ANNUAL REPORT ome 2009-2010

Reglobalisation

Underlying transformations and new opportunities in a post-crisis world

Executive working version for the 5th International Foresight Forum

[EXECUTIVE VERSION]

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Competitiveness for Catalonia

Generalitat de Catalunya
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First Edition: October 2009

Printing: 500 copies

Typesetting and printing: Addenda

D.L.: B-41.454-2009

Note:
ACC1Ó does not necessarily share the opinions expressed herein.

Foreword

When it comes to comparing the extent of the crisis on an international scale in terms of absolute statistical parallels, we would have to go all the way back to the Great Depression of the thirties to find anything which has had such an impact. Barry Eichengreen and Kevin O'Rourke (2009) update comparisons between both events, using indicators which illustrate the dramatic shrinkage experienced in terms of economic activity, production, financial flows and international trade.

The risks implicit in globalisation can be more clearly envisaged, whilst on the other hand protectionist tensions arise, thereby underlining the need for a new political, institutional and regulatory framework. Meanwhile, the role the state has to play is under the spotlight, as governments also have to contend with growing social unrest. At the same time, there is a more positive context toward changes in "growth models" and of redefinition of business strategies.

Is the current crisis a major watershed, after which the world will no longer be the same and where the rules of the game will have changed? Is this the starting point of something new or is this apolat of no return interconnected to the current series of deep-seated changes and other existing crises involving climate change, food energy and global governance... which will end up reshaping world economic order? And before the dust settles, what may there be in it all for business?

Finding a reply to the above questions is the main aim of the Working Document of the 2009-2010 Annual Report, thought as an instrument for creative reflexion and discussion, with the aim of contrasting and gathering the ideas of both local and international experts, within the frame of the International Foresight Forum's fifth edition organised by Observatory of International Markets (OME) of ACC1Ó. This working document, of wich there has also been done an executive version, will be enriched by the forum's main conclusions.

On the one hand, the scale, impact and extent of changes taking place have been analysed, appraisal has been made of possible world reglobalisation scenarios. The underlying forces which make up the economic and business environment have been examined in order to uncover incongruities, whilst simultaneously giving consideration to implications for entrepreneurial strategies and identification of business opportunities worldwide and within specific relevant sectors and markets.

The OME is involved in analysing the workings of these underlying forces in order to help anticipate new opportunities, whether they arise from the economic and geostrategic muscle of emerging markets or the role of networked businesses that are evolving against a backdrop of increasing globalisation of knowledge, despite possible restraints imposed by the economic and financial crisis. The working version of this report looks into how the development of these underlying forces may be affected, confirming that some of these deep seated changes are still taking place, while in other cases new concerns arise around them. Moreover, we have detected signs of new emerging forces which will require looking into over the coming months.

Finally, what is clear is that a new and altered entrepreneurial environment is taking shape, severing links to those in place before the crisis, sparking new challenges, requiring new strategies and also new opportunities for business.

Maite Ardèvol
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Reglobalisation: underlying transformations and new opportunities in a post-crisis world

Summary

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1. Extent of the crisis and anatomy of international trade

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Recent data on industrial output and trade worldwide have had a widespread impact, but going beyond the raw data it is necessary to take a concerted look at what the current situation actually represents and what twists may be taking place along with the scenarios that are being forged, with the corresponding opportunities and challenges.

Two clear assertions arise from comparative data on the extent and implications of the crisis: on the one hand, concerning the recessive cycles of the economy, absolute and comparative data bring out the fact that only the Great Depression of the thirties was deeper than the current crisis. On the other hand more in-depth indicators, which typically date from after the Second World War, also illustrate the singular nature of the current global economic malaise.

Special attention needs to be given to comparative data on international trade due to the backdrop of globalisation against which the crisis is set, and on key discussions as to how this process may be affected along with frequent comparisons made with the 1930s when protectionist solutions among others led to even greater shrinkage in international trade.

Current international trade statistics are of great concern, and even though "protectionist temptations" are still under control, the fall in world trade volumes would initially be greater than that of the depression. Such vast amounts stand out even more when contrasted with past recessions where average shrinkage was registered at 2%, with the upper limit of -14% reached in October 1982.

Nevertheless, there are several explanations as to the singularity of the current situation, centred on the multiplying effect of global production chains, problems of trade finance and questions related to (lack of) confidence and eventual (de)globalisation, as well as the size of the recession, the exceptional degree of correlation and its essentially worldwide nature. Each (complementary) interpretation plays a part when it comes to interpreting the meaning of current data and possible evolutionary patterns.

Renewed importance of the composition of target markets

At a more detailed level, comparative figures illustrate how some of the countries more affected by the recession – in both absolute terms as well as in terms of historical comparison – represent some of Catalonia's major export markets, especially France and Germany as well as Italy and United Kingdom. This reopens the debate on the "excessive" concentration of Catalan exports to the closest EU markets and therefore the need, as stressed by the crisis, of speeding up the process of opening out into markets with greater potential not just in the mid-term but in the short term too.

Going beyond simple historical comparisons, even data and forecasts presented in June 2009 by the OECD (2009) show up a mild variation in the approach to decoupling. It is worth remembering that past assertions which stated that some emerging economies – especially in Asia – would see a decline in their dependence on trends affecting leading economies due to such factors as their economic growth and strengthening of regional ties, were finally proved wrong in 2008 when the financial crisis spread to these emerging and developing economies too, despite a lesser involvement in the financial excesses which brought the recession about.

When talking of recovery, OECD figures and IMF (2009c) for 2009 are brighter for some states such as China and Brazil, whilst observing a growing heterogeneity among both advanced economies – with trouble for Europe – as well as for those emerging and developing economies. Some analysts point out that the potential for improving productivity via greater penetration into advanced economies is still important for emerging economies and that suitable reorientation could help them recover upward trends more quickly.

Furthermore, the above mentioned figures shift US indicators up; though see Europe taking longer to recover positive output. That said, it must be pointed out that a greater heterogeneity in terms of recovery per country and region require more selective fine-tuning for the urgent and important task of resetting and redefining the geographical areas where Catalan trade must achieve greater projection.

In any case, and linking the opportunities that open to new realities, Gianazzi – as has been summarized in his contribution to the IMF (2009c) – highlights that a potentially dynamic factor of investment is precisely the statement that this crisis “will change the composition of global demand in the long term”, both in geographical terms and of the contents of this demand, as is analyzed in sections 4 and 5. As well, Giavazzi notes that investments will be needed to match production processes with the new patterns of demand, being specilally relevant (also to different levels of growth in the future) the timing of each of the country’s responses to these challenges.

Global production chains and international trade shrinkage

Is it true that as some point out, deglobalisation is taking place? Indeed, to a large extent reduction in trade is affected not only by a drop in activity worldwide, but by the drying up of trade finance and especially by the “statistical” impacts stemming from adjustments in worldwide production chains.

When production is spread worldwide in chains where different tasks or activities are undertaken in different locations where components and intermediate inputs or semi-finished goods are sent from one part of the operation to another, a drop in end sales leads to a fall in trade exchanges affecting all the links of the chain. Thus, the bigger the chain, the more exponential the effect on the so-called “trading in tasks” (Grossman and Rossi-Hansberg, 2008).

Escaith-Gonguet (2009), in a WTO document show how global production chains multiply the impacts of activity on trade, both upwardly, (in the years of prosperity prior to the crisis) and downwards in times of recession such as the present. Going into further detail, the relationship between global economic trading exchanges at the centre of global chains, and other, more traditional ones (such as for oil, commodities, etc.) would be bound to lead to a greater shrinkage in those sectors which rely most heavily on global chains, (such as the car industry and IT equipment etc.), therefore partly accounting for the statistical drop in the proportion between world trade and GDP in times of recession.

First of all, the issues arising here beg the question as to whether an upturn in economic activity would lead to a multiplication in world trade volumes, and if the response would depend on the degree to which incentives are maintained for operating in global production chains, or in other words, if any deglobalisation would in real terms be limited to a "statistical deglobalisation". Secondly, what factors does a country rely on to be able to hook up again to an eventual upturn? It is therefore essential to develop the most effective strategies to get back into the new chains in a reglobalised world with greater creativity, quality and innovation to be up with and to meet changes in demand.

Elasticity of trade to activity

In a similar vein, several studies bring out that in recent decades international trade has become increasingly sensitive to the volume of activity. The main reason given for this would be the above mentioned fragmentation of productive processes worldwide, thereby accounting for such a large elasticity index – reaching 4.5 for the Asia-Pacific states which have a greater involvement in these global production chains. (Freund, 2009).

This work also observes that sensitivity increases sharply in times of trade shrinkage due to such reasons valid at the present time too, from; protectionist temptations, (including those of reducing supplies from abroad before cutting domestic ones) to resorting to stockpiling in response to a drop in demand against a backdrop of falling production, and to a greater sensitivity in terms of demand for manufactured goods in comparison to services.

However, it appears that the recent shrinkage is qualitatively different, with a more notable drop, although Freund insists that in light of the scale of the downturn in activity, the dimension of the fall in trade does indeed correspond to previously observed elasticity indices, especially those of earlier periods of shrinkage. His underlying message is that an upward "rebound" effect of worldwide recovery can be far-reaching... provided that the rules of the game do not change significantly and when the productive infrastructures of each country are able to face up to new demands.

The great synchronization

One feature which is consistently cited as making the current drop in trade so unique is the high degree of synchronisation among the major world economies, (Araújo-Oliveira 2009). At present nearly all OECD states are simultaneously experiencing negative growth in both exports and imports.

Such a high correlation goes to explain why trade has fallen so much, given that unlike in previous economic crises, this time there is no-one to play the role of economic locomotive to get the economy back on track and the multiplying mechanisms among states which generate an upward growth in trade in times of expansion only serve to further fuel the downturn in times of overall recession.

International trade finance

A further factor behind the drop in trade volumes is directly related to the impact of financial factors and the reduction of finance available for international trade.

One of the commitments taken on in the G-20 summit in London in April 2009 was, in response to the existing shrinkage of available credit, to open up a new source of finance. The OECD (2009) also pinpoints restrictions in loans as a major bane to growth and considers that a change in the climate of financing would lead not only to halting the fall in trade during 2009, but would even lead to an increase of 2.5 points – or up to a growth of 4.9% in world trade for 2010.

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2. Aspects of competitive positioning

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A number of analytical tools have been developed in recent years, which have helped in the study of trade and other forms of internationalisation, thereby contributing to improvement in the appraisal of trends in this area. Indeed such tools have enjoyed wide coverage in previous OME annual reports.

This is due, firstly to their stress on the role of detecting differences among enterprises – even within a given sector or traditionally defined "industry" which has led to identification of the origin of the differential features behind why some have managed to attain a greater international presence, whether through overseas trading, investment and/or business links, with productivity playing a big part.

Secondly, analytical tools such as those of margins (intensive and extensive of firms, products etc.), have proved their worth and have become a standard part of existing economic literature, given their ability to break down the factors behind trade flows (as well as investment and other forms of internationalisation) into single components which have major implications for enterprise and public policy alike.

What follows is a summary of recent expansion and updates which have taken place since the publishing of works commented on in previous editions.

