income growth but current policies may be ineffective.
- Social safety nets are often based on formal employment arrangements – the "gig economy" often contains no retirement provisions.
- Without savings, retirement ages may need to drastically increase; however, 35% of people today choose to retire between 55 and 59 due to poor health.
- The premium for skilled (and often mobile) workers may not accrue to the country that has provided their education.

Recommendations
- Quantitative easing not only leads to a rise in wealth inequality but also to distortions in how individuals save and invest. Normalization in monetary policy after several years of emergency measures might ultimately have a positive effect on the overall economy, reducing distortions and re-establishing the normal functioning of market economies. Plus, it could also increase returns on accumulated wealth, with a positive effect on the ability of individuals to save for retirement.
- Public policy can play a role in pushing individuals to save more for retirement by providing tax incentives, introducing compulsory additional pension pillars (including for informal work), and/or raising awareness about the fact that the public sector is unlikely to provide adequate retirement income in the future.
- Countries may need to enact an intergovernmental transfer mechanism that compensates countries for providing education. A positive side-effect could be that countries might specialize in providing education as a globally-traded service. To sustain an open system with quality education, such an incentive mechanism could be a global solution to overcome the educational "prisoner's dilemma."

Part 2: Corporate wealth

From plant to platforms
Previous industrial revolutions have all been about supply-side economies of scale. Companies have invested heavily to create an economic moat with small marginal costs of production and significant scalability.

The mega corporations of the early 20th century – Standard Oil, Ford, General Motors, AT&T, and Exxon – were all built on this principle.

But now the supply-side economies of scale are shifting: the fourth industrial revolution is creating new demand-side economies of scale, with more efficient supply chains, and with the size of the customer base creating the economic moats and mega corporations in each domain.

Platforms have become more valuable than products. As an example, back in 2007, just seven firms controlled 99% of handset profits: Nokia, Samsung, Sony, Motorola, HTC, RIM, and LG. Six years later, all but one was making losses, while a single newcomer had 92% of all industry profits (Apple). Now, three of the world's top five listed companies by market cap are platform companies – Apple, Google, and Microsoft. And this extends beyond the top "mega-caps": 13 of the top 32 companies globally are also platform companies.

Fewer physical assets required
The necessity of physical assets has been in decline: many successful platform companies run low capital-intensity businesses requiring little to no capital

replacement. Uber is the world's largest transportation company, yet owns no cars. Alibaba is one of the world's biggest retailers, but has no stock. Markets are attaching higher valuations to firms with fewer hard assets. The book value of Exxon, Chevron, and AT&T combined is worth less than a third of the market value of Apple, Alphabet (Google), and Microsoft. And Walmart's book value is more than five times larger than Amazon's, yet it is worth over USD 100bn less.

As noted in the UBS White Paper "The fourth industrial revolution," firms also need to spend less on digital infrastructure. Cloud computing allows companies to outsource a host of IT tasks, including software installation and server maintenance. The trend toward encouraging staff to use their own IT devices also provides companies with more flexibility and allows them to better deploy capital to their core business. The worldwide use of public cloud services is expected to expand at close to a 20% annual rate over the next five years to more than USD 141bn in 2019, according to an analysis carried out by market research firm IDC.

The cash pile

Moody's Investors Service noted in a May 2016 report that US non-financial companies had total holdings of cash, short-term, and liquid long-term investments of USD 1.68trn at the end of 2015, more than double the USD 742bn held at the end of 2007.

This could in part be explained by the relatively low capex intensity of a new generation of successful businesses, which may help explain the growing cash pile and weakness of corporate investment, as well as the low level of equilibrium interest rates.

