



EUROPEAN POLICY BRIEF



FLAGSHIP

*Forward Looking Tools and Methods for Answering
Major Societal Challenges*

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CEPS & ISIS

1. INTRODUCTION

The EU is facing a number of Grand Societal Challenges (GSC) that require timely and appropriate policy reactions in a number of fields, such as society, energy and the environment, economy and finance, technology and governance. In order to develop a proper strategic approach, the nature of the challenges and the trends underpinning them must be well understood. Facing such challenges may require both adapting to change and mitigating its effects and shaping a new economic and political system that can meet the needs and expectations of citizens. There are a number of pre-conditions to building a system that is more legitimate and hence more resilient.

In a context that combines complex and changing global landscapes, a gloomy, crisis-ridden European economic outlook, a risk of 'secular stagnation' and policy responses driven by short-term priorities, the broad horizon of this project calls for a balance between realism and ambition.

To achieve this balance, FLAGSHIP describes a pattern of alternative futures that can inspire decision-makers and society at large. It focuses on two different visions of the future, driven by contrasting paradigms, which define the perimeter of a set of possible and acceptable scenarios. The first vision, called *Perseverance*, is driven by mainstream conventional thinking based on projections of current trends. In this vision, GDP growth

remains the main focus of decision-makers and policies tend to be reactive rather than anticipate future changes. The second vision, *Metamorphosis*, is more daring and normative in nature. It assumes that a fundamental and systemic change is needed to build a future that is more just, environmentally healthy and more legitimate overall. In this vision, the well-being of citizens and a greater democratisation of the system (including politics, information, knowledge, capital ownership etc.) are the main targets of policy-makers, which anticipate future challenges and aim to influence emerging trends.

The project argues that the vision that prevails in the long term will depend on policy actions taken at the EU and global level and on the evolution of society; the acceptance of certain values and hence changes in the behaviour and choices of individuals and communities. These factors, which are not fully under the control of policy-makers, are sufficiently powerful to trigger dramatic and disruptive transformations.

This Policy Brief aims to present the main features of the two visions, to identify areas where transformative dynamics could emerge – favouring or inhibiting certain future scenarios – and to draw initial conclusions about the role of policy.

Choosing between the two visions described will not simply involve an assessment of likelihood, it also requires an ideological stance that either conforms to the mainstream view or adopts a more progressive approach.

The paper is organised as follows. The next section presents a short description of the modelling approach to design futures applied to the Flagship conceptual framework. Sections 3 and 4 focus on the assumptions underlying the *Perseverance* and the *Metamorphosis* visions, respectively. Section 5 considers possible factors and dynamics that could influence the pattern towards the *Perseverance* or the *Metamorphosis* vision. The last section focuses on the role of policy in making one vision more likely than the other and in shaping its key features.

2. CREATING VISIONS OF THE FUTURE

This section presents a summary of the conceptual framework surrounding the two visions used in Flagship. This framework, based on the futures technique called the 'Three Horizons Model'¹ connects the present with desired futures, and helps to identify the divergent futures that may emerge as result of a trade-off between the rooted present and these imagined futures.

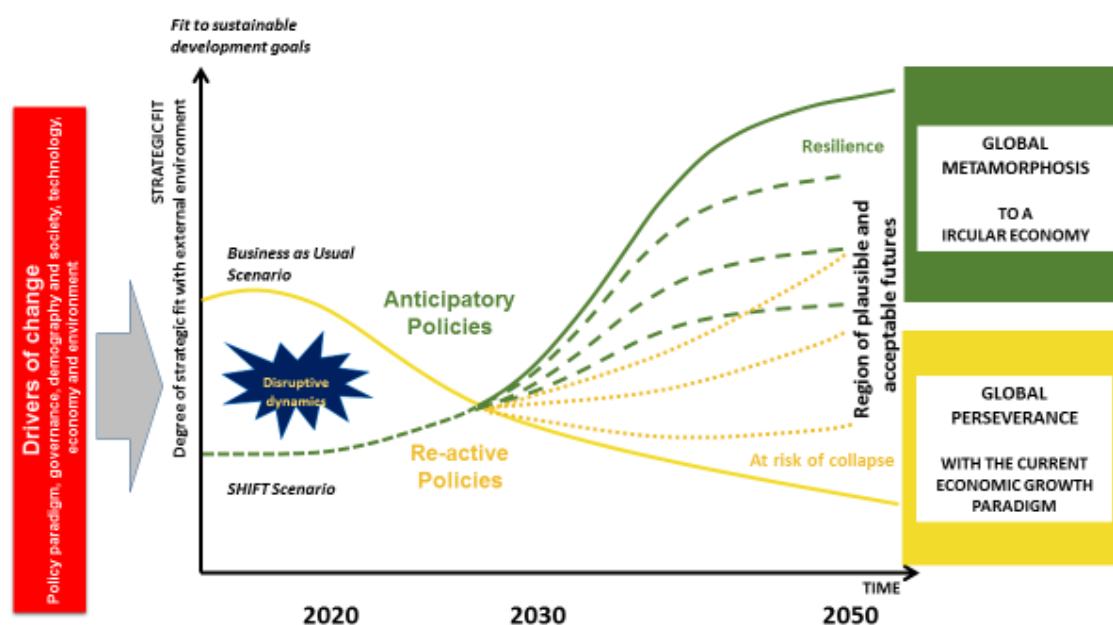
Figure 1 illustrates the application of this technique to the Flagship framework and represents the time pattern of the two alternative visions, *Perseverance* and *Metamorphosis*, according to their fit with the strategic objectives. This allows a comparison of their expected impact according to the ability to meet the goals of economic, social and environmental sustainability. The sustainability yardstick is represented on the vertical axis of the diagram below, which shows the unfolding of time over three horizons along the horizontal axis: i) the imminent future where current paradigms and policies prevail (until 2020); ii) the medium-term future when different options and new paradigms can emerge and new policy choices can be taken (2020-2030); iii) the long-term future (until 2050) where the prevailing system of values, paradigms and policies, if continued until then, is assumed to progressively lose its fit with the sustainability goals (the *Perseverance* vision) and, by contrast, if a radically different system of values, paradigms and policies prevails, is assumed to progressively fit better with the sustainability goals, (*Metamorphosis* vision).²

¹ The section is mostly based on excerpts from the seminal paper of Curry, A., Hodgson, A., (2008), "Seeing in Multiple Horizons: Connecting Futures to Strategy", *Journal of Future Studies*, August 2008, 13(1): 1-20.

² The diagram is the result of applying the 'Three Horizon Model' conceptual framework to articulate visions and alternative scenario-building in the FLAGSHIP project. It is important to note the normative stance of this framework, where two radically different visions of 'what could be' in the long term meet and a back-casting

As shown in Figure 1, while in the near future the current paradigm remains dominant and the signals from a new one are still weak, the emergence of certain factors and disruptive dynamics that are not fully under the control of policy-makers could lead to dramatic changes. These can affect the strategic fit of the prevailing vision either accelerating the decline of the existing paradigm and/or contributing to the affirmation of the new one.