Additions to Bernard et al. (2009): suggestions and potential implications

Using figures quoted therein, the authors analyse the factors which explain the differences among trade flows between the US and a cross-section made up of different states. On the one hand, the intensive margin "accounts for" 22.6% of trade, while the extensive margin of enterprise and its output makes up the remaining 77%. Also of note is that the intensive margin is more important in business between "related enterprises" at 31%, rather than when they have "only" a contractual relationship, (21%).

The authors also show, from analysis of US imports from overseas, that the results are highly similar, with the intensive margin greater for trade exchanges between enterprises with closer ties.

Studies in trends in world trade, representing the other major pillar of analysis, also bear out the fundamental importance of the intensive margin, in the short term.

Looking beyond the impact of the economic crisis, the common explanation for the predominance of the intensive margins in the short term is due to the relatively small size of new firms entering their limited trading volumes in an "average" year, although it has also been observed that on the proportion of intensive margins in the mid-term. This is explained by variations in firms themselves (and their permutations of products/overseas market) which grow in importance, along with their learning to chart the waters of internationalisation.

Lastly, Bernard et al. (2009) in their study focusing on previous Asian crisis observed highly differential approaches in responding to major crises.

Most notably their results assert that in times of crisis trade where with those Asian states was most affected, the intensive margin was important, whilst during the most critical phase of the recession in 1998 the fall in the extensive margin played a more important part than at more placid times. This fragility of the extensive margin in enterprise during times of major recession should be taken note of, as well as the fact that proportionally smaller reductions in trade volumes than in those of the extensive margin in companies go to suggest that "enterprises pulling out are smaller in relation to those that survive overseas", which serves as a further notice for the business of setting up, survival and pulling out from foreign ventures with the consequent implications for the potential role of public-private ventures.

A European angle: Fontagné et al. (2009): Impacts of the Euro and other considerations

Fontagné et al. (2009) apply and expand the methodology of the EFIM (European Firms and International Markets) Project, (cited in previous editions of this Annual

Report). The report presents two major findings: firstly, the low number of firms involved in internationalisation activities in proportion to overall production, and secondly, the role of the extensive margin, namely the increase in the number of firms – and products – rising to the challenge of internationalisation, clearly complemented by the intensive margin to do with the greater presence of firms – and products already internationalised. Given the concentration, (at least for the time being), of trade flows from Catalonia to EU states and especially Eurozone ones, it will be important to take a close look at results obtained in this study for states such as France, Belgium and Hungary in order to appraise to what degree they can be extrapolated to Catalonia.

A breakdown of variations in overall exports from France and Belgium for the four "margins" reveals that the intensive margin plays a major role for more distant markets, (those beyond the Eurozone and EU), whilst margins associated with greater variety are more important in markets closer to home.

In the case of Belgium – in terms of size at least a reference standard for Catalonia – contributions to all extensive margins are positive, even for those of enterprise, for trade with the Eurozone and the EU as a whole, however the greater costs associated with markets further afield has taken its toll on firms" extensive margin, thereby providing a window of opportunity for the role of public policy and public-private cooperation in addition to cooperative approaches in the private sector. France even returns negative figures, (enterprise pulling out), which underlines the need to adopt measures based on "survival" and internationalisation dynamics".

International Business – Start ups and pull outs

A sample of Spanish exporters taken by the Banco de España (2009) not only coincides in general with studies for other geographical areas, (e.g. in terms higher productivity, salaries, and quality/skills), but also provides information on overseas start-ups and pull outs of enterprise.

The survival rate for the years 2001 – 2 is a mere 6% for purely export operations, rising to 13% for those simultaneously importing and exporting. For the segment of firms with 250 or more workers survival rates are much higher. This shows the need not only to lend support to "first timers" in internationalisation, but also that it is vital to have mechanisms in place to avoid new ventures turning into one-offs, most probably via more long-lasting support projects.

That said, we will take a look at some approaches to competitive positioning of different economies, paying attention to those aspects which are potentially more practical when it comes to moments of critical change, such as that encountered in a post recessionary environment. Recent results published examine tasks and activities with a specific importance in given geographical areas and the implications these may have. Furthermore, some studies interpret the concept of the quality ladder as a way of describing competition among emerging economies which are producing increasingly sophisticated products with advanced economies which are striving to retain the origins of their competitive edge. In addition, discussion will be given over to some traditional competitive indicators, such as the IMD that publishes a subset of indicators with the aim of measuring capacity against the backdrop of the current situation.

Contrasts in task trading

In prior editions of this Annual Report basic aspects of this concept have been discussed, such as the work of Grossman and Rossi-Hansberg (2008), now a benchmark in this area. What is becoming clear is that there is a "task typology" taking shape which has the ability to explain the patterns of specialisation, the offshoring processes as well as the wage levels associated with the added value of each component of the typologies defined therein.

Autor-Handel (2009) expand on the definition of tasks and, with the help of new data bases from the US, observe how task typologies hold the key to explaining wage structures and qualifications required above and beyond traditional labour categories that tend to be highly varied in terms of tasking.

Jensen and Kletzer (2009) also apply task typologies in order to identify the degree of tradability and the potential of outsourcing services, a further concern to add to traditional offshoring of manufacturing activities. Strategies for training and attracting human capital vary from one country to another according to the scale and position they aspire to in the "international division of business activities.

Debate on the degree of potential outsourcing and shifting tasks and jobs is often bound by socio-political concerns. As mentioned, such trends not only affect industrial sectors, but increasingly services too and those which require greater skills. Baldwin (2009) has adapted data from Alan Blinder on potential job losses in the US service sector pointing out that internationalisation is a two-way street and that forms of specialization enable economies to position themselves correctly to cash in on activities on a global scale.

Quality ladders: are all ladders the same length?

A familiar argument is that in the face of competition from the emerging economies and developing countries as a whole, the competitive edge of the advanced economies hinges to a large extent on quality. And as some economies increase the quality and sophistication of their output and exports, advanced economies have to keep moving further forward up the quality ladder through innovation, creativity, unfailing commitment to R+D+i, coupled with the detection of and response to new demands and preferences of the global consumer etc.

Recently however, it has been observed that these quality ladders may be of different lengths and shaped according to a given sector. Khandelwal (2009) shows how the ability to differentiate products through quality varies according to the sector or industry. The implications are therefore clear; the degree of response or competitive pressure in countries with cheaper labour will be greater in those sectors where the quality ladder is shorter, whereas the impact of this competition on production, employment and salaries will be lesser in sectors where the quality ladder is longer... provided that countries carry on moving up the ladder at a steady pace.

When it comes to explaining this, the contrast in the “length of the ladders” can be statistically correlated to R+D+I and productivity. Naturally enough, the role of creativity in order to lengthen the ladder, thereby overcoming the determinist view of its length, would represent the following rung in gauging differences in competitiveness.

Competitive positioning in times of crisis: the IMD *stress test*

One of the most widely known comparative analyses is that published by the World Competitiveness Center of the Swiss business school IMD. Its 2009 edition includes competitive positioning based on a wide range of factors and indicators and a further classification pondering only a sub-set of indicators with a “future dimension” from areas ranging from economic perspectives, good governance, entrepreneurial features and social factors, (flexibility, adaptability, acceptance, needs, reforms, social cohesion etc.) which aim to go into greater detail to pick up on the ability of economies to work off the hangover following the crisis and redirect efforts with the fundamentals of recovery.

Denmark comes out on top after the stress test, followed by other smaller and medium-sized Nordic economies, and by the Asian countries (including Australia and New Zealand). India and China attain better positions in the stress test than in the overall rankings, whilst others such as the US gets worse positions (to 28^{th} in the stress test). Spain drops from 39^{th} to 50^{th}, connecting to the fall in positions in the indexes of the World Economic Forum (2009) Global Competitiveness Report, in which the US loses the lead and Spain goes from 29^{th} to 33^{th} position as other European states in a fragile state of economic health such as Britain (34^{th}), France (44^{th}) and Italy (47^{th}) come well down the table.

All in all from a Catalan perspective it is interesting to see that smaller nations with an emphasis on export, which are flexible and with stable socio-political environments have come out at the top of the stress test, therefore being best equipped to take advantage of any recovery right away. Whilst acknowledging that it will be the performance of the major players, such as the US, China and Germany that will define the credibility of any global recovery, the underlying message is that it is important to link up to the changes in the model – and once again stressing features as greater orientation towards internationalisation, firmness and flexibility and socio-political cohesion with shared visions and projects – that reglobalisation should bring about in the terms discussed in the following section.

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3. New scenarios: deglobalisation or reglobalisation?

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Which new scenarios are being defined on the world stage – the relationship between the financial crisis and the “real” economy on a worldwide scale? Do references to an eventual deglobalisation have any ground? Or on the other hand is it feasible and/or desirable to “carry on” from where we left off before the crisis as if nothing had happened with the risk of falling for the same trick twice? Or is it more likely that a scenario of reglobalisation with deep-seated changes, which limit excesses and lay down more well founded alternatives, will be able to provide new opportunities?

In order to reply to the above in a systematic fashion, it is necessary to briefly review some of the macroeconomic and financial trends that have brought us to the current situation along with the management of the crisis. Needless to say, Works on the subject abound, so a summary has been made of those considered as having a greater relevance when shaping future scenarios.

Financial flows: from recent past to present... and on to the near future

What has happened to financial flows? In the pre-crisis years many theories were forged as to how surplus savings from certain emerging economies became the source of finance for cash-strapped advanced nations, headed by the US, and followed by Spain along with others such as the UK, Italy and Australia. 2008 IMF figures confirm these trends, despite falling commodity prices that dented surpluses in some countries coupled with the first effects of the crisis.

What effects has the crisis had on this trend? And what path will be taken from now on and with what implications? These are questions at the heart of a major controversy.

Some analysts were expecting that a key ingredient of the crisis would be a major depreciation of the dollar, once the (presumable) unsustainable reliance of the US on – abundant and cheap – savings from emerging economies was exposed. However, in the first half-year periods of the crisis, the dollar revalued given that its status as a "safe" currency outweighed other factors. Nevertheless, the US undergoing a drop in import demand, (along with other states reliant on outside finance, such as Spain), set off a series of "automatic" mechanisms which would reduce external imbalances that would make depreciation of the currency less necessary.

The above events gave fuel to those backing "benign" interpretations as to the reasons for "global imbalance". Dooley et al. (2009), having put forward a theory called the "Bretton Woods II" theory – according to which there would be a strategic complementarity of interests between China export needed of (helped by an artificially low exchange rate) receiving foreign investment (with an increasingly sophisticated technology) to modernize, and the US, looking to attract foreign savings and cheap and efficient relocation sites for its multinationals – insist that their analysis is still valid and indeed go on to talk about a "Bretton Woods II bis" or "Bretton Woods 2.1" scenario in which such practices would be taken up again.

Outstanding economists such as Rogoff (2009) argue reasonably that to try and/or go down this path would suggest we have learned nothing from the crisis, thereby condemning us to go through it again in the not too distant future. Blanchard (2009) observes how corrective scenarios forecast for the macro economy to deal with external imbalances – more spending and appreciation of economies with surpluses and, more saving and depreciation of economies in the red – did not take place in the time leading up to the crisis, giving rise to interpretations which state that "accountable" imbalances could have been positions of economic equilibrium – and it would necessary to wait and see if now in the crisis and post crisis such mechanisms were set in motion to further a "lasting recovery". Such positions as underlined by Rodrik make up the starting point for reglobalisation scenarios which will be discussed later on in this report as an alternative to the hazardous return to imbalances given "legitimacy" by Bretton Woods II (or others such as that of the "dark matter" mentioned in previous editions of this Annual Report).