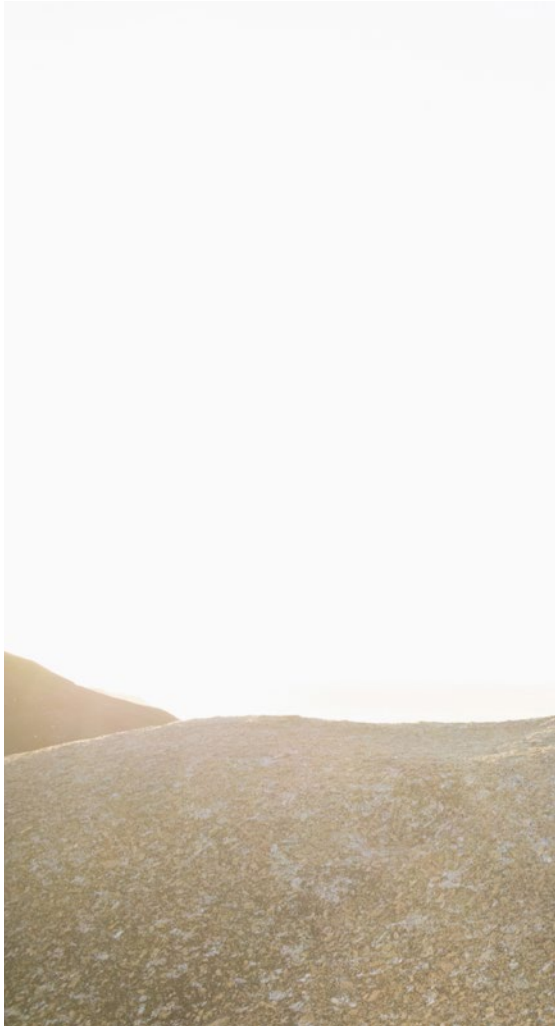
It could also be argued that a lack of corporate confidence is having an impact. A sluggish global growth environment and uncertainty about the length and depth of the post-financial crisis recovery reduce visibility on investments, whose return may only become apparent five years later or more. Reduced availability of intercompany, bank, and trade credit also means companies may need greater insurance against potential

The corporate world is transitioning from supply-side to demand-side economies of scale.

Greater supply chain efficiency means lower reliance on physical capital.

Companies are accumulating record financial wealth due to a combination of lower capital intensity, misaligned incentives, and an uncertain economic environment.

Customers and employees don't appear on the balance sheet, but are becoming an increasingly critical part of corporate wealth.



liquidity crunches. Companies may also see the future return on investments as not high enough to compensate for the risk, a potentially worrying signal for future growth.

The offshoring of corporate wealth could also be a contributing factor – even if attractive investment opportunities are available domestically, repatriating funds could have negative tax implications which more than offset the potential gains from investment.

Investor demands may also be shaping corporate behavior. Companies with low capex to depreciation have been broadly outperforming those with high capex to depreciation over the last five years, as professional investors whose remuneration depends on short-term performance may be incentivized to buy firms with higher short-term payouts. Demand for more "bond-like" equity returns in a negative interest rate environment may also drive similar behavior. The percentage of earnings paid out by US companies as dividends and share buybacks (rather than reinvesting) is close to a 25-year high at 74%, according to UBS Global Research. It has only been higher once in the last 25 years, right at the end of the last bull market in 2007.

Off-balance sheet wealth

While financial assets have been accumulating, the most successful companies of the new millennium have not been those deploying vast sums of cash. Instead, they have been the ones that have been able to build platforms, user bases, brands and other "people structures." In short, the value of intangible intellectual property has been increasing.

Customers are now often key content creators, so companies need to treat them differently. For example, Airbnb is a platform that enables people to offer rooms/apartments and others to rent them. The service becomes better if the rooms being let are cleaner and of higher quality, and the hosting is good. So a mutual rating system was introduced which forces good behavior on both those offering rooms and those renting them – improving the quality of the offering.

Corporate attitudes toward their employees will also have to adapt too. Just as a greater part of corporate wealth is attributable to employees' intellectual capital, the rise of the "gig economy" could make it harder to retain valuable workers. A Deloitte survey of 7,000 clients worldwide found that 51% of respondents expected to increase the number of contingent workers they use over the next five years, yet a study by Bliss & Associates calculates that replacing a disaffected member of staff exceeds 150% of the employee's annual remuneration, including lost time, advertising, and recruitment, as well as the slide in productivity as the new employee adapts to the role.