Figure 1. Articulation of FLAGSHIP visions and scenarios



Source: Own elaboration.

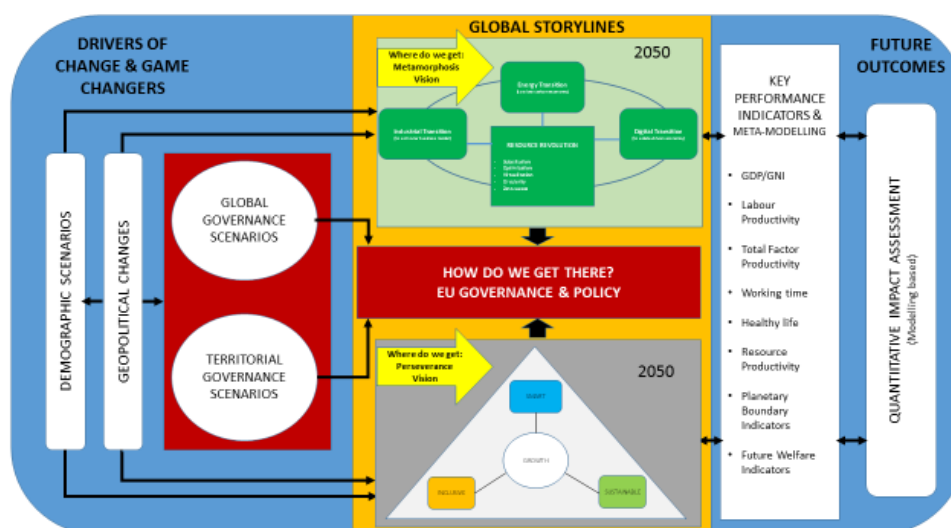
By identifying the two alternative visions the two continuous lines in Figure 1 define a region of plausible and acceptable (in terms of strategic fit) scenarios characterised by different degrees of resilience and, by symmetry, the risk of instability and collapse. This should provide policy-makers with key insights into the strategic choice of policies.

As illustrated in Figure 2, the strategic fit to sustainable development goals is measured through indicators of economic progress, social cohesion and environmental health. This set of indicators will be used to evaluate the merits and demerits of both scenarios.³

exercise is performed to analyse which changes and choices are conducive to one future or the other. The normative dimension is implicit in assuming a better fit to sustainability for the radical change/transformational scenario, but this assumption will be subject to a detailed quantitative assessment of the impacts of the two alternative visions, which may confirm or not the credibility of a better fit for the transformational scenario.

³ The evaluation is undertaken *ex ante* through the formulation of two alternative global storylines based on a meta-modelling exercise that relies on a set of indicators and an IPAT-like equation that differentiates the two visions in terms of quantitative targets and forecasts. The *ex post* assessment is based on the quantitative modelling assessment of the alternative socio-economic and environmental scenarios.

Figure 2. FLAGSHIP scenario-building and assessment architecture



Source: Own elaboration.

Figure 2 also depicts scenario-building and its assessment mechanism. It considers:

- drivers of change and game changers – encompassing demographic scenarios, geopolitical transitions and wild cards - and how these help shape the alternative visions. Such factors also have an effect on global, EU and territorial governance scenarios, which in turn influence (and are influenced by) the two alternative visions. Geopolitical transitions and wild cards are also assumed to influence, on the one hand, the demographic scenarios – especially migration patterns affecting Europe – and, on the other hand, the governance scenarios;
- global and territorial governance scenarios that describe alternative institutional framework conditions prevailing, respectively, in the global arena and within the European Union. These alternative framework conditions will affect the governance of the EU itself – respectively the Union’s external functions and the multi-level governance of matters within the Union – and the feasibility and effectiveness of different EU policy options and strategies for the 2020-2030 horizon;
- the two alternative global visions and how they are evaluated in terms of different future outcomes, analysed both *ex ante* through the meta-modelling of Key Performance Indicators and *ex post* through the FLAGSHIP modelling-based quantitative assessment of socio-economic and environmental impacts;
- finally – and taking a back-casting stance (‘how do we get there?’) - which EU policy decisions would need to be taken between 2020-2030 to shape Europe’s future towards the two alternative visions: continuing on the existing pathway (*Perseverance* vision) or shifting towards a new paradigm (*Metamorphosis* vision)?;

The assumption underpinning the whole exercise is that both visions aim at a sustainable development of Europe in the context of a sustainable global economy, but while the *Perseverance* pathway will eventually reveal itself to be unfit for purpose because of the limits implicit in its approach (i.e. current policies are not enough to achieve long-term sustainability), under the *Metamorphosis* vision more radical transformations will eventually be more effective. The next two sections illustrate the main features of these two alternative visions.

3. THE GLOBAL PERSEVERANCE VISION: SLOW GROWTH AHEAD

This global *Perseverance* vision offers a conservative view of the future based on the assumption that the present pathway will continue and the current global GDP growth paradigm and policies will remain dominant. This assumption implies no change in the current policy approach and a perpetuation of the EU's 2020 strategy for smart, inclusive and sustainable growth after 2020. It also implies that policy-makers will continue to look at GDP growth as the main target variable. Individuals will also continue to see consumption as key to their welfare.

These assumptions, combined with the persistence of factors causing a widespread deceleration in productivity in advanced economies, the ageing population and constraints in resource availability, could presage a structural downshift in potential growth rates and the beginning of a new low-growth era (or secular stagnation). This would create the conditions that mean this vision fails to achieve its goal of sustainability.

These concerns, prevalent among advanced OECD countries for some time, are now fuelled by high unemployment and also encompass emerging market economies.

The projection of past trends, corrected for the structural changes inflicted by the crisis and under the hypothesis that the current policy trust continues at least until 2030, inevitably leads to a 'low-growth trap' for advanced economies. Various reference scenarios set out up to 2050 suggest long-term growth rates declining to disappointingly low levels by mid-2050. In other words, the *Global Perseverance* vision is more or less a standard business-as-usual vision and does not necessarily end in tears. But the system is at risk of losing its legitimacy as citizens' support wanes, together with the weak performance of the system.

Under this vision, countries are likely to meet the various challenges that this throws up (unemployment, inequality, consequences of climate change etc.) with quick fixes and ad hoc solutions that sustain the overall thrust of structural reform and aim at higher labour market participation of both older people and women, in line with EU2020 strategy targets. It is quite conceivable that the world economy would muddle through along this path to the middle of the century. And indeed, many people might be happy with such a situation: no major disruption, low growth, 'after-the-fact' measures of income redistribution and wealth-mitigating inequality, consumption along similar lines as today, tolerable levels of unemployment and pollution and the elderly and middle classes moderately well off.

Yet such a future may not appeal to all, in particular to today's young and tomorrow's generations, who may consider the prospect a non-option and demand fundamental change.

This business-as-usual approach is broadly in line with the OECD Going for Growth framework that focuses on structural policy reforms and economic performance to provide policy-makers with concrete reform recommendations to boost growth. Such reforms are also expected to foster job creation if accompanied by measures to facilitate wage adjustments and reduce labour costs.