Savings worldwide: from the "global savings glut" to "global savings drain"?

Another key element in the appraising dynamics of pre-crisis financial flows was that defined by the now Director of the Federal Reserve; Ben Bernanke (before he became Head) in terms of the well-known hypothesis of the global savings glut according to which an excess of savings in emerging trading economies and export of raw materials led to "over-compensation" of the lack of savings in the US and in other advanced economies. This gave rise to a period of low interest rates that according to many analysts (including Blanchard, 2009; Brunnermeier, 2009) encouraged an increase in the appetite for risk and other conditions which sparked off the crisis.

Taking the above into account, but from the opposite angle, Christian Broda et al. (2009) postulate that the scenario of the "global savings glut" could be morphing into a "global savings drain" as (mainly) emerging economies, which until now have been able to save, now find themselves on the one hand, less able to put by, (due to falls in trade surpluses and/or a drop in the value of commodity/raw material exports), and on the other, have domestic matters that need attending to, thereby limiting any extra cash that they may wish to channel into the world financial system.

A major implication of this is that in the same fashion that former abundant savings would have contributed to keeping interest rates very low, now, the lack of global savings – although a rise in savings as a precautionary measure in advanced economies does not make up for the loss in flows from emerging economies and the need demands on public policies – will press interest rates up, despite all short term efforts by central banks to keep them low. Some upward trends in long-term interest rates would seem to fit in with this analysis.

Interest and exchange rates

Expansive monetary policies may hold off the upward spiralling trend of rates for the time being, but midterm forecasts suggest an inevitable rise, which will be accentuated by the growing volume of deficits and national debts.

Upward trends in interest rates – the price of savings – lead to a number of drawbacks in times of recession. Then again, an *artificially low* rate has, to a large extent, been the cause of some of the factors that have brought the onset of the crisis, added to others such as the "anaesthetic" of savings scheme incentives of some advanced nations such as the US and Spain. Although times of recession are the worst times to cash in on savings, it is worth recalling the Keynesian "Austerity paradox" – in the mid-term, societies with a greater capacity and will to save can lay down the foundations for a more solid growth. This report will go on to discuss the role of increasing deficits and public debt within this trend.

As for exchange rates, although some pre-crisis analysts foresaw a depreciation of the dollar as a consequence – and symptom of the crisis – early figures bore out that the dollar was being used as a safe haven, which overrode any other concern, despite the US being considered the epicentre of the crisis.

The above point begs the following question: If the dollar's first response to the crisis of increasing its value is to be considered exceptional, how far will it depreciate when things return to normal? Broda et al. (2009) observe that paradoxically, any depreciation of the dollar that until recently was perceived – and at times "feared" – as a sign of crisis, could now rather be looked on as an indicator of getting back to business as usual, as a starting point for the necessary means of adjustment and desired recovery.

A digression: Who will take on the role of issuing high quality financial assets?

The US was always referred to as having a "competitive advantage" embodied by a financial system that was able to issue "high quality financial assets". Ricardo Caballero (2009) points out how major demand (mainly from emerging countries) for these assets has led to creation of a "balance" among the "external imbalances" with the collateral effect that pushed the North-American financial system into generating "synthetic assets", supposedly triple A or top notch quality, but which sparked off a series of abuses and frauds which acted to ignite the crisis. A crucial side to the current situation is how the system's role will have been affected when things get back to "normal". Will recent reforms pushed through by Obama's administration be enough to win back the credibility of the US in this role? And were it not to prove so, what alternatives would emerge to soak up capital looking for high quality safe/profitable returns? Could Europe step in here?

New international financial patterns

The onset of the crisis witnessed several changes that have later either been corrected or in other cases become the norm. On the one hand there was a rise in "home bias" with a drop in investments in developing nations which spread the crisis worldwide. Another and delicate economic and geopolitical question was how far this trend would have ended up affecting the ability and/or will to continue financing imbalances of the US and other investment hungry states – and in that case at what price – as well as eventual changes in the makeup of financial tools, where public bond issues are now more prevalent (than private ones).

Figures analysed in-depth by Brad Setser show that during this crisis, sovereign" funds of emerging economies have continued to play a pivotal role in financing US foreign debt, with a new twist: in recent months investment has been increasingly headed to treasury bond issues public debt in detriment to private entities, thereby contributing, to a major extent, to finance the huge debt bond issues in the bailout packages and/or stimulus programs being undertaken by the US and other advanced economies. Even though other figures show a recovery in savings levels in the private sector, (as a precautionary measure) in these economies, they are nevertheless helping mop up these bond issues, as a large part are being underwritten by emerging economies, which further underlines their role as sources of finance for the world economy – a pattern to be followed closely.

Some implications of the crisis and the post crisis era.

History has regularly proved that financial crises leave major scars in terms of increased public debt as a result of publicly funded stimulus and bailout packages pushed through as a response to such episodes.

Reinhart and Rogoff (2009) in a key study on the subject include among the relevant comparative variables the precise effect of crises on the volume of public debt in circulation. They point out that a major financial crisis can practically double what is owed (86%) on average of the public debt in circulation – a figure which is both worrying and worthy of further attention.

Indeed, the gravity of the current crisis coupled with responses which are proving more expansive than in previous bouts, (due to its global scale among other considerations) has led to a very marked trend in this respect.

Rises in debts and public deficits have far reaching repercussions. On the one hand, the sheer amount of money required by public spending policies of advanced economies – both in fiscal and monetary terms – may well be sowing the seeds for a inflationary outbreak (unless conclusive "pull out" strategies or reversals of these measures are taken). Other analysts foresee such inflation leading to depreciation of the dollar thereby reducing the value of its debts, (such as the "valuation effects" of 2003-2007). These would reach more critical levels when this risk is coupled with other political or geostrategic factors which hinge on the need seek alternatives to the dollar as the international benchmark currency, as alternatives may be found which diminish its major role in contracts and international reserves. Many point out that China could find itself "trapped" by its high commitment to greenback investments, which would make it a major loser, should the dollar depreciate, leading to a weakening of its international position and/or increased inflation, (or equally caused by a downward credit quality rating) of the US. All in all, there is a wide list of candidates to succeed the dollar (if it is not too hasty to declare the race on), each with their own weaknesses: from the Euro to Special Drawing Rights and even an Asian currency based on the Yuan.

Macroglobal scenarios

The complex nature of the current situation opens the future to a multiplicity of different scenarios, with each alternative harbouring its risks and challenges, whether worldwide or more locally for Europe or indeed, Catalonia. What follows is a summary of some of the most relevant patterns with a number of implications to consider.

A. Statistical deglobalisation

As commented earlier, in the short term, the reduction of economic activity acts directly on the usual indicators of globalisation, (trade and financial flows etc.), and especially within the context of worldwide recession with a higher degree of uncertainty than in previous episodes. The role of global production chains and a certain return to home bias mentioned before only exacerbate the major fall in globalisation markers. Some analysts add that oil prices – still far below highs of 2008 – have not hit the rock bottom levels of previous recessions (and the midterm outlook suggests they are set to rise if anything), and given the importance of this element in transport costs, it is fair to say that this factor conveniently explains the sluggishness in globalisation indicators.

Against this backdrop, the message is that looking beyond the markers with which we had got used to measuring globalisation trends, we now need to focus on the causative and qualitative factors underlying existing data, bearing in mind that "more" is not always "desirable".

B. Protectionist deglobalisation (repeating mistakes of the thirties?)

Although it is natural to see that extreme measures could lead to a protectionist deglobalisation which would see a repeat of the mistakes of the thirties, for the present there does appear to a be an awareness that the worst option is going down the same path that brought failure in the past.

The most "sober" of institutional statements insists that the lesson of protectionist ills has been well learnt, as well as that of adopting exceptional fiscal and monetary measures to dampen protectionist temptations – at least those of greater degree – thereby preserving an open, multilateral order which is a surety mechanism worth hanging on to. The truth is not always so simple: the WTO for its World Trade Report for 2009 has chosen as its main theme the delicate balance between commitments to an open global trade system in times of crisis and margins of flexibility given by governments within their "contingency measures" (such as anti-dumping rights, safeguard clauses and other safety valves) for tight situations. All in all a showing of pragmatism and realism does not necessarily mean backtracking on commitments in the mid-term... at least in principle.

In line with such cautionary, sentinel and supervisory approaches some snippets of protectionist measures have been gathered, that in isolation could be called "low intensity protectionism", although it is when they are deployed in unison that their effects must be appraised. The Global Trade Alert (GTA) in its first report published in July 2009 lists 67 protectionist measures brought in by 26 jurisdictional entities with potentially prejudicial effects for 142 states, whilst in the second report (September 2009), under the evocative title "Broken promises" (referring to the commitments agreed at the G-20 London summit), practically tripled the number of cases, with some of them being potentially conflictive. Consequently, it is necessary to survey how the commitments of the G-20 Pittsburgh Summit, to reject protectionism and to finish the Doha round of negotiations (now announced for 2010), fit with these short term frictions.

Indeed, recently within the framework for new proposals on environmental initiatives as part of new policies (the Green New Deal and such like), it has not taken long for concerns to arise as to whether quarter will be given to protectionist measures and temptations, as observed by Feldstein (2009).

The current situation also rekindles debate on the role of regional agreements: will new blocks further bonds as they did in the thirties or will we see a "multilateralising regionalism" as per Baldwin et al. (2009) and the WTO-IADB (2009)?

For a number of reasons – among which is the fact that the EU heads the table of goods exporters – any regression towards greater protectionism would particularly harm Europe. Furthermore, given that Catalonia, despite the adverse incentives of the "Spanish growth model" of recent years still leads in export volume and has more chance of succeeding in open, competitive waters, any growth in protectionism would be a bane which would impoverish the world economy as a whole, but particularly harm Europe and Catalonia both in terms of incentives and most likely in terms of results too.

C. Business as usual: (repeating the mistakes of the excesses 2000-2007)

On the other end of the scale there is the option of "business as usual" which considers the crisis as an unpleasant glitch, and once overcome, life can go back to a "Bretton Woods 2" syndrome or similar without having learnt even the most basic lessons on costs or chronic domestic savings shortages. As mentioned before, this scenario could shortly bring on new troubles which would once again oblige us run the risks of ignoring the lessons of history, whether more recent or further in the past, such as those depicted by (Rogoff, 2009). One of these lessons is that major and widespread crises are not simply cyclic phenomena but also catalyse new trends and developments in such a way that we come out of crises in a totally different way from how we came in. Indeed, the longer it takes to recognise this fact – by insisting in simply "replicating" the pre-existing situation – the longer and deeper the crisis will be.

This scenario throws up major issues, with not just the potential return of imbalances, but also of the incentives which caused them with their distorting effects. To this we must add the complication of not having learnt enough from recent history... with even greater penitence for having to go through the same mill again in a not too distant future.