Companies will need to consider their reputation and brand as increasingly important aspects of wealth. Many companies are reliant on their customers to generate much of their content. Over 500 hours of new YouTube video content is created per minute. The likes of Facebook or Airbnb derive much of their value from network effects. Uber's drivers are independent contractors. For such companies, a strong reputation and brand is an integral part of their wealth.

Policymaker challenges / talking points

- To a certain extent, lower capital intensity and the sharing economy mean higher capacity utilization and lower levels of investment, and hence lower short-term growth and job creation.
- Companies are sitting on record volumes of cash while indebted governments struggle to reinvest in failing infrastructure.
- Low interest rates, intended to stimulate growth, are sharpening investor and executive focus on cashflow, leading companies to invest less, which in turn could detract from growth.
- If investors cannot properly measure the current wealth of a company, capital may be misallocated, and opportunities missed.
- Corporate wealth is more and more concentrated in employees and users – ownership of data and intellectual property will become an increasingly important question.

Recommendations

- More could be done by governments to help "seed" investment (e.g. through PPI, infrastructure financing, and the use of state pension funds) or to ease interactions with the private sector. As noted in our Whitepaper "The Investment Drought: How can the problem of weak investment can be fixed?", Chile's National Public Investment System may be a good example of how policymakers and private businesses can work together on longer-term investment projects.
- Incentives for investors could be tweaked to enable greater alignment between long-term investment plans and long-term investment. Potential changes in incentives include reforming capital gains tax or creating a more aggressive sliding scale after five to seven years to encourage sticky capital. On the other side of the spectrum, policymakers could look to change the tax treatment of share buybacks.

Executive remuneration could be shifted even further to longer-term-based compensation. To account for the new forms of wealth, measurement could be based on wider metrics than simply share price or quarterly profits: examples might include customer satisfaction, brand value, sustainability of model, and contribution to society as a whole.

Part 3: National wealth

National wealth can be broadly defined as the stock of assets that generates future income for an economy. This comprises both tangible – including infrastructure, foreign exchange reserves, and natural resources – and intangible assets – environmental sustainability, and the skills and training of the national workforce.

Tangible forms of wealth diminishing in significance

Commodity wealth: Raw materials and natural assets are perhaps the oldest perceived form of wealth – humans have been fighting over ownership of land for millennia. Throughout much of history, environmental wealth has been seen as a windfall source of income – the proverbial "striking gold." After the discovery of deep water oil reserves in Brazil in 2007, President Luiz Inácio Lula da Silva proclaimed that the country had drawn a "winning lottery ticket."

But the relationship between natural wealth and economic dynamism has often been shaky at best. Large swings in commodity prices make them a precarious basis for national prosperity, particularly if, as often happens, countries overinvest in (or become over reliant on) commodity extraction in times of a relative boom (here, the example of Russia is also emblematic). A few years after Lula's statement, Brazil has suffered a painful recession, and other "lottery winners," like Venezuela, have been suffering too.

Countries have been forced to quickly adapt to the new paradigm of lower prices. Saudi Arabia recently announced a new policy agenda to diversify its income stream from oil, but after years of reliance, this will take time.

Financial reserves: The rapid rise in sovereign wealth funds (from USD 5.7trn to USD 17.3trn in the past decade) and projects such as China's New Silk Road initiative have demonstrated the potential importance of national financial assets. But financial reserves today offer less security to domestic policymakers in an increasingly globalized financial system. China has expended nearly USD 800bn in foreign exchange reserves since mid-2014 in a bid to stabilize the yuan and prevent capital outflows. Despite having spent sums around a third larger than Swiss GDP in 2015, China's onshore currency continued to depreciate, recently reaching a five-and-a-half year low against the US dollar. Furthermore, high levels of foreign exchange reserves can also indicate a misallocation of wealth, which could actually reduce future national income (by investing in low-yielding overseas assets rather than human capital domestically, for example). In a world of globalized capital markets, financial resources alone do not indicate, and cannot secure, economic stability.