However, faster job creation as a result of such reforms is unlikely to be enough to bring employment rates back to pre-crisis levels, let alone to levels that would offset the impact of population ageing in advanced economies. Moreover, some of the factors behind the productivity slowdown have yet to be fully understood; not least the role and nature of technological progress. Another evident and worrying development is the marked slowdown in global trade activity relative to world production. These trade-related concerns are magnified by subdued investment both in tangible and less tangible

assets, such as research and development or new business processes and workforce training, which are needed to make the most of new technologies. In addition, many advanced countries are still plagued by persistently high unemployment and, worse, by long-term unemployment. As time goes by, maintaining the long-term unemployed in the labour force and facilitating their return to work is likely to become more difficult. The share of young people not in employment, education or training (NEET) has also risen substantially or has remained high. The result is potentially a huge loss of human capital, which further undermines productivity prospects.

An analysis of growth prospects in the medium-to-long-term calls for a neo-classical growth theory, according to which there are three factors at play: labour, capital and total factor productivity. Here we try to estimate what their expected dynamics are and how much each of them could contribute to economic growth in the foreseeable future:

- **Falling working-age population:** The working age population (15-64) of most European countries, Korea and Japan is declining rapidly. China and several other Asian countries will soon follow this trend. In North America, potential labour resources will continue to grow over the next 15 years, though at a very slow pace. The working-age population will continue to grow rapidly in Africa, the Middle East and South Asia. However, the labour absorption capacities of those regions will remain limited due to the shortage of capital and numerous institutional obstacles, including labour market rigidities, limited social mobility, insufficient skills and political instability. More migration from labour-surplus to labour-deficit regions might provide a partial solution. For example, in order to stabilise the size of its working-age population at the 2010 level (505 million), European countries would need to attract more than 50 million additional migrants from other continents (plus their families) up to 2030, which is both politically and socially problematic. Another remedy for the falling working-age population is to increase the labour-market participation rate, especially among women and the elderly. This, in turn, should be linked to an increase of both the official and actual retirement age. Again, it would not be able to fully compensate for the labour shortage originating from population decline.
- **Declining investment rate:** The global investment-to-GDP ratio has slowly declined over the last 30 years. And there is no reason to expect that it will increase in the medium-to-long-term. More specifically, the investment rate in advanced economies (AE), including all G7 countries, has declined systematically but this decrease has been partially compensated by a rapid increase in the investment rate in emerging-market and developing economies (EMDE). Much of this trend can be accounted for by just one region, i.e. Developing Asia (DA), including the two largest emerging-market economies, China and India. Clearly, their extraordinarily high investment rates cannot be sustained indefinitely (especially in China, where it has approached 50% of GDP since 2009). As shown by the experience of Japan, the rates will have to decline once China approaches a higher income-per-capita level. There is a question of the sustainability of the extremely high savings rate in China (more than one-half of GDP since 2006), especially in the context of expected rapid population ageing and building the public social safety net. Finally, gross national savings in some AE countries and emerging market regions have systematically decreased since the 1980s. This trend is unlikely to be reversed due to population ageing, high public sector borrowing requirements, and historically low interest rates.
- **Uncertain prospects of innovation and policy reforms:** In the second half of the 1990s and the early and mid-2000s, the world economy benefited from innovations in information and communication technologies (ICT), the peace dividend after the end of the Cold War and fundamental reforms in several former communist economies and developing countries. In particular, global trade liberalisation (the successful completion of the Uruguay round in 1994), the far-reaching liberalisation of capital movement, and market-oriented reforms in many regions, including China, India, and other Asian economies, Latin America, CEE and the former Soviet Union,

and less so in MENA. As a result, the increase in total factor productivity was a powerful engine for global growth in the decade preceding the recent global financial crisis. Currently it is difficult to detect any major new qualitative growth impulses, either on the innovation or policy reform fronts. The pro-growth effects of the ICT revolution seem to be failing to meet expectations. No new fundamental innovation that could boost TFP can be identified in the near-to-medium term. And although there is still a large pending policy reform agenda in both AE and EMDE (see below), they require time and effort to be completed and deliver visible benefits. The low-hanging fruits have mostly fallen.

The above analysis of likely developments in supply-side growth factors leads us to conclude that potential growth is likely to remain low in the next few years and we cannot underestimate the risk of secular stagnation for Western advanced economies.

If, as the *Perseverance* vision suggests, the more realistic prospect is the continued decline of global growth, rather than policy-makers fine-tuning monetary and fiscal policy fostering short-term GDP growth, they should focus on removing structural and institutional bottlenecks to economic growth in the medium and long term.

4. THE GLOBAL METAMORPHOSIS VISION: BEYOND THE GDP GROWTH TARGET

According to the conceptual framework illustrated above, the ability of the *Perseverance* vision to meet the sustainability goal is doomed to decline because of the inherent features of the current system. This failure will emerge over time and more markedly so after 2020. At that point, a transitional period will start as the 'quest' for a system that best fits the sustainability target that will emerge. This is the time for policy action to anticipate new challenges and drive change towards a new paradigm able to produce a better system. These policies are different from responding to challenges through quick fixes and ad hoc solutions.

Yet policy alone will not be enough for such a radical transformation. A truly new system requires a shift in individuals' behaviour and preferences, which is usually driven by push factors and societal dynamics; the production system; politics; awareness of environmental issues, which are not completely within the control of policy-makers. The next section identifies some of these possible dynamics.

The *Metamorphosis* vision is characterised by two main pillars; the first is a new production and consumption system: the circular economy; the second pillar is equality and the foundations of liberty and democracy.