It is vital to remember that the problem is not just centred on external imbalances, but also on the incentives generated in the past – that should not be generated again – of allocating productive resources to largely unsuitable productive activities more centred on "rent-seeking" than "profit-seeking" in open competitive markets.

Such a scenario would be potentially harmful and indeed of great concern, given that Catalonia has been penalised by the growth model of recent times, with focus on the "rent-seeking" ethic in detriment to "profit seeking" added to by further troubles affecting innovation and internationalization – as other climes have wooed investors with more attractive short-term incentives, despite their negative impacts in the mid-term.

D. Reglobalisation: new trends... more solid?

One scenario that may seem "halfway" between a protectionist deglobalisation and a Bretton Woods 2.1, but, as explained below, could be qualitatively different, is one that would come out of the adjustments to reasonable situations, taken note of, but which were unsuccessful at certain moments of the expansion phase. This would be more akin to a reglobalisation in so much as that it comprises of a more constructive scenario, focusing on more solid and sustainable balances, and despite leading to reductions in some statistical markers on globalization, such an approach is worthy of consideration from the point of view of judging positive values of globalization as a potential mechanism for prosperity, whilst cutting down on the negative impacts of past abuses committed.

Dani Rodrik (2009) refers to a partial "deglobalisation" – although some later works prefer to coin the expression "intermediate globalisation" or use such similar semantics. This concept is based on China being able to stay the pace in a less unbalanced world, combined with an overall allocation of resources to more dynamic sectors – so often as a result of foreign competition – without the artificial impulse of an undervalued Yuan, but rather with the input of industrial policies (such as those which formed the cornerstone of other Asian successes) and more centred on internal spending, including higher consumption (and welfare) and more social protection, which would alleviate pressure on the need to save. Prasad (2009), in a similar vein, refers to the need to "rebalance" the growth of the most dynamic Asian economies.

On the other side of the fence the US, (and, due to recent shortages in savings and over-reliance on foreign capital, other advanced nations, such as Spain and especially Catalonia could be added) would experience less external imbalance, save more and above all reallocate resources to traded sectors – which are subject to international competition and associated pressures on innovation and costs – taking over from the former star of non-traded activities, which not only limited productivity and creativity, but were also a melting pot, tarnishing models and values. Indeed, for Catalonia, being able to get into such a new groove is not just interesting, but important too. It must be mentioned that for such a case, perhaps some globalisation markers would see a drop in statistical terms, but given that to a large extent this would be accounted for by replacing such pernicious excesses with more solid foundations, it would be better to consider such a case more constructively as one of reglobalisation rather than using that of deglobalisation which has far more pejorative connotations.

Anatomy of the reglobalisation

The fashioning of this scenario of reglobalisation ties in with the classic arguments put forward on how to deal with external imbalances, which were neglected during the previous expansive phase prior to 2007-2008. According to traditional wisdom, economies spending above their output such as the US and Spain have to either reduce spending and/or raise production as they can no longer "live indefinitely beyond their means"... despite arguments and expectations which foresee foreign finance as cheap and indefinite. On the other side, those economies producing more than they spend, with subsequent current account surpluses and capacity to finance the rest of the world such as China, should raise spending in relation to production. Classic approaches recommended constrictive policies and depreciations in the former group of countries, with just the opposite (higher spending and revaluing) in the latter group to bring both back to a state of greater balance. Such adjustments would cheapen produce from states in the red and raise costs of goods from states with surplus, adding further to the balancing act. Incidentally, this trend would – provided it accepted a major appreciation of its currency – see China take on the role of "global responsibilities" – weakening pressure on the Euro as the main – if not only – currency to act as a bulwark to the fluctuations of the dollar and notably its depreciations, having China share the "burden" of exchange rate adjustments in relation to the greenback..

The abovementioned policies would bring the spending of each state nearer domestic output levels, thereby reducing external imbalances. Blanchard (2009) recalls that such recipes and their common sense approach were neglected in the heady days of the expansion. Such adjustments in turn would reduce globalisation indicators, as they would reduce the need for finance and trade imbalances, but this would represent a "statistical" deglobalisation, whilst to a large extent recovering a more solid and sustainable balance. The basic points of the "G-20 framework for strong, sustainable and balanced growth (G-20, 2009)" also mention of these approaches.

Reglobalisation and change of model: new incentives

For modern economies we must add a further dimension to adjustments, which is so important that it has deepened the downward spiral that led to the crisis, namely that the distinction between traded and non-traded goods is crucial when there is a clear divergence of price trends from one group to another, as this greatly affects investment incentives. When non-traded sector prices rise far above traded ones, there are greater incentives to allocate resources to the former rather than the latter. The attraction of big returns in the non-traded sector make investments in the traded sector seem "heroic", although these determine competitiveness, require innovation and quality in order to play on the global stage, whereas some non-traded sector tasks are less productive and therefore economies heading down the non-traded road often experience slower rates of productivity growth.

Signs of improvement in economies such as China are linked to a certain extent to incentives to opt for traded goods. Figures bear out how the most sophisticated technological sectors are those which grow fastest in revealed comparative advantage indices, (i.e. deduced from the real behaviour of foreign trade) and in the case of China, this doubtless takes on board an element of concerted political response, but which has also been helped by such incentives as those mentioned above.

If we add to the problems of the US (with its foreign debt and lack of savings) a rise in real exchange rates (due to the strength of the Euro and a higher rate of inflation), it is easy to appreciate that for Spain as a whole and especially Catalonia, incentives have been distorted leading to a model heavily focused on non-traded values. This model has fashioned an environment of adversity to competition and internationalisation, and therefore it is necessary to take advantage of the crisis to redress the balance. Such changes represent prime ingredients ("essential components") in "changing the model".

As for exchange rates, when real rates rise as with the case of Spain from 1999-2000, this not only pushes up domestic goods prices in relation to foreign ones, (leading to trade deficit), but furthermore – as traded goods are more easily pegged to those of foreign goods for competitive reasons – this makes resources allocated to them less profitable (being cheaper due to pressure from foreign imports), thus incentives and returns on non-traded products attract increasing amounts of capital.

Which goes to explain why China, with a constantly undervalued Yuan has assisted channelling of resources to the traded sector, with the subsequent surplus etc.

In order to appraise the extent of changes that may take place in a reglobalised world, it is important to bear in mind the variables of traded/non-traded ratios and exchange rate values. For economies like China, greater commitment to internal demand (more domestic spending, among other reasons to make up for the slump in foreign demand), would cut trade surpluses more if coupled with a real appreciation. For

Spain, redressing the balance of incentives crucial to spark off a real change in model requires not only – or not even – depreciation of real exchange rates – to an extent hinted at as price rises remain below the Eurozone average for 2009 for the first time since introduction of the single currency – but also a drop in the relative price of non-traded in relation to traded goods thereby reducing investment incentives in the former and encouraging grounds for banking on the latter.

Abe (2009), as part of a Brookings Institution publication, points out a number of implications for world trade as a result of such changes in focus. For states that have undergone imbalances with real revaluation, such as the US and Spain – and here arguments are highly applicable to Catalonia given its greater volume in traded goods with respect to Spain – it is paramount to push exports, among other things in order to hook up with increased demand from emerging economies which until now have enjoyed surpluses and where the importance of realigning the geographical guidelines of Catalan internationalisation resurges again.

All in all, a key conclusion from the analysis of reglobalisation is that it is neither necessary nor desirable to "return to the conducts of the past", on the contrary, we should exploit new circumstances and developments to prepare for a "restructuring of global economic activity" (Abe, 2009), which will enable recovery followed by a wave of more solid economic and socio-political growth.

Within this scenario, the revalued role of the EU, so often underestimated now stands out. Now Chinese expansion measures are taking in commitments to social protection, whilst in America the Obama administration is trying to succeed with public health where Clinton failed. Social cohesion is about coming into line with the competiveness of both places, getting closer to one characteristic that is different from the European model. Moreover, if the Euro manages to navigate the rapids in the current turbulent economic seas –as per analysis of Pisani-Ferri and Posin (2009) – and emerging economies learn the lesson on the importance of the quality of institutions; perhaps our European model will have to be reappraised without bounds.

Executive working version for the 5th OME International Foresight Forum

4. Crisis and underlying changes

4. Crisis and underlying changes

Although we are faced with an economic situation where uncertainties are at a peak, underlying transformations are still in happening, and which the present crisis is affecting in terms of intensity and pace, however they continue to progress precisely because of their underlying nature; speeding up and slowing down, giving rise to the appearance of new phenomena, developments and opportunities.

Growth of the economic and geopolitical role of emerging economies: from the G-7 to the G-20 and on to the G-2?

The role of emerging economies, led by a subset of countries – notably in Asia – has become clearer in light of the crisis. Both in geopolitical terms, with the transformation of the G-7 into a G-20, sanctioned now with the Pittsburgh Summit, as in economic ones, where post-crisis growth forecasts still see China and India in the lead.

The current recession may see a variation in effects not only on the speed and impact on growth, but also on competitiveness of nations in the long term, according to their public, private, individual and collective responses.

Today it is coming to light that a framework of cooperation and commitment between emerging and advanced countries to boost their economies, (at the same time avoiding protectionism), is the most beneficial way forward for all. Furthermore, despite current uncertainties, some nations may even find the way of achieving a more sustainable competitiveness in the long term.

A key historical challenge now and in the near future will be how to bring about effective redistribution of political power – that has come out of economic and financial developments –without the armed conflicts that have been the traditional way of achieving supremacy. In this terrain the experience of the EU can be considered as singularly relevant.

The eventual transformation of the economic and financial might of emerging nations into political clout, to create a more multi-polar world is a truly historic challenge. Recently, Kevin O'Rourke (2009) has aligned results of comparative studies on successive waves of globalisation in order to illustrate the empirical regularity of the historic link between ongoing stability of both the flow and security of international trade and transactions and the presence of a major, dominant power underwriting such conditions. Nevertheless, he also observes that when political power breaks down and rivalries and struggles develop, this often has a detrimental effect on the legal and physical security of routes and transactions.

This all goes to making the challenge of global governance, (which includes ensuring institutions are matched to circumstances), an altogether more delicate affair. And at present there is neither a lack of geopolitical nor economic tension at present to contend with. Indeed, in June 2009 the four BRIC countries met in Yekaterimburg (Russia) to stake their claim for a more multi-polar world. In any case however, with the aspirations of emerging powers on the one hand and doubts of the major power as to as to whether or how to bend positions to acknowledge new realities on the other, Europe for its part must avoid the G-20 becoming a de facto G-2.

Changes in demand patterns: consolidation of low-cost society

Deep seated changes in demand habits are taking on new dimensions within the context of the current financial and economic crisis.

In addition to the unprecedented ageing in the West and in some emerging economies in Eastern Europe and China and growing urban populations, we must also consider the uncertain future of pensions and consequences and changes in demand patterns these factors produce.

The current crisis is contributing to notable changes in the world's middle class. Some analyses point to a decline in this segment when referring to advanced economies. Now a new, more polarized system is being forged with a smaller class of technocrats, far richer on one side of the fence than on the other, with its classless social *magma* comprising of former middle and low class elements. The low-cost society model is consolidating its position with business models that blur the boundaries of the traditional segments. A variety of sectors such as tourism, furniture, fashion, sports goods and DIY are bearing witness to this movement.