Infrastructure: Infrastructure, broadly defined, includes physical assets which may be owned publicly or privately. There is a tendency to regard physical infrastructure as being absolutely critical to future income growth, when in fact it is not normally a major factor over the long term.

In the near term, infrastructure spending can help growth as short-term gaps, driven by austerity policies and lower bank lending, are plugged. But over the longer term, infrastructure tends to be fairly stable as a share of wealth – if the stock of wealth rises, the stock of infrastructure rises broadly in line with that (accounting for between 15% and 30% of total national wealth). Extreme levels of infrastructure spending are no guarantee of future prosperity, as China's recent experiences demonstrate.

The role of infrastructure in national wealth is likely to change as the fourth industrial revolution progresses. For example, as connectivity increases, it should become easier and more efficient to work from home. In Switzerland, for example, the practice has quadrupled over the last 15 years, with 120,000 people habitually "telecommuting," as it is sometimes called. For countries, this could render partly redundant large sections of physical infrastructure – including offices, cities, and transportation systems. This would be even more the case if economies move toward more localized production.

A greater premium on workforce skills and training

Labor already accounts for about three-quarters of the national wealth of developed economies. And the quality of labor is perhaps the single most important driver of

Tangible national assets – such as extensive energy and transport infrastructure, a large foreign exchange war chest, or abundant natural resources – are becoming less reliable sources of wealth.

The fourth industrial revolution is placing an ever greater premium on intangible factors: namely, the skills and training of the national workforce.

The value of a sustainable environment is becoming more widely appreciated.

Digital and energy efficiency infrastructure will prove to be important sources of national wealth.

productivity and the main driver of future income. As noted in the UBS White Paper "The fourth industrial revolution," the importance of labor as a source of wealth is likely to increase even further from current elevated levels.

Successful national labor forces will need to harness the technological change associated with extreme automation and extreme connectivity, which dismantles physical boundaries. This increases the incentive for policymakers to fully commit to building, attracting, and retaining a flexible and skilled workforce.

Building a skilled labor force will raise questions about the education system: as technological developments accelerate, so will the speed at which skills or knowledge become redundant. That raises the premium of adaptive reasoning and the ability of workers to teach themselves. Meanwhile, innovation is increasingly likely to come through cross-disciplinary work – a medic and an economist cooperating to enhance risk control in the financial sector, or a lawyer, philosopher, and biologist cooperating in the field of personalized medicine. Multiple disciplinary skills – a modern Renaissance style of learning – may be necessary to maximize future national wealth.

Recent global trends in political populism threaten countries' ability to attract and retain talent. US technology firms have recently complained that many bright foreign graduates are unable to stay in the US long after finishing their studies due to immigration restrictions, and that they are unable to import sufficient foreign talent.

Arguably one of the key challenges for the Gulf countries, which are facing a shift in the balance of natural and labor market assets, is the fact that large sections of their societies are not able to participate in the workforce in a way that maximizes their potential value. Developed nations have not been immune either: female labor force participation in Japan remains low, despite recent falls in the working age population.

Nature as a form of wealth

While much attention has been devoted to commodity-based wealth, the economic value of the ecosystem has often been neglected by conventional economists and policymakers. But the unsustainable nature of natural resource consumption is already having consequences.

Australia's overconsumption of fossil water in aquifers could reduce the value of its agricultural land, which accounts for 2.4% of its national wealth and 30.0% of its natural resource wealth. The death of tens of thousands of vultures in India over recent years due to pesticide

usage led to a spike in the dog population (due to less competition for food) and greater rabies infections among humans, ultimately costing the Indian economy in excess of USD 30bn (according to Tony Juniper in his 2013 book *What Has Nature Ever Done For Us?: How Money Really Does Grow On Trees*).