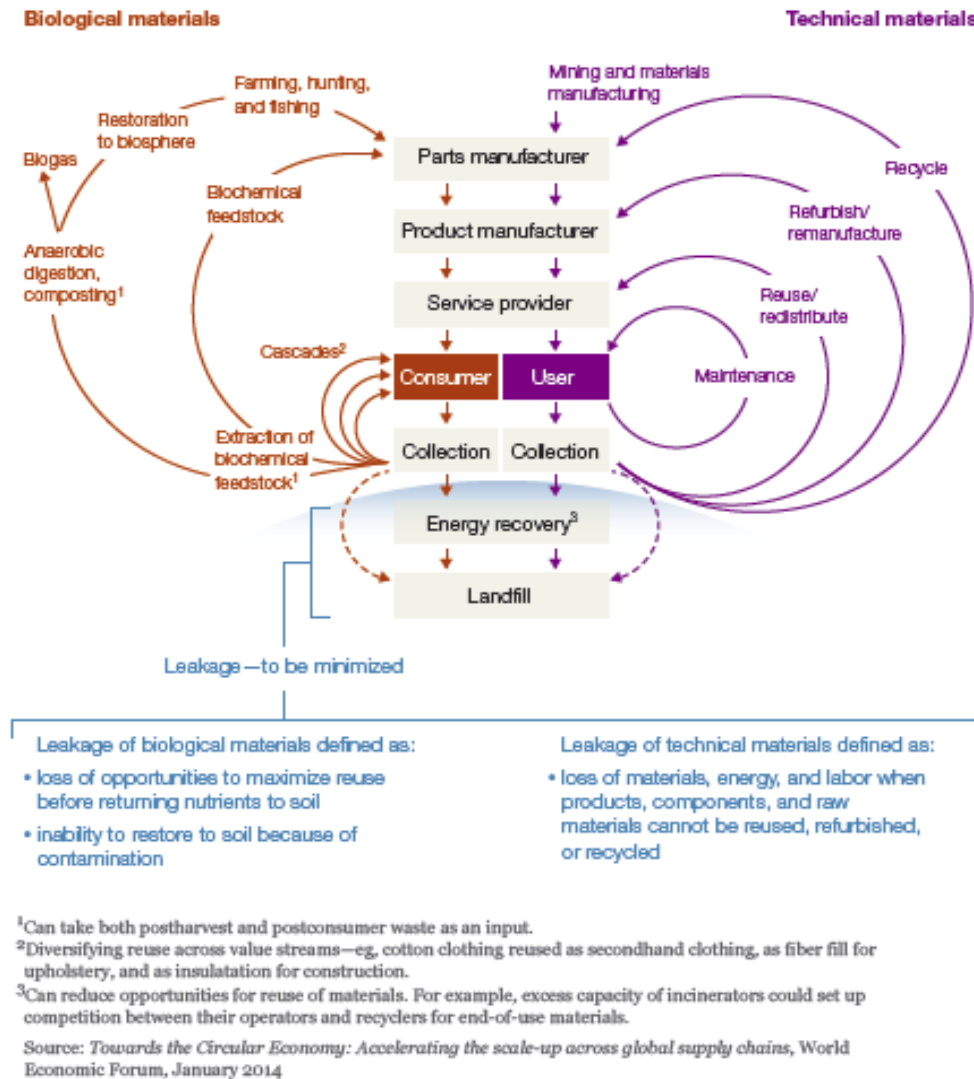
Circular economy

The vision assumes a shift in Europe's industrial system to a circular economy paradigm. Europe literally remakes its industrial system by adopting a circular business model in all sectors, and it becomes the world leader in this respect.

The main feature of the circular economy is that it replaces a key concept of the current production system's disposability with that of restoration. At its core, it aims to move away from the 'take, make, and dispose' system by designing and optimising products for multiple cycles of disassembly and reuse. This starts with materials, which are viewed as valuable stock to be re-used, not as elements that flow through the economy once.

Figure 3. GLOBAL METAMORPHOSIS vision: The circular economy

In a circular economy, products are designed to enable cycles of disassembly and reuse, thus reducing or eliminating waste.



The circular economy aims to eradicate waste – not just from manufacturing processes, as lean management aspires to do, but systematically, throughout the various life cycles and uses of products and their components. Moreover, a circular system introduces a strict differentiation between a product’s consumable and durable components. In a circular economy, the goal for consumables is to use non-toxic and pure components, so they can eventually be returned to the biosphere, where they could have a replenishing effect. The goal for durable components (metals and most plastics, for instance) is to reuse or upgrade them for other productive applications through as many cycles as possible, as illustrated in Figure 3.

This approach contrasts sharply with the mind-set embedded in most of today’s industrial operations, where even the terminology: value chain, supply chain, end user, expresses a linear view. Since restoration is the default assumption in a circular economy, the role of consumer is replaced by that of user. For companies, this change requires a different way of thinking about their implicit contract with customers. For example, in a buy-and-consume economy, the goal is to sell the product. In a circular economy, the aspiration might be to rent it out to ensure that its materials are returned

for reuse. Where products must be sold, companies would create incentives to guarantee their return and reuse.

According to Heck and Rogers (2014), the circular business model is at the core of the so-called 'resource revolution' recipe, which: i) combines information technology, nanoscale-materials science, and biology with industrial technology, yielding substantial productivity increases; ii) achieves high-productivity economic growth in the developing world to support the 2.5 billion new members of the middle class; iii) requires new policy and business management approaches for capturing such opportunities; iv) reduces the current resource and sustainability constraints, spreading a new model of circular economy; v) reduces the current social tensions, creating new labour-intensive activities and job opportunities. The job creation potential, also in entry-level and semiskilled jobs, is one distinctive feature of the circular economy, and it is also what makes the resource revolution concept more attractive from the societal perspective, as it is inherently and deeply inclusive. Indeed, as the key engine of the circular economy is resource savings innovation, not necessarily labour saving, inclusive development is no longer a chimera, as is often the case for the smart growth scenarios where conventional industrial profit-making strategies at the expense of labour inputs are the dominant business strategy.⁴ Again, according to Heck and Rogers (2014), the 'resource revolution' will be achieved through five distinct approaches, either individually or in some combination:

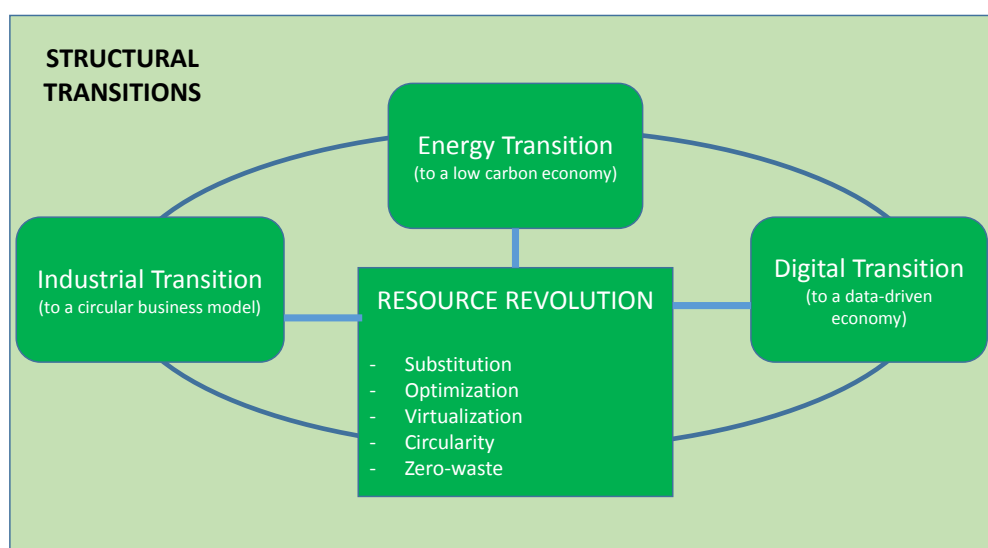
- Substitution: replace scarce materials with less scarce, highly performing materials
- Optimisation: embedding intelligent software in industry and service processes
- Virtualisation: moving processes out of the physical world or simply not doing things
- Circularity: finding value in products after their initial use
- Waste elimination: achieved by means of lean production design innovation

It is a huge challenge to integrate the five 'resource revolution' and the drivers/mechanisms presented so far into a systemic transformation of the way companies, consumers – and policy-makers and investors – operate, organise and behave.