Here is should also be mentioned that there is a noticeable rise of inequality within and between different states.

Then again, it is also considered that the rise of a new middle class in emerging economies is held to be a vaccine against the worst throes of the crisis.

The question is also being considered today that if America is no longer to be the driving force behind world consumerism, then who will supersede it? Two answers are now commonly mooted here: firstly, that Asia will become the new centre of gravity, (China and India alone now have more than one billion people with incomes nearing those of middle class level). When growth picks up and homes start bringing in over US$20,000 per annum in disposable income (adjusted to ppp), this will lead to a boom in private consumption. Indeed some forecasts situate China as the third consumer economy after the EU and US in the next decade, with India set to come in behind Japan, leaving 3 of the top 5 major consumer markets in Asia. Secondly, the consumer map could become more diverse, despite continued upward growth of China and India, provided governments" policies and behavioural patterns continue to leave high rates of savings in other emerging economies.

One factor which has led to the middle class being dragged down in numerous countries, especially the most developed, is the fall in purchasing power of millions of pensioners. This group and their incomes have been severely hit by the world financial crisis with consequent modifications in spending volume and patterns in population segments that were innate consumers.

Expected future pension incomes have been scaled back as the structural crisis has dented public pension systems, whilst the financial crisis has hit private pension funds hard, while governments find themselves having to shoulder the burden of bailout packages too. In the future these factors will all affect the split of family savings to meet costs such as children's education or being able to get by in retirement.

Another factor to note here is that unemployment is rising whilst salaries are waning, as the crisis has led to big job losses, less well-paid and more insecure employment.

Worldwide unemployment could hit 30 million by 2009 as figures have soared to reach 5.8% of the workforce. The outlook for the future of employment according to future scenarios painted by the ILO is at best bleak. Commitments of the G-7 and other economies to aiding financial systems and provide stimulation packages will be key in order to prevent a major rise in jobless that could top 51 million if economic recovery has not kicked in by 2010.

Against this backdrop, wages are falling which is adding to a trend of the 80's recession which turned the working class into the working *poor* as manufacturing operations fled to the third world, forcing workers into the lower-paid services and retail trade sectors.

Another important population segment to reckon with is that at "the base of the pyramid" which also represents an opportunity for business in times of crisis and which can help consolidate low-cost products that cover specific basic needs. Despite low individual incomes, collective total spending amounts to some US$2.3 billion, and in some cases, this segment is starting to accumulate incomes in order to spend it on less essential products. Money at the base of the pyramid has been rising by 8% per year, and even in the current climate of crisis further growth forecasts tip the amount to hit US$4 billion by 2015. Indeed, some analysts state that this may be the driver behind the next phase of global trade and prosperity and a source of innovation to benefit poor and rich nations alike.

The base of the pyramid has to rely on micro-credits, which until now have weathered the storm of the financial crisis relatively well. 2009 forecasts point to further, but slower upward growth in micro-credit asset sources. The crisis has had uneven effects on this form of finance from one nation to another, seeing East European institutions hit harder, whilst The Middle East and North Africa have held their ground better.

The crisis has managed to alter the way consumers think and buy as they learn to become more frugal (having cut spending due to the breaks put on credit by banks), and experts are observing a new logic in our buying habits.

Two new trends hardened by the crisis have seen consumers are getting rid of the middle-men, whilst at the same time consumption is *dematerialising*. More culture and communication and fewer *physical* goods and property are being consumed but with greater social and environmental concerns, cutting out the middle-men and getting closer to the hub of production, although as mentioned above, consumers are becoming split into two groups.

In light of the above trends, enterprise should take note off the following:

a. A long-term drop in upward consumer spending, so firms that have based strategies on market growth, particularly in mature products, will now need to fight for market share or compete in new segments.

b. Investment in Asia and consumption is growing faster in China and India than in advanced markets.

c. Enterprise should take more heed of the grey market. In 5 years, more than half US spending power will be in the hands of the over 50s, while the proportion is set to rise in the EU and Japan too.

d. New ways must be found to create affordable luxury products, because a fall in consumer budgets does not mean a drop what people aspire to attaining.

e. Strategies must change to keep clients – these may be new strategies or ones brought back, such as the examples given below:

   1. Increase discount coupons

   2. Create new low-cost product ranges (such as those of Danone)

   3. Accept deferred payments for products (e.g. Sears of the US)

   4. Improve complicity with customer offering the possibility to return goods if they lose their jobs.

   5. Get involved in ecological or healthier products, but without passing on premiums.

   6. Increase internet links: recommendations, consumer price comparison pages, downloading of coupons, cheap product searches, money-saving tips, DIY stores etc.

f. Take into account that some sectors, such as those listed below, maintain and even increase their job creation potential in post-recessionary periods.

Global connectivity – Immunity

ICTs have consolidated the organisation of work, production and innovation in networks, broadening traded activities that can be physically or virtually exchanged.

Experts foresee continued health in the information and communication technology and consider any firm stretching its ICT potential will win out. If prior to the crisis ICT sector growth was thought to be about 2.1%, 2009 forecasts lower the figure to 0.2% for this year, with 2.9% growth expected in 2011, within reasonable estimates.

Growth of mobile phones in developing nations has not been hit by the crisis and major markets such as Brazil and India returned increased numbers of subscribers in 2008.

Governments are also getting involved to staunch repercussions of the move towards next generation networks (NGNs) – which can simultaneously transmit voice, data and multimedia services – whether it be via investment in nationwide infrastructure or including broadband network facilities in economic incentive packages.

Globalisation of knowledge stands its ground and talent as a key competitive factor gets a makeover

The rise of *average* skill levels due to constant channelling of tasks from advanced to emerging economies has made it clear in the West that there is greater pressure on human capital stemming from current demographic dynamics. India, ASEAN and China will also play a greater role in providing talent worldwide in the coming years. The number of university graduates from these emerging nations is rising at 5.5% per year, compared to just 1% in high income nations, a pace that can be sustained and given that, as mentioned, the spread of ICTs is not set to slacken, this will enable greater distribution of labour linked to knowledge, thereby contributing to upward growth in the world talent market.

Job losses due to the economic crisis and lack of future employment prospects have led many immigrants returning home. Although the figure is small in terms of the net immigration of so many millions in the last five years, this trend is becoming established in Asia and the Persian Gulf.

That said, it should be pointed out that multiple and dynamic migratory talent fluxes will take place. While traditional migration to developed nations wanes, both external and internal migrations are rising in emerging states. However, talent migration, on the way up, will head only to certain regions and cities.

The phenomenon of *brain recovery,* which has led to talent being concentrated in certain regions or cities, has been partly sparked off by the current economic crisis, and against this backdrop the global talent war could become more entrenched as firms – especially in emerging economies – go about tackling aspects of skills shortages in candidates. Groups such as TATA, Ayala (Philippines) or Koc (Turkey) are now developing training programs in different business areas in collaboration with universities.

The hiring of international talent by firms in emerging countries is set to rise in light of the crisis with the consequent job losses this will represent in Western markets.

Future competition and economic development will be more closely linked to talent management. Therefore enterprise has to draw up strategies to create, attract, develop and hold onto talent as the rules of the game change.

It must be pointed out that the diversity and complexity of successive generations working together is also growing as generation X rubs shoulders with the born digitals or generation of young people who regularly use ICTs. The greater complexity brought about by new values, different cultures and several disciplines will require more expert management and introduction of new models.

Meanwhile, learning is becoming more informal. *Learning by doing*, organisation of creativity and retaining talent are now the major new challenges to competitiveness.

The current economic crisis is taking its toll on education systems through freezes and cuts in public education services once again, however the impact of the global financial crisis has been less evenly spread worldwide. While Europe, North America and some Asian countries (Japan and Taiwan) have suffered, others have been only marginally affected until now.

The bigger and more prosperous countries will benefit from stimulation packages largely directed at the education sector, whilst the more vulnerable or weaker ones will rely much more on loans from international organisations such as the IMF or the EU.

The spread of the application of new technologies in education, primarily higher education, could act as an important trigger to mollify the current economic situation.

Many countries are witnessing a greater demand for public education due to the downturn just as governments are faced with post-crisis budget reductions that could see a cut in resources earmarked for education.

The recession is providing numerous new opportunities in the education sector for creative products with demand set to hold up and indeed grow into the future.

Just as in health, where an important shift took place to take on board ICTs, with the resulting global trends boosting demand for health services, education may well be set to see a similar convergence. That said, education still lacks a clearly defined business segment, like that of the public-private symbiosis seen in healthcare. It is here where a new R+D+i horizon is set to appear.

A greater need for innovation as a driver coupled with technological hybridisation

Technological progress is an interdisciplinary phenomenon. Although private investment in R+D+i and new project numbers are dropping with the recession, this does not weigh down the chances of innovation in combination with or in relation to other technological spheres, (ICTs, clean energy, bio and nanotech) in order to create new business opportunities. Progress here will continue despite sluggishness in getting wares on the market.

Productivity is increasingly focused on intellectual labour and services with clear implications for enterprise: when resources are scare, R+D+i investment must be protected. If efficiency improving measures are to be introduced, (joining up research structures, rationalising project portfolios, reappraising licence agreements) at the same time investment should be doubled on those projects with the greatest potential in a post-crisis world. Some analyses have observed that those firms investing heavily in R+D against the flow i.e. during recessions tend to overtake the competition in times of recovery.

The potential of nanotech applications has led to talk of a new industrial revolution. Investment in nanotechnology in developed regions such as Europe and the US is considerable as governments continue giving priority to technologies they believe are destined to be at the forefront of economic growth.

China, South Africa and India have invested heavily in nanotechnology. It is increasingly clear to developing countries that they must foment nanoscience, especially for waste water treatment.

Growth forecasts for the nanotechnology sector are highly positive. It is thought the global nanotechnology market will top US$2 billion by 2012. Experts believe the fields of nanotechnology and nanobiology are converging, thereby triggering off production of substantial amounts of new healthcare equipment and drugs.

Products with nanotechnological inputs in the car industry make up 4% of the market and just 2% of the agro-food sector, while it is foreseen that by 2012 products designed to combat water, air and soil pollution will take on a bigger role.

Nanotechnology may also have a major part to play in the struggle against the current world food and energy crisis. Advances recorded in microscopic engineering could lead to increased shelf lives, detection of plagues or pollutants and soaring yields. Nanotechnology could enable world energy needs to be met by renewable sources, such as solar energy by 2028, thereby severing world reliance on fossil fuels.

The financial crisis has also hit the biotech sector. In the last 5 years a total of US$12 billion (€7.8 billion) has flowed out of biotech funds in the US alone with €2.6 billion lost in Europe since 2002. Most companies are large concerns, though the rest are smaller firms or in debt. This is why the sector has needed to make serious, major changes and rethink research strategies.

Biotech firms have therefore started to sign agreements with pharmaceutical companies to concentrate on R+D, whilst decentralising other areas.