The Chinese government too has become increasingly aware of the importance of measuring ecological wealth, and especially its destruction. Already the effects of sacrificing environmental wealth for financial gains may be taking their toll on China's labor force. Life expectancy north of the Huai River is 5.5 years lower than in the south due to higher air pollution, according to a recent Council on Foreign Relations paper. Overall, air pollution contributes to an estimated 1.2 million premature deaths a year. China's own Ministry of Environmental Protection estimates that the cost of pollution was around 3.5% of GDP in 2010.

There is a cost in terms of migration of skilled workers too. A Pew Research study in 2015 found that about a third of Chinese people surveyed considered air and water pollution a big problem, and another 40% a moderately big problem. Only 4% viewed it as "not a problem." 70% of wealthy Chinese expats cited the quality of the environment and healthcare as important factors in their decision to emigrate, according to a survey by Shenzhen-based New Fortune magazine reported by Shanghai Daily.

A new infrastructure

While some older forms of infrastructure may become obsolete over coming decades, far-sighted policy-makers can contribute to national wealth by seeking to foster investment in the infrastructure of the future.

Nations with a superior digital infrastructure will have a competitive edge over those where connectivity is slower and less reliable. Countries with flexible and smart electric grids could eventually benefit from cheaper power as the cost of solar energy falls. Green energy is likely at some point to shift from being an expensive option for rich nations to being a cheap alternative.

According to UBS Wealth Management CIO, annual investment in renewable energy is expected to rise from about USD 270bn in 2015 to USD 400bn in 2020. And total investment may reach USD 4.2trn by 2030. But only nations with the right electricity systems – capable of storing power and coping with fluctuations in output – will be able to take full advantage of advances in renewable power.

Policymaker challenges / talking points

- With the importance of human capital growing, how can the education system successfully supply the right skills when policies that have focused on increasing years in education or higher spending have failed?
- How can countries maximize the use of the labor force when sections of some societies are not able to participate in the workforce in a way that harnesses their full potential value?
- As the pace of skills redundancy increases with technological change, how can countries most effectively reskill adults?
- What are the consequences for immigration policy if human capital becomes an increasingly important source of national wealth?

Recommendations

- Governments should focus on output rather than input. A study by New York University professor Richard Arum found that 45% of students showed no significant gain in learning after two years at US colleges, and 36% showed little improvement after four years. Setting policies that ensure skills are properly learned is more difficult than simply increasing time in the classroom. But this process starts with ensuring that outcomes are properly measured, and that teaching methods are adjusted in response to these results.
- The public sector should refocus efforts on improving efficiency. National debt burdens effectively reduce income and detract from holistic national wealth. Prejudice or irrational discrimination in the workforce will effectively throw away skills that could enhance the national wealth. Governments will need to foster inclusive cultures and carefully consider the economic as well as social costs of discriminatory laws.
- The pace of technological change will require ongoing education services to switch from being provided on the institutional supply side toward the individual demand side. This culture can be fostered by developing an education system that encourages students at all ages to take charge of their own learning and to challenge established views, and utilizes new technology, such as massive open online courses, to deliver ongoing learning.
- Multiple disciplinary skills – a modern Renaissance style of learning – may be necessary to maximize future national wealth. It will not be easy to achieve this from education systems that have tended to ossify into relatively rigid department structures or indeed from corporates with "silo" mentalities.
- Immigration rules should be increasingly considered in the context of skills as a source of national wealth, rather than merely unwanted competition for native workers.

A policy environment that maximizes future national wealth will therefore maximize the potential of any country's population. This will require a political and economic climate that encourages innovation and challenges the status quo. It will have to be flexible and adapt to significant shifts in economic structures. In some respects, this is as much about getting the political culture right as it is about specific economic policies – making the maximization of national wealth a far greater challenge than policies aimed at maximizing personal or corporate wealth.

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