The *Metamorphosis* vision assumes that the challenge is successfully tackled, with the global economy shifting to a circular economy paradigm. Europe – including both the European private industrial system and the European Union public governance system at all levels (EU, national, regional, local) – will effectively contribute to this success, taking the leadership in structural industrial, energy and digital transitions (see Figure 4).

⁴ To put this in context, think back to Adam Smith's "The Wealth of Nations" (1776), which identified three primary business inputs: labour, capital, and land (defined broadly as any resource that can be produced or mined from land or disposed of as waste on it). The two industrial revolutions the world has thus far seen focused primarily on labour and capital. The first gave us factories and limited liability corporations to drive growth at scale. The second, from the late 1800s to the early 1900s, added petroleum, the electric grid, the assembly line, cars, and skyscrapers with elevators and air conditioning, and it created scientific management, thus enabling corporate globalisation. But neither revolution focused on Smith's third input: land and natural resources. The new resource revolution industrialisation will be mostly based on exploiting resource-saving technologies.

Figure 4. GLOBAL METAMORPHOSIS vision: Structural Transitions



In the global *Metamorphosis* vision, policy-makers focus on accelerating the transition to a circular economy in a timescale consistent with the response to climate change, water scarcity and other global challenges. Smart regulation is enacted to reward private-sector leadership and align incentives along the supply chain – e.g. to deliver step-change in remanufacturing rates. At the global level, the circular economy will help developing countries to industrialise and developed countries to increase wellbeing and reduce vulnerability to resource price shocks, but without placing unsustainable pressure on natural resources and breaching environmental limits.

It is clear, however, that a major reorganisation of global industrial systems will not happen overnight. In the meantime it is critical to avoid further lock-in to resource-intensive industrial systems and infrastructure. Owing to the size and scope of economic transformation in emerging economies, choices made in these countries in the next few years will help shape global resource and carbon pathways for decades. There is a window of opportunity to avoid replicating the resource-intensive production models of developed countries and to 'leapfrog' to a more sustainable mode of development.⁵

Besides the supply side, the global metamorphosis storyline envisages changes to consumption patterns that will help to shift global resource trajectories away from 'business as usual' – also from the demand side. A key demand-side issue is the extent to which resource efficiencies can be achieved by the sharing and recycling of products by consumers. Concepts such as 'collaborative consumption' or the 'sharing economy' are based on the observation that conventional ownership is being replaced in some parts of the economy by 'sharing, bartering, lending, trading, renting [and] gifting'. Companies such as Ebay and Craigslist and organisations such as Freecycle were early enablers of these processes, but now thousands of organisations and companies are involved. Collaborative approaches are also emerging in the design and production of products, posing a potential challenge to orthodox manufacturing practices.⁶

⁵ For instance, today China is giving a renewed boost to the eco-industrial park concept. The 12th Five-year Plan states that China will plan, construct and renovate various kinds of industrial parks according to the requirements of the circular economy (Guo, Q. and Li, J., 2011, "The Ideas of the Development of a Circular Economy in the 'Twelfth Five-Year' Plan of China", Department of Resource Conservation and Environmental Protection, NDRC, China, www.unccd.or.jp/env/spc/docs/3rd_3r/PS5-2_NDRC-China_Guo%20and%20Li-new.pdf)

⁶ The sharing economy is a socio-economic ecosystem built around the sharing of human and physical resources. It includes the shared creation, production, distribution, trade and consumption of goods and services by different people and organisations. The 'Collaborative Consumption' website provides hundreds of

Finally, it is important to note that measuring progress towards a circular economy will involve much more detailed mapping of how resources move within the economy than there is now, and information technology will enable new ways to track both resources and value flows. This may enable the use in the standard national accounting systems of 'resource intensity' indicators and targets – e.g. the total flows resources and the total inputs and waste (adjusting for imports and exports) divided by GDP. Connected to the use of these indicators, new key questions will be raised and monitored in a circular economy, for instance: What is the maximum volume of resources that can be circulated sustainably within safe planetary boundaries? What are the key resources to focus on? How fast should circulation occur?⁷

Moreover, it is important to note that changing towards a circular economy may easily cause a reduction of progress in the short term as measured conventionally by means of GDP growth – at least as long as the new circular business models imply a reduction of traditional products sold on the market, only partially compensated by the market value of new services and intangible products (e.g. the substitution of cars with car sharing services). This means that in the 'global metamorphosis' storyline a primary innovation is to reform the way in which society measures future progress, and the indicator – or rather the set of indicators and targets – to which the macro-economic and societal policies will have to be anchored.⁸

Equality and democracy

The second pillar of the global *Metamorphosis* vision is the issue of reclaiming equality and building deeper and more sustainable foundations for democracy. Both equality and democracy seem to be increasingly challenged by the economic globalisation process and the tendencies that emerged in recent decades in Western societies. There is no doubt that workers in America, Europe and Japan have been through a difficult few decades. In the 1970s the blistering growth after the Second World War vanished both in Europe and America. In the early 1990s Japan joined the slump, entering a prolonged period of economic stagnation. The rich world is still trying to shake off the effects of the 2008 financial crisis. And now the digital economy, far from pushing up wages across the board in response to higher productivity, is keeping them flat for masses of workers while extravagantly rewarding the most talented ones.⁹ For at least the last two decades economists concerned with this have debated the precise role that i) globalisation and ii) technological change have played in generating these worsening trends.

The globalisation of economic activity has undoubtedly played a role as it has increased the already enormous power of the large corporations economically and politically, while weakening the power of labour unions, especially in the US, the UK and now also on the European continent. Globalisation brings with it ever expanding opportunities for

examples in music and other media, household DIY equipment, toys, textbooks, fashion and art. The proliferation of these approaches is enabled by the internet, but it is also driven by the desire to save money, by convenience, and by environmental and social awareness. The model can be for-profit, non-profit or a mixture of the two. These approaches are also often associated with a specific community or location, even if they are part of a larger network. Car-sharing is one example: there were in 2010 half a million members of car-sharing schemes in North America (up from 2,500 in 2000), who drove about 30% less than when they owned a personal vehicle.

⁷ Slower resource flows – with very durable products – might have a lower environmental impact in the short term, but faster flows might enable growth and encourage green innovation.

⁸ The issue here is not substituting the current 'totemic' GDP, labour productivity and total factor productivity indicators, rather complementing them with – and giving more emphasis to – *resource efficiency indicators*, because achieving resource efficiency is the key profit-making driver of the circular business model, and *new welfare and intangible benefit indicators* (also for future generations), because quality of life and well-being is increasingly achieved through the consumption of immaterial goods and services.