Meanwhile, the crisis has also led to a reduction in researchers on the payroll of the pharma industry giants – between 2007 and the end of 2008 the sector declared plans to restructure that would affect some 42,000 jobs in Europe and the US – meaning the closure of many research centres. Indeed these two regions have seen 18 R+D locations shut in the last 18 months, with a further 14 cut in emerging countries.

All these changes suggest we are moving to a new paradigm in research... the science of the future will be networked science.

Knowledge that endures beyond the boundaries of the organisation

The combination of ICTs and the millennium generation will enable skills to reach beyond individual talents: as today talk revolves around crowd wisdom and collective intelligence, set to play a leading role in the creation of value with outsourced communities co-designing and co-producing.

Where innovation systems become more open and more complex, special care must be given to the sphere of intellectual property. Furthermore, the consequences of changing the ways we collaborate are especially relevant: namely in an upward spiral of commoditisation of technology which needs to be highly active when it comes to managing the innovation pipeline.

Economic competition in the future will be closely linked to the ability to generate knowledge and to apply it to productive processes i.e. innovation. The economic model of the future will be centred on innovation, entrepreneurial flair and networked labour.

For this reason networked labour is a key strategy in a reglobalised world. The most important and most exclusive element of innovative economies is their social and professional network: the interconnectivity, diversity and interdependence of people, businesses, institutions and groups, where all the above elements act as the keys to growth and favour the generation of useful ideas and innovation.

A more polycentric world: new poles of talent and technology where public policies have a renewed role

As stated above, the knowledge economy will develop with the help of creative and digital talent in the coming decade, agglomerating in certain metropolitan areas across the globe.

At present the poles of creative knowledge are spread among the US, Western Europe and the advanced Asian nations. Nevertheless, the differential impact of the crisis is leading to a growing trend in improvements in the location of talent poles in emerging states such as India and China which will enjoy more prominent positions in the near future.

The current crisis has affected the OECD countries in a moment of transition towards service economies based on knowledge and investment in intangible assets that is just as important as investment in machinery, facilities and real estate.

This recession has severely knocked public and private R+D budgets in this region, which, in turn, has damaged the trend towards a more polycentric distribution on talent, technology and innovation.

One of the clearest patterns stemming from the crisis acting upon multipolar development is the growing influence of governments in enterprise, as they reappraise their role within the scenario of a reglobalisation. Stimulation packages are springing up all around and support is being given to specific sectors and businesses, whilst they push through regulatory reforms.

Therefore the crisis may represent a source of opportunities to be found in economic stimulation packages (especially in new markets), in providing innovative service and offering solutions to meet the global challenges.

For enterprise, this throws up two consequences when developing strategies: firstly business must be prepared to compete in an environment with new regulations, and secondly it must acknowledge the growth and importance of the public sector as the main client for a range of industries, due to the sharp rise in central spending.

From goods trade to task trade in a reglobalised world

The shrinkage in world trade cited in section 1 has been exacerbated by the role and development of global production chains, where countries having increasingly specialised in tasks and segments of activities along the value chain.

Such specialisation in tasks linked to characteristics of offshorability and degree of tradability, provided by ICTs has significant implications in terms of the distribution of economic activity and incomes too, which can no longer be explained in the traditional terms of skill levels, but rather by task typologies, as mentioned in Section 2. This has not only had a marked effect on the manufacturing industry, but also on services as well and in some cases those with a high skill level.

As economic activity picks up, the intensity and speed of these changes in advanced economies will be conditioned, as discussed in Section 1, by how far incentives to operate with global production chains are maintained i.e. that the only deglobalisation of the future will have to be a mere “statistical” one. Further to this, for a country to be able to rehook up to these chains in a reglobalised world it will be necessary to take into account that internationalisation is two-way and that forms of specialisation enable economies to position themselves in the right way in training and to attract talent as per the new dimensions which these new task typologies offer, thereby harnessing activities with a global impact, as analysed in Section 2. They must also develop strategies to slip more effectively into global chains and with greater creativity and innovation to harmonize with changes in demand patterns, as referred to earlier.

Latent pressure on natural resources

Prior to the financial and economic crisis, the rise in demand for commodities from energy to food, led to a major increase in prices. The situation then changed with the recession. Taking oil as an example, there are basic restrictions in supply which could become more apparent investment in production capacity fails to materialise with the crisis. Excess capacity in the oil market could bring us back to the levels of 2007, (when prices hit their highest levels) between 2010 and 2013 (HBR, 2009). Water resources are also coming under mounting pressure due to population growth, industrialisation and climate change. By 2030, 40% of world GDP and 85% of the planet's population will be in areas where demand for water outstrips supply.

As for basic products, The World Bank (GEP, 2009) forecasts that in the next two decades a slowdown in demand for basic commodities will result in reduced GDP growth, and although it foresees prices of these basics falling in the short term, estimates them maintaining higher levels than those of the nineties.

To what extent demand for basic products will fall away and how easy it will prove for supply to keep up with demand will, to a large extent depend on policies, the pace of technological change and other external factors, such as climate change. For example, demand for metals depends greatly on China improving its efficiency. At present the intensity of use of metals in China is four times that of the advanced nations and twice that of other developing countries.

That said, the world financial crisis and the economic downturn have had important adverse effects on access to food, triggering a major world food crisis. This food crisis has been further exacerbated by the effects of climate change and has brought about new limitations and conflicts centred on access to natural resources.

Although the food crisis has been with us for several years and deepened as prices rose from 2004 – 2007, the financial crisis has now restricted availability of capital at a time when it is vital to invest in agriculture, above all in emerging and poorer countries.

Future food requirements will undergo important growth: if current population growth forecasts are born out, it is calculated that the world will need 50% more food by 2013 and twice current supply in the next thirty years. This means competition for natural resources for agriculture – in other words, fertile land and water – will also intensify.

Decline in long term investment capital has triggered a depreciation of natural resources, which has led to acquisitions of land by governments of states with potential food shortages in fertile areas of other countries. In light of the financial and food crises, fertile land has therefore become a strategic asset for governments and multinationals and a number of governments have already signed accords to buy agricultural lands in Africa, Asia and Latin America.

Faced with this situation, enterprise needs to develop new strategies for scenarios where prices of resources will push up, experience volatility and shortages too.

Pressure on natural resources will also accentuate the need for the corresponding innovation and technology to sustain current models. Development of new resources throws up many challenges as well as opportunities in new markets, especially for energy and raw materials. Indeed the environmental sector has a high growth potential both within local and international markets, above all in waste water treatment and use of renewable energies. In addition, there will be new opportunities for more efficient production methods that save on use of raw materials, (as all in all there will be greater competitive pressure to reduce costs).

Beyond simple survival: intangibles and internationalisation set to remain key factors in business models

The core value of any enterprise revolves more around its non-material or intangible assets than its material ones, with creativity and innovation taking centre stage as technology increasingly *commoditises* (as mentioned above) within a context of the ongoing, underlying changes referred to earlier.

Intangible assets have gone from some 20% of enterprise value on the S&P 500 index back in 1980 to 70% at the present.

Indeed, the role of creativity in the current context is crucial. Efficiency itself is necessary, but not enough in a hyper-competitive environment, which has been honed by the crisis. The axiom is “to be the best is not enough you have to be different”. We are now entering times for new opportunities and strategies to improve competitiveness, and in this way, given that the current world economic downturn has strafed countries unevenly, and if it were not already a priority, it has also, increased the need for internationalisation and diversification of markets to spread risk more and hook up to those hardier markets with a higher potential for recovery. The second section of this report takes a closer look precisely on those markets and sectors with interesting growth potentials.

Executive working version for the 5th OME International Foresight Forum

5. Map of global opportunities for Catalan enterprise

5. Map of global opportunities for Catalan enterprise

Despite the current global outlook, the crisis has had uneven effects on both sectors and countries alike. While advanced nations were set for an between 3-4% fall in GDP in 2009, emerging and developing economies were forecasting slow growth of some above 1%.

Against such a backdrop one of the OME's main aims is to spot short and mid-term international business opportunities for Catalan enterprise based on a dynamic *map* of business opportunities or openings that is set out in the following pages.

The international markets selected take in some 30 countries including both advanced and emerging economies from round the world, chosen not only for their current suitability for Catalan business activity in recent years, but also their future growth potential. A further factor is the composition of strategic sectors in each of these markets, from the point of view of their domestic growth potential, as well as other considerations, such as how well they match up to what Catalonia can supply them or their technological relevance. The map of business opportunities offers a wide selection in potential entrepreneurial openings, based on a research methodology that has involved the combining of both qualitative and quantitative analyses.

Eastern Europe and Russia

The countries of Central and Eastern Europe have been the emerging economies hardest hit by the international financial crisis seeing a reversal of capital flows and sharp falls in exports. Nevertheless, in recent months a series of factors, among which we can include financial backing, have helped to increase confidence in the zone. All in all, this could contribute to a slight improvement in growth perspectives for the Central and East European region in the short term, as underlined by the IMF July 2009 forecasts, which put projected growth locally in 2010 at 1.8%.

The **agro-food industry** is a key sector in both Eastern Europe and Russia. Despite the effect of the current crisis on growth, the region still has a high mid-term potential, due to the inability of domestic production to satisfy local demand (notably in Poland, Rumania and Russia), coupled with changing consumer preferences (demand for greater variety and healthier foodstuffs, and in Russia demand for premium or luxury produce), as well as the need for improvements in technology. Indeed in the period 2004-2007 many Catalan products such as meat, fruit, fungicides and packaging, bottling/canning equipment among others are already present in these marketplaces.

Automotive components have played a significant role both in the Catalan export trade as well as in the makeup of imports flowing into Central and Eastern Europe during recent years, which is considered as a whole due to its privileged location, near to centres of vehicle production and demand in Western Europe and Russia. Except in Rumania, the sector has matured, and therefore has been hit harder by the crisis as a resul; Despite this maturity, which has seen notable salary rises in recent times, there is still a certain potential in the mid-term for segments such as cable and wire connectors, electronic components and coach building (Poland), advanced processes of plastic moulding and high precision part manufacture (Czech Republic) and precision panel building (Hungary). Russia suffers a number of handicaps when it comes to building up an integrated, vehicle industry: lack of clusters, deficient logistics infrastructures and a rudimentary level of technology, which explains why international component manufacturers have not set up there on a large scale. Nevertheless, once the crisis is on the wane, Russia has the potential to become one of the world's leading markets in the sector due to its small vehicle park and growing trend for international makers to grab a share of the domestic market.

Poland, Hungary and The Czech Republic have a sizeable **pharma industry**, with factors such as research facilities, labour and social circumstances (ageing) that have attracted multinationals to the region. Although there have been sizeable exports from Catalonia to these states recently, little has been shipped to Russia, which nevertheless has imported large amounts of drugs, which seems to suggest that not enough has been made of business opportunities in a sector with one of the highest growth potentials. Lastly, the Romanian pharmaceutical sector is relatively underdeveloped, with a low production and few modern facilities, where local output, based on generic drugs, only accounts for 20% of domestic needs, leaving a clear opening for imports that Catalonia has yet to really exploit, throughout the recent years.

In the **environmental sector**, Russia's intensive heavy industrial activity along with growing ecological awareness, point to potential high investments in anti-pollution technologies, and although the current downturn may have put the brakes on demand temporarily, there is still a bright future for environmental control technologies applied to air and water pollution along with those focused on renewable energies, set to jump from the current 1% share to 4.5% by 2020. Indeed, East European EU states will be obliged to adapt to EU regulations, and for such ends Community funds are still available for the sector specially for water and waste management.

Latin America

Throughout the first half of 2009 it was possible to detect how economic activity was getting increasingly sluggish, which is explained above by the fact that the slowdown in world trade has hit regional production more than originally foreseen. Nevertheless, the most recent projections hint that in 2010 economic activity could pick up faster than first thought. Mexico and Brazil would lead the way to recovery, followed by Colombia and Chile, while Argentina's performance would remain discrete.

As a result of concerted efforts in recent years to modernise, and raise quality and safety standards in the **agro-food** industry throughout the region, overall a number of specific openings can be perceived now in bottling/canning, packaging, containers and industrial freezers. Indeed, in Brazil, Argentina, Chile and Colombia, Catalan exports in packaging and bottling/canning won significant market shares in the period 2004-2007, while Mexico has become an important market for Catalan machinery and food processing systems in those years. Furthermore, once over the hurdle of limited access to finance in the region, in the mid-term any efforts made to modernise the agro-food sector should lead to a major, renewed demand for equipment and technology. Not only this, but a rise locally in family incomes is changing consumer habits, increasing spending on fruit and vegetables, organic and pre-prepared foods, snacks and luxury/gourmet products with a higher added value. Indeed, the wine-making sector has put major investments into Argentina and Chile, whilst growers remain very interested in all the latest technological advances.

The **automotive component** sector has enjoyed a healthy development in Brazil and Mexico in recent years. The recovery of intra-MERCOSUR trade in the period 2003-2007 and the rise in domestic sales gave a great boost to Brazilian component production. Once the sector bounces back from the effects experienced worldwide of late, Brazil could become a market with high potential due to factors such as the expansion of the domestic market and consolidation of the country as the main vehicle manufacturing base in South America. In Mexico development will rely, to a great extent, on US vehicle demand. The future of the American General Motors and Chrysler that accounted for about half of (2008) Mexican vehicle output, will determine the future of the sector there. Then again, output could also pick up if the industry takes advantage of potential export markets in neighbouring Central American and Caribbean states.

The **health sector** has one of the largest growth potentials of any in Latin America. Demand for pharmaceutical products has shot up in recent years in the region, and despite development of domestic output, notably generics, there is a reliance on imports, which Catalan firms have been active in throughout the area. Leaving aside generics, phytotherapeutic agent based products, dietary supplements, cosmetic and beauty products are also tipped as major avenues of business to exploit in these markets. In fact Catalan exports of cosmetics to Argentina and Colombia have won a sizeable share of a buoyant import business, while respectable market shares were attained in Mexico and Chile during recent years. In the short term, the crisis may interfere in personal spending and affect import trends for these goods, but when the economy picks up again, the opportunities in this sector will abound, given Latin American consumer preferences for health and beauty products.

As for the **ICT sector,** Brazil generates 45% of all Latin American investment. Openings in this sector will have to come with a turnaround in the current low penetration of technological products, (such as PCs and broadband services), the public sector and the introduction into the market of triple-play[1] and quadro-play[2] services. In the software and related services market, Brazil is a net importer and occupies a leading position in the world marketplace. Despite Mexico's structural backwardness in the software trade, its proximity to the US software market, coupled with the size of the domestic one, honour it with a widespread growth potential. Openings here could take the form of infrastructure management, security and conventional services for enterprise. In Argentina, development of management and animated software, production of videogames, IT solutions for the agro-food and biotech industries, e-learning, or hardware production itself among others, has enabled the country to be considered as a viable option within the continent to act as a technological springboard and international offshoring centre. Chile's ICT market meanwhile is one of the most developed in Latin America and despite the international crisis, it is set to grow at an

1. Packaging of audiovisual services and contents: voice, broadband and television in a single item of hardware.

2. Integration of GSM + Wi-Fi.

average 10% from 2008 – 13. The currently low PC owner figures of 18%, public support program and potential in sectors such as finance, telecommunications, trade and biotechnology are set to be the major growth drivers in the mid-term. In Colombia, development of the sector will depend on the growth of domestic demand and the possibility of attracting outsourcing from US technological industries. Investments in recent years have headed into information systems and processing services with telecom operators having launched a series of technological advances and services in the 3G realm that has put Colombia up with Chile and Argentina in terms of networks. The main sectors in demand (and which offer most business opportunities) are banking, health and education.

Emerging Asia: China, India and Asean

China and India's drive will help the emerging nations of South and South East Asia recover sooner after 2009. Growth projections for the ASEAN-5 point to it reaching between 3-4% by 2010 and above for subsequent years.

The **pharmaceutical and health** sectors have enjoyed a boom in all emerging Asian countries in recent years, and even if this trend may be curtailed in the short term by the present economic downturn, mid-term potential for the whole area is high, boosted by an important domestic market, ageing populations and growth income perspectives for most countries in the region. China has an enormous future potential for pharmaceuticals. Despite being the world's leading producer of basic pharma goods, it is still a net importer of high added value pharmaceutical compounds. Cosmetics also have a rosy future in China too, especially hair colour, moisturisers and women's sanitary articles. In India the level of industrial development of its productive sector makes things difficult for the competition, although some firms could use it as a cost-reducing base (whether for manufacturing or outsourcing supplies), or as a base for joint ventures which take advantage of India's scientific and research infrastructures.

Thailand and Malaysia are now competing to become prime health tourism destinations. Nevertheless, they still import large amounts of medicaments, such as those to reduce cholesterol and diabetes, new generation anti-biotics, heart and oncological drugs. In Thailand a new opening is appearing for development of medicaments for tropical diseases as R+D+i investments rise, while Malaysia has a high potential in herbal medicines. Meanwhile, the Singapore government is studying the idea of converting the territory into a regional medical hub, focused more on R+D+i than output volume. Lastly, Vietnam's pharma industry is a strategic sector, with forecasts tipping the market to double in a few years. Furthermore, the entry of Vietnam to the WTO has helped the sector, as foreign firms can now export there, also enjoying incentives for setting up joint ventures with local companies.

The segments of the **chemical industry** of most relevance for imports to the region as a whole are plastics and organic chemicals. In this vein China is one of the world's top organic chemical importers, while the petrochemical industry is one of the major segments of the industry in Malaysia, Thailand and Singapore. High growth is expected in the coming years. Malaysia is a net exporter of oil and gas due to healthy reserves, as well as palm oil (being the world's top exporter), and in recent years has absorbed important investments. It is one of the world's top oligo-chemical producers, therefore a major player in an expanding segment. It also has a developed plastics industry with many multinational plants established there. Its rubber plantations have also provided the material for processing plants that have enabled Malaysia to top such leagues as that of rubber glove production. Although it still relies on many outside products, Thailand's petrochemical sector specialises in many types of organic substances such as resins and components. To meet outside competition, the government is promoting diversification of new chemicals (chlorine, hydrogen peroxide, hydrochloric acid and sodium chloride) and investing in new equipment to help raise competitiveness in the sector, as well as boosting the local bio-plastics segment. Singapore is a well-established petrochemical hub defined by both its first class infrastructures, efficiency and logistics making it a key location, which in addition attracts a lot of investment in R+D+i, although it does depend heavily on industrial imports. Vietnam is the country in the region with the greatest ground to cover in the sector with an incipient chemical industry made up of small and inefficient producers making it reliant on imports. This also makes it a nation with a great potential to fill the gap whether via supply, investment in facilities, technology, management etc. One of the major sub-sectors earmarked for a rise is that of agrochemicals which needs to see urgent investment in fertilisers.

The **biotech sector is** surging in Asia, because the continent is blessed with a wealth of natural resources, added to an expanding scientific base, government support and a very competitive cost structure. India continues to experience a boom in the sector against the run of the international crisis, especially for vaccines, transgenic cultures, enzymes and bio-IT. The consolidation of a powerful domestic biogenerics industry has drawn many multinational pharma companies to the country. Apart from the above, the bio-agro industry has returned high growth figures and is set to stay this way with the government's determination to cover India's food needs. In China however, the state is the driving force in the sector. China has the right legal framework to enable and encourage the crop and sale of transgenics, with the country leading the way in transgenic cotton production, hybrid rice and biologically based pesticides and fertilizers. On the other hand, medical biotechnology and pharmaceutical specialization still harbour a vast potential for the private sector, given the size of the domestic market.

In South-East Asia, Singapore already has a mature scientific base, particularly in the bio-medical field, attracting companies interested in clinical research. Added to this, the strength of Singapore in genomics, IT and nanotechnologies make it an ideal ground for converging specialities, which would put it near the top of the medical research league. Meanwhile, although Malaysia and Thailand have only a fledgling biotech sector, their respective biodiversities offer them a huge potential not only in segments such as bioplastics and biofuels based on processed palm oil, cane or cassava, but also in developing medicaments from research into new bioactive compounds present in nature. Indeed, the Malaysian business environment is particularly hospitable to foreign firms wishing to enter its biotech sector.

Automotive components have recently played a part not just in Catalan exports to China and Thailand, but also imports from these states. At present the crisis is affecting the sector across the entire region, which has obliged governments to launch stimulation packages and incentives to boost flagging sales. The industry requires technological improvements in design, safety and environment, all of which amount to openings for foreign companies in segments with a high-tech content. India has a developed domestic industry with a low cost structure and relatively skilled human resources, which has enabled local investment in design capacity, engineering and product innovation. In fact foreign firms have used India as an outsourcing venue for motor components and to a lesser extent, panels, seats, air-conditioning and electrical components. Of note is the trend of vehicle makers to use India as a launch pad for West Asian and African markets, which together with domestic demand potential are set to see India take on a big role in the future of the sector.

Thailand has developed a notable automotive cluster around Bangkok, positioning the country as a regional hub. That said, there are interesting investment opportunities up for grabs, in such segments as: more sophisticated electronic components, moulds, paint technologies, design and precision engineering. Moreover, other more complex components that must be imported are: injection pumps, power steering systems and anti-theft devices. Furthermore, the government has drafted a scheme to back the eco-car segment, aiming to make Thailand a leader in this field. While Malaysia starts to gather pace as an exporter of such products as steering wheels,

wheels, brakes, exhaust, radiators and clutches, with improved quality and technological know-how, the reality is that it still also imports a large amount of components – mainly from Thailand and Japan. Lastly, Vietnam is still an import market, receiving exports from Japan, China, Thailand and South Korea.

The **environmental and renewable energy** sectors here are still in their infancy, but are increasingly experiencing greater needs across the entire region. In general terms, despite the crisis, major booms are being hinted at for coming years to match growing demographic trends such as urban explosions and higher industrialization, added to government awareness raising incentives (such fomenting use of renewable energy). In China, the crisis could tip the scales in favour of the government pushing new environmental infrastructures to boost the construction sector and overall economic growth, thereby opening up specialised water and waste treatment equipment. Beijing also aims to push forward the expansion of alternative energy schemes setting a target of going from the current 8% to 15% of needs to be met by 2020, with the photo-voltaic-solar segment set to cash in, while wind energy is set to quintuple its coverage by 2020.