⁹ To quote some trends, between 1991 and 2012 the average annual increase in real wages in the UK was 1.5% and in America 1%, according to OECD. That was less than the rate of economic growth over the period and far less than in earlier decades. Other OECD countries fared even worse. Real wage growth in Germany from 1992 to 2012 was just 0.6%; Italy and Japan hardly saw an increase at all. And, critically, those averages conceal plenty of variation. Real pay for most workers remained flat or even fell, whereas for the highest earners it soared. The income shares of the top 1% and 10% earners soared for most OECD countries between 1980 and 2012.

relocation to other countries – and this adds to corporate leverage and the capacity to threaten departure unless demands are met. Worldwide competition for investment has added to the pressures, forcing government to reduce business tax rates, shifting more of the burden to low- and moderate-income earners. Globalisation thereby also implicitly reduces the capacity of governments to spend on redistributive social programmes. This means that the traditional ‘after-the-fact’ redistributive political strategies are increasingly difficult to apply and/or ineffective in their outcomes.¹⁰

The global metamorphosis storyline considers a new and deeper approach to cope with inequality challenges, by means of a greater “democratisation of wealth creation” before, not “redistribution of income” after the fact.¹¹ The emphasis in this new approach is on an **ex ante democratisation of wealth creation**, rather than on ex post equalisation of income, and this shifts the focus from redistributive policies to fostering new democratic wealth institutions. One specific institutional arrangement is the possibility that workers might own their own companies; a straightforward idea that if extended and applied across the board implies a political-economic system of ‘universal capitalism’ that is quite different from both traditional socialism and corporate capitalism. However, the diffusion of worker ownership in the context of the capitalist economy would not be the only democratisation of wealth approach. The latter should benefit much broader groups directly, not only workers. For instance, in the US a full set of longer term, system-wide wealth-changing proposals have been studied, although so far they have been beyond the range of current political feasibility.

The most interesting aspect of the ‘democratisation of wealth creation’ idea is to diffuse the ownership of capital assets and distribute income streams that are disconnected from labour earning opportunities. Forms of Public Trust schemes connected to the huge investments needed for the transition to a low carbon economy are therefore envisaged in the global metamorphosis storyline.

The other driver underlying increasing inequality is technology, in particular the **diffusion of labour-saving technologies**. The wave of invention and economic disruption, set off by advances in computing and information and communication technologies (ICT) in the late 20th century, is now delivering a mixture of economic transformation and social stress. It is driven by a handful of technologies – including machine intelligence, the ubiquitous web and advanced robotics – capable of delivering many remarkable innovations: driverless vehicles; pilotless drones; machines that can instantly and effectively translate hundreds of languages; mobile technology that eliminates the distance between doctor and patient, teacher and student, etc. This wave, like its predecessors, is likely to bring vast improvements in living standards and human welfare, but history suggests that society’s adjustment to it will be slow and difficult. In particular, whether this digital revolution will bring mass job creation to make up for its mass job destruction, however, remains to be seen.¹²

¹⁰ Until recently, it was accepted that capitalist economic systems produce highly unequal distributions of income, but it was also hoped that ‘after-the-fact – after basic income flows have been generated – progressive taxation, combined with various social programmes, could alter the underlying patterns. But as we are now confronted with the reality of new corporate global powers, national or even regional after-the-fact approaches are insufficient.

¹¹ As the Harvard economist Richard Freeman put it, “If we were to start democratic capitalism with a blank slate, we would naturally divide the ownership of existing physical assets equally among the population ... Our main strategy – be we left or right – for fighting income inequality under capitalism, should be to assure a fair initial distribution of physical and human capital themselves”. Freeman states the essential principle of such an approach in this way: “Equality of income obtained in the first instance via greater equality in those assets, rather than as an after-the-fact (or earning or luck) state redistribution of income from rich to poor, would enable us to better square the circle of market efficiency and egalitarian aspiration”. Richard B. Freeman, “Solving the New Inequality”, in *The New Inequality: Creating Solutions for Poor America*, ed. Joshua Cohen and Joel Rogers, Boston: Beacon Press, 1999, p. 14

¹² Some economists offer radical thoughts on the job-destroying power of this new technological wave. Carl Benedikt Frey and Michael Osborne, of Oxford University, recently analysed over 700 different occupations to see how easily they could be computerised, and concluded that 47% of employment in America is at high risk of being automated away over the next decade or two. Brynjolfsson and McAfee ask whether human workers will be able to upgrade their skills fast enough to justify their continued employment.

To say the least, we can argue that if unmanaged, the risk that the digital revolution will open up a greater divide between a skilled and wealthy few and the rest of society is substantial. In the past, new technologies have usually raised wages by boosting productivity, with the gains being split between skilled and less-skilled workers, and between owners of capital, workers and consumers. Now technology is empowering talented individuals as never before and opening up yawning gaps between the earnings of the skilled and the unskilled, capital-owners and labour. At the same time it is creating a large pool of underemployed labour that is depressing investment. Also in the developing world, as manufacturing is increasingly based on automated work standards, and skilled design work accounts for a larger share of the value of trade, governments can no longer count on growing industrial sectors to absorb unskilled labour from rural areas, as in the past for the old industrialised countries.

A possible portfolio of anticipatory policies for dealing with the upcoming labour imbalances would include:

- **Creating more and better qualified service jobs for low- to middle-skilled workers:** A huge technology-induced improvement of labour productivity in the industrial sectors will continue to boost average wages and per capita income in the whole economy, perpetuating the so-called 'cost disease' that affects the most relevant service sectors of the economy (notably education, health and personal services industries), where labour productivity cannot be radically improved for structural reasons.¹³ On the one hand this will make most progressive sectors' products and services cheaper relative to consumer buying power, and on the other hand the stagnant services costs higher but potentially affordable for society as a whole, provided that the surplus revenues generated by higher productivity in the progressive sectors are partially used to finance the provision of these services. For this, new social welfare and social innovation mechanisms should be put in place to enable a transfer of resources.
- **New low- to middle-skills job opportunities in the eco-industries:** The diffusion of eco-industries based on the new circular business model can create several new activities and job opportunities. Circular/reverse processes will require more labour today than linear and highly automated industrial processes.
- **Turning less-skilled workers into more-skilled workers:** The best option for reducing the glut of less-skilled labour is to transform some of it into the more-skilled sort through higher spending on education. In the 19th and 20th centuries it took significant public investment to ensure that newly industrialised economies had a supply of labour with the right qualifications. Something similar is needed today. Across the world more effort is also needed to improve primary and secondary education.
- **Providing income support for those who find it hard to earn a living in this new world:** If the dislocating effect of technology turns out to be really severe this time, governments might consider offering a universal basic income, just sufficient to live on, to which all working-age adults would be entitled. A basic income for all is an old idea receiving new attention because of the recent labour-market turmoil. However, the most promising mechanisms for providing income support are those discussed above for creating diffused capital income streams, beyond what is provided through labour earnings.

¹³ According to Baumol (2012) the cost disease is a structural phenomenon, by which the costs of health care, education, live performing arts, and a number of other economic activities known as 'personal services' are condemned to rise at a rate significantly greater than the economy's rate of inflation. The reason is not hard to identify: the items in the rising-cost group – the stagnant sector – generally have a human element not readily replaceable by machines in their production process, which makes it difficult to reduce their labour content. Items whose costs are falling – the progressive sector – are predominantly manufactured via more easily automated processes, and their steadily falling real costs simply reflect their declining labour content. Cfr. Baumol, William J., 2012, *The Cost Disease: Why Computers Get Cheaper and Health Care Doesn't*, Yale University Press, New Haven and London,

Finally, consideration must be given also to a fourth factor, namely translating the fruits of technological change and increased labour productivity, not only into an equitable distribution of labour earnings or other income opportunities but also into equitably distributed reductions in the working week as time goes on. The specific question here is how to allocate the gains made possible as the productivity of the economy improves between earning more, or having more free time available without reductions of available income.¹⁴

Quite apart from the equities involved, more free time is also one of the most important requirements of any serious long-term system-wide approach to building solid foundations for individual liberty in the 21st century.¹⁵ Indeed, another key issue at the heart of the global metamorphosis vision is rebuilding democracy from the bottom in the advanced countries, and spreading deeper and more sustainable democracy institutions across the world.

Deep and sustainable democracy is achieved by enabling the rule of law everywhere, compliance with the Charter of Fundamental Rights, the rights of minorities, transparent and accountable institutions, and public services oriented to empower citizens. The critical foundational argument might be put as follows: *It is not possible to have a democracy in the global system as a whole if you do not have real "deep and sustainable" democracy at the level where people live, work, and raise families in their local communities, and share sustainability concerns.*¹⁶

In the global metamorphosis storyline, a community-oriented emphasis is coupled with the diffusion of forward-looking dialogues and participation in future search exercises. Indeed, envisioning is a key, but often missing, element in a true democracy. Democracy is about much more than simply voting for representatives. It is about building consensus around the kind of world we really want. The global communications made possible by the internet will make sharing visions and scaling up real democracy – as that for instance experienced in the New England town meetings – feasible. This basic community-oriented emphasis can also be found in a line of arguments urging decentralisation of government within large cities so as to increase opportunities for genuine participation.¹⁷

5. DISRUPTIVE DYNAMICS

The EU paradox: Legitimacy crisis and horizontal integration

The crisis in the euro area has exposed serious shortcomings in the ability of the EU to deliver results in line with citizens' expectations in terms of prosperity and response to

¹⁴ Indeed, in the US the typical working week decreased from roughly 70 hours in 1850, to 60 hours in 1900, to 50 hours in 1920, and – allowing for variation during the Depression and World War II – stabilised at a little over 40 hours by the middle of the century. The pattern is different in Europe, but the drop in average working time over the whole year is confirmed. It is clear that as technological progress continues – and as the capacity of one hour's work to produce three, four, or possibly even five times what it now produces continues to increase – further changes in the work-week are likely to be feasible, and at some point during the coming century a greater work-time reduction – in principle with no diminution of living standards (and plausibly an increase) for the vast majority of people in the wealthier economies – is conceivable.

¹⁵ Individual liberty can never be fully realised if men and women must work for most of their time simply to feed and shelter their families. Only if individuals have time they can dispose of freely as they see fit can liberty be truly meaningful. There is also a relevant gender issue here.

¹⁶ The argument is not new; as Alexis De Tocqueville noted in his masterly analysis of Democracy in America, in the 1830s "Municipal institutions constitute the strength of free nations. Town meetings are to liberty what primary schools are to science; they bring it within the people's reach, they teach men how to use and enjoy it". John Stuart Mill similarly held that direct experience with local governance was essential to "the peculiar training of a citizen, the practical part of the political education of a free people".

¹⁷ It is important to emphasise here that different forms of knowledge should be made available to citizens to empower them and enable different degrees of democratic practice. Something far more powerful than knowing your rights and the law (the minimal knowledge required by weak democratic politics) will be needed, and this requires very different ways of acquiring knowledge for more responsible and active citizens.

crisis situations. As output has always been the EU's main source of legitimacy, this poses an existential problem for the EU.

The idea that a successful EU is sufficient to ensure the support of citizens relies on the very assumption that output legitimacy can compensate for any lack of input legitimacy. This assumption seemed to hold until 2009, but the crisis exposed the inherent weakness of such a system: every time there is a crisis, output legitimacy deteriorates by definition, making the system vulnerable to shifts in citizen support. This translates into questions about EMU membership and the rationale for having a monetary union rather than questioning specific policies and actions, as would be the case in a democratic nation state.¹⁸

Weak input legitimacy has always been a feature of the EU project. But the management of the crisis and the creation of a new system of governance that privileged quick fixes and ad hoc solutions with no ambition to make the process more democratic and fully accountable exacerbated this weakness. As a result, the democratic credentials of the economic governance of EMU have been called into question and citizens' disaffection with the EU has increased.

The combination of low input and output democracy is jeopardising support for the EU project.

A fully fledged political and fiscal union as a counterpart to the monetary union would help to overcome these two sets of shortcomings and reduce the system's vulnerability to citizens' disapproval. It is highly unlikely, however, that EMU will become a federal system any time soon.

Assuming that the status quo is not sustainable, increasing and overwhelming anti-European and anti-establishment parties could jeopardise the European project and, more generally, the stability and the peace of the region.

This possibility could either lead to a catastrophic scenario or the fear (which has always acted as an engine in Europe) of it could work as a strong incentive to move forward with the European project. For this to happen, citizens' preferences are crucial. While it is anything but clear that vertical integration, intended as a relinquishment of national sovereignty in favour of the united states of Europe, would receive support, forms of horizontal integration are taking place. This is still far from a common European identity, which clearly does not exist, but horizontal relations among citizens have been evolving.¹⁹ Horizontal attachment among Europeans could find expression in institutional mechanisms, possibly different from the traditional attribution of powers typical of nation states.

Globalisation: From gain to pain

Rising international economic integration, or globalisation, has offered many opportunities. Firms have been able to enter new and expanding markets and access new sources of finance and technology. Consumers have been able to access a greater variety of goods at lower prices. This has opened up the prospect of significant gains. The European Commission estimates that about one-fifth of the increase in EU-15 living standards over the past 50 years is attributable to integration of the world economy.²⁰

¹⁸ See Alcidi C., A. Giovannini and S. Piedrafita (2014) "Enhancing the legitimacy of EMU governance", European Parliament Study, *Forthcoming*

¹⁹ See U. Guérot (2014), *Res Publica Europaea: "A citizens-based concept to re-think political integration of Europe in The European Union and Supranational Political Economy"*.

²⁰ http://ec.europa.eu/economy_finance/international/globalisation/index_en.htm

Between 1980 and 2002 world trade tripled while world output only doubled.²¹ This is historically exceptional and unlikely to persist. The globalisation of trade is expected to slow down as some of its main driving factors are expended.²² But there are also other factors that could slow down globalisation and move towards a different system of production and consumption.

Since the crisis, public opinion has increasingly tended to associate globalisation with job losses, downward pressures on wages and the deterioration of working conditions. These views are based on fears that increased competition from countries where labour costs are low and employment protection non-existent puts excessive pressure on local producers and workers and may result in the relocation of factories abroad and hence in growing unemployment. While these concerns are not new, they have increased with the rapid rise of China and India on the world trading scene but also with the widespread use of information technologies that reduce the need for labour input and increasingly erode the boundaries between what can and cannot be traded.