The water and waste treatment sector has also great mid-term prospects in India as water offers important openings for companies specialising in treatment and desalination. As for waste management, there are also opportunities to be had for refuse and treatment expert firms. As India is already the world's fourth producer of wind power, there is an important ongoing demand for turbines, blades and aero-generators (48% of equipment is imported). Other segments such as biomass also have a large potential and there are openings identified for associated products such as gasifiers, driers, boilers, gas turbines and ash extraction systems. India has 187 hydroelectric projects planned which will all require precision electro-mechanical equipment and turbines, while the government is strongly backing solar power as the best energy source to satisfy rural needs.

Malaysia is one of the first ASEAN countries to adopt environmental criteria in its long-term economic planning, and the sector could see a rise of over 60% by 2012. The renewable energy market is set to expand by some 10% per year and in the future this South East Asian state aims to work on hybrid and biofuel car production. Thailand's environmental sector relies heavily on equipment and technology imports and new water treatment plants are scheduled for the near future. The government aims to establish Thailand as a regional "clean" energy hub, and once it has got over current obstacles related to the international crisis, the sector could play host to big opportunities in the development of solar and wind power. In Singapore, the environmental sector could reach double figure growth in the coming years, despite effects of the crisis, as it has the potential to become a test bed for environmental initiatives for South East Asia. The sub-sectors with the most promising future are those of water and waste treatment. Lastly, the government of Vietnam, committed to improving environmental conditions, plans to open the market by 2010, thereby providing foreign companies with openings in channelling of water resources, waste treatment, filters and scrubbers to cut factory pollution, noise pollution reduction and environmental control mechanisms.

Government support and heavy multinational investment in recent years has led the emerging Asian nations to become one of the strongest and attractive markets worldwide for **ICT and electronics**. At present, in the context of the global crisis, the sector has been hit by a drop in demand from its main consumer markets, (the US, EU and Japan), though when recovery comes about, an upward trend is bound to reemerge. China is the world's number one hardware exporter and is one of the world's key bases for the production of telecom equipment for export, thereby generating important business openings for any firm managing to get a foot in the door. As for ICT services, opportunities are cropping up in the sale of high added value telecom equipment, as little local competition exists. Moreover, an increasing number of local firms are seeking out companies than can provide domestic mobile telephone services.

India has the potential to become the number one offshoring base of ICT services and BPOs. It is a beacon of cost reduction (boosted by the recent crisis) and experienced at establishing bilateral agreements with local firms, benefitting from its leadership, notably in knowledge and bio-IT services, where India is a pioneer. In the segment of software, opportunities may lie in direct sales of original products to local firms in sectors such as health, transport, insurance, entertainment and consulting, all of which are undergoing recent expansive and digitalisation phases. As for telecommunications, the outlook for growth in the domestic market offers vast opportunities for firms specialised in this field, notably for those offering mobile telephone services.

In Malaysia the electronics sector is the most important of all its manufacturing industry and one of the cornerstones on which the government aims to base industrial development of the country, and to this effect it has provided special incentives especially in the telecom sub-sectors for optic fibre, synthesis modules and new generation network hardware. Furthermore, the government is investing in the creation of industrial parks to develop higher added value goods for the automotive component, pharmaceutical and electronic console industries. In Thailand, 80% of electronic industry production is exported. Key products include hard disks (of which Thailand is the world's second largest producer). Electronics in Singapore is, together with chemical sector, the most important manufacturing area and the country specialises in the export of sophisticated electronic devices. Workforce skill levels coupled with logistical efficiency guarantee that Singapore will continue to hold its place at very least in world markets. Nonetheless, it is being hit harder than many due to the current international slump in demand, as its domestic market is small and this leaves it highly dependent on exports.

The Mediterranian and Middle East

Among the oil exporting economies of the region, Algeria and The Gulf States have adopted fiscal measures to act as a buffer against the crisis and in the mid-term may achieve an annual growth of 4.5%. Other North African states have resisted the crisis well due to their limited exposure to international financial systems. Turkey though has suffered the withdrawal of foreign capital badly, coupled with falling exports. The recovery of the Mediterranean states with more varied economies should take place by 2010, where they are expected to pick up the pace to return to levels achieved prior to the crisis – provided Europe and The Gulf also move upward.

In recent years the **textile and garment** sector has flourished, overcoming such difficulties as those associated with the end of the MFA (Multi-fibre Agreement) and Asian competition. In real terms the integrated Euro-Mediterranean Free Trade Economic Zone has provided a major boost to the industry, which is tipped for an important expansion in the mid-term.

Only China supplies more goods from the sector to the EU than Turkey. This is because it possesses numerous important competitive advantages and the potential for industrial textiles and applications in other areas such as the marine textile and household linen segments. Despite recent improvements in quality, local Turkish firms still require support in design and marketing. At the other end of the region, Morocco's main asset (given trends of distribution) is the chance to compete geographically, while Tunisia has a large reserve of qualified human capital as a result of a strong national education system and a generally favourable business environment. Growing awareness of the need to improve quality is also generating openings for machinery, management, design and creativity in both Morocco and Tunisia. Lastly, Egypt could become a regional supply base if it manages to attract sufficient foreign investment to make its cotton thread an even higher quality product. One of its main competitive advantages is that of low production costs (cheap energy, water and labour) in relation to other states regionally, added to improvements in its business climate, agreements with the EU and Turkey and the setting up of Qualifying Industrial Zones (QIZs), which enable export goods to reach the US tariff and quota free.

The importance of the sector in the entire region is illustrated by the important presence of Catalan exports in a number of products during the period 2004-2007. Morocco is Catalonia´s main cotton and special fibre market and its third and fourth for knitted and synthetic fibres respectively in the latter years. Indeed, Catalonia enjoys a large share of the market in knitted fibres, synthetic threads, accelerators and dyestuffs too. Tunisia and Algeria have also accounted for significant Catalan exports of cotton, particularly Tunisia with a major presence in the local market in 2007. Turkey has been Catalonia's second most important market for furs and also has acted as receptor for a large slice of its total exports of accelerators and dyestuffs. In terms of garment manufacture, Catalonia has had, in recent years, important export operations of clothes and accessories in place to Tunisia, the UAE and Saudi Arabia, with a notable market presence in Morocco and Turkey too.

The **agro-food industry** in The Mediterranean has developed as a result of a number of factors working in its favour, such as large farm outputs, sizeable expanding domestic markets and cheap, available labour. Furthermore, in recent years the sector has been modernising, not only to adapt to changing consumer needs (prepared and packaged dishes, snacks, processed frozen canned/bottled foods), but to rise to the competition from European products in a freer market. Overall, there are opportunities to be had for foreign firms originating from public agricultural development projects, where imported machinery producers stand to gain, given the obligations of farmers to comply with EU standards and hygiene, added to the need for raising quality, through research and innovation as well as improving areas such as packaging, processing, logistics and associated services. The rise of organic farming is also called to draw in a lot of foreign investment in the coming years. Investments are being made in Morocco and Turkey with a view to exporting to the EU, while those put into Algeria, Egypt and Tunisia are more orientated to meeting local demand. Despite the inherent agricultural limitations of Middle Eastern nations, they are also trying to develop their local processed food industries and therefore boosting investment in technology and marketing.

Catalonia has had recently a number of successful export operations in place in the region and the importance given to agriculture is illustrated by such examples as that of fungicide exports, which have won sizeable market shares in Turkey, Tunisia and

Morocco in 2007, with notable exports of insecticides and fertilisers to the latter as well. Catalonia also exports baby-foods to Saudi Arabia, soya oil to Tunisia and Algeria, in addition to fruit, margarine and aromas to the latter and coffee extracts and products to the entire region. Moreover, Catalonia has had recently a significant market share in packaging and bottling machinery in Algeria. Last but not least, Catalan firms have invested heavily in recent years in Turkish agricultural concerns, the Moroccan drinks market and in the Algerian wine-making business.

Both Mediterranean and Middle Eastern countries are major importers of **organic chemicals and plastics,** with a demand that Catalan enterprise has been able to exploit successfully in recent years achieving buoyant export targets for these products in all countries of the region without exception. Turkey tops regional refining capacity as its *bridging* location between producers and consumers have seen it exploit its privileged location with oil pipelines from The Middle East and the Caspian. Moreover, the drive of the automotive, electrical appliance, packaging and construction industries in recent years has pushed up demand for plastics beyond local output, opening Turkey to greater imports and advances in the plastics sector that is undergoing modernisation, thereby upping demand for machinery. Despite the slowdown produced by the crisis, its recovery will no doubt be linked to an upturn in all related sectors of the industry. The Saudi petrochemical sector is also not exempt from the shock waves of the crisis, which had forced some projects to be put on ice, although the government is still committed to driving internationalisation in the sector. As, the one hand, it wants local enterprise to take a bigger hand in refining projects in foreign markets, and on the other, through public investment funds it is looking into investment opportunities abroad, which may benefit development strategies for plastic automotive parts for use in the vehicle industry. The governments of The Emirates have been backing expansion of the petrochemical sector beyond simple oil production, and some forecasts point to the country tripling its ethylene output by 2013. In other words, despite the downturn, production development inputs planned for the industry are no means on the slide.

In the **pharmaceutical sector** Catalonia has had a healthy export trade going to Turkey, Algeria and Saudi Arabia in the period 2004-2007, all of whom are major net importers. Turkey promises most in the region with its large, rising population, and its location as the gateway to the Middle East and Central Asia alike. The sector already has an infrastructure in place to be further developed, with skilled human resources and high-tech business parks. It is also undergoing a process of legislative convergence with the EU, although differences in clinical trial frameworks have yet to be ironed out. The Customs Union with the EU has produced a decline in raw material output locally, leading to imports of both these and finished products, notably in biotechs, hormones, vaccines and oncological drugs. Growth prospects for the pharma sector in Saudi Arabia are also promising, as higher per capita spending is on the cards due to impending domestic healthcare reforms and introduction of compulsory insurance, coupled with government plans for quality improvements in healthcare facilities. In the UAE, upgrades in health service infrastructures added to an accommodating regulatory environment and lack of local competition all point to growth in the sector in the coming years. Moreover, the Emirates is also backing health tourism developments, with all the implications of subsequent demand for related products and services. The cosmetics market also continues to expand in Turkey and the Middle East, with the UAE representing a major export venue, which Catalan businesses have been exploiting successfully in recent years, whilst its slice of the Saudi Arabia market-share has increased.

Despite the blows dealt by the financial crisis to the **construction, and infrastructures** sector and sub-sectors such as building materials, factors such as the upward demographic trend, urban migration, further industrialisation and tourism will act as drivers in the mid-term in the region. Within this context of ongoing real estate trends, Turkey is seeing increased demand for studios and apartments in the suburbs of Istambul. It is also a high profile exporter of materials such as tiles, bathroom porcelain, doors, PVC framed windows, insulation and floor coverings, all of which afford openings for foreign businesses to use Turkey as a springboard for Central Asia. In Morocco the sector is enjoying a number of stimulation packages for public funded housing, tourism, luxury properties, infrastructures and industrial zones. Demand for housing and infrastructures should continue to spread, although it is tipped to slacken. Government priorities and interest from multi and bilateral funds to finance projects will set the pace in the sector for the short term. Construction