Such transformations have led to a process of adjustment that entails a shift of factors of production, such as capital from activities, firms and regions that cannot withstand the increased pressure of competition to those that can benefit from it.

Even if there is no evidence that globalisation has been associated with employment losses at global level, the adjustment of economic structures has costs that are unevenly distributed across firms, activities and regions. In this process mature economies are likely to carry most of the burden due to more rigid labour, capital and product markets. This means that in these regions globalisation may increasingly be seen as responsible for growing numbers of 'losers' in society.

As reaction movements promoting 'local' as opposed to 'global' are emerging and are likely to expand in the future. Besides the slogan such an approach calls for a system of production alternative to the so-called global value chain model, privileges local products and producers, produces less waste and requires new habits consumption habits and fewer energy resources.

Technology: From complement to substitute for labour

Until a few years ago, news about technological development was taken as unadulterated good news. Technology increases opportunities to improve living standards, reduces costs and by increasing productivity can cement or promote a country's position on the technology frontier. But pessimism is creeping into people's understanding of the impact of many innovations. This is an old fear, voiced by Ned Ludd for the first time more than two centuries ago, who organised the first protest against technological change. But in its current incarnation, this fear is rather new. It strikes against a bedrock proposition of economic theory according to which technology is a complement to labour not a substitute for labour. This canon is now under question.

Throughout history the introduction of machines has increased the demand for complementary human skills. But as information technology creeps into occupations that have always relied on intellectual skills, many jobs are now threatened.

The hypothesis that capital, in its different forms, is not necessarily complementary to labour but a substitute for it is supported by emerging evidence that the share of income taken by workers has been shrinking around the world as labour faces more competition and new labour-saving technologies. By symmetry, corporate profits have made up the largest share of national income since the government started measuring the statistic.

²¹ Dean and Sebastia-Barriel (2004) "Why has world trade grown faster than world output?" In http://www.econ.brown.edu/fac/Mark_Dean/Other_Paper_1.pdf,

²² See Alcidi and Gros (2013), *The Global Economy in 2030: Trends and Strategies for Europe*, <http://europa.eu/espas/pdf/espas-report-economy.pdf>

This seems to signal that something structural is happening to the economy and the capital share could continue to increase.

One implication of this phenomenon is that technology, even if it is not the only responsible, is playing a role in widening the income gap between the tech-savvy and others. Even if the economy is only going through one of its 'natural transitions', it is an extremely painful one for many workers, and one that will have to be addressed somehow.

When inequality leads to political instability

Inequality has risen in recent decades in most countries, both emerging and advanced economies.²³ In the US this results in a shrinking middle class and is seen by many as a major threat to future economic growth and political stability in the country. Indeed, in the unstable political environment that can be created by high income-inequality, investment is discouraged by a higher risk of expropriation and voters' preferences towards re-distributional policies. This can degenerate into revolutions.

It is no accident that after the Second World War it was accepted that workers' rights needed to be protected, wage and labour conditions improved, and a welfare state created to redistribute wealth. This was to avoid revolution. The rise of the social-welfare state was a response (often in market-oriented democracies) to the threat of popular revolution, populism and communism, whose probability increases in times of severe economic and financial crisis. From the late 1940s to the mid-1970s – a period of relative social and economic stability – inequality fell sharply and median incomes grew rapidly. The lesson was forgotten in the 1980s, but the model that has emerged since then has failed. Any economic model that does not properly address inequality will eventually face a crisis of legitimacy. This requires rebalancing the relative role of the market and the state. If not discontent and disapprovals can become more severe, with social and political instability eventually harming long-term prosperity and welfare.

The limits of 'nation states' and the end of redistributive policies

Falling costs of transport and communications on the one hand, and liberalising economic policies on the other, which have been among the main drivers of globalisation, had several unintended consequences. One of these is limiting the ability of traditional nation state to exert its sovereignty; a natural reflection of democratic systems.

In the countries with the most advanced and internationally integrated economies, governments' ability to tax and redistribute incomes, regulate the economy, and monitor the activity of their citizens has become more difficult. Collecting taxes is becoming harder due to a long list of factors undermining the foundations of taxation regimes: cross-border shopping, the increased mobility of skilled labour, growth of electronic commerce, development of new financial instruments and intermediaries, growing trade within multinational companies, and the possible replacement of bank accounts with electronic money embedded in 'smart cards.'

The combination of economic liberalisation, globalisation and technology advances is making taxation significantly more challenging. Taxes on spending may have to be partially recast. The taxation of corporate profits may have to be radically redesigned or even abandoned. Finally, the ability of governments to impose taxes that bear no relation to the benefits provided may be more constrained than before.

One consequence of this is that redistributive policy is more difficult to enact, thereby reducing government instruments to pursue stabilisation policies, which are key when citizens' discontent is high and inequality is rising. This is in a context in which fiscal restraint is an important priority in many advanced and developing economies.

²³ See among other <http://www.imf.org/external/np/fad/inequality/>

6. ANTICIPATORY VERSUS RE-ACTIVE POLICIES

Broadly speaking, policy can be divided into two categories; anticipatory policies and reactive policies. The first set of policies is based on the idea that policy should anticipate challenges and shape emerging transformations in society and the economy at large. This requires an 'enlightened' political class to be able to capture even weak signals of change, to understand the magnitude of its political choices and to have in mind a vision of the future.

The second set of policies, the most common, typically consists of reacting to challenges, trying to mitigate effects using quick fixes and ad hoc solutions. This approach is characteristic of policy-makers focused on the political cycle and without a vision of the future.

In a world largely shaped by forces beyond the full control of policy-makers, following the second approach may result in a catastrophic scenario, where after-the-fact reactions are insufficient.

Even if policy-makers' tools are more limited, policy choices can still affect medium- and long-term trends and transformations. For instance, by generating incentives of a different nature, taxation, subsidies and regulation affect market dynamics and shape individuals' behaviour. But to achieve this policy-makers need a vision of the world to which to aspire.

When considering the very long term, policy options should be conceived in the framework of a strategic approach that defines possible scenarios for the future, like the *Perseverance* and the *Metamorphosis* proposed in the framework of the FLAGSHIP project.

It so doing so it is critical to acknowledge that a traditional approach to growth can lead at best to a steady economy (with still large differences across the globe due to different starting points in degrees of economic development). The reasons for this can be found in ageing (declining population growth rates); the fact that improvements in resource efficiency will lead to better use but will not remove constraints; physical capital accumulation (given the high level of stock) will have limited effect on growth; human and intangible capital will have a positive effect to ensure a steady economy but may not be sufficient to guarantee improvements in living standards.

Both economy and society are undergoing structural changes that may fundamentally threaten acceptance of the existing system. This requires a shift in the overall economic system and policy paradigm, which are not possible without fundamental changes to mind-set.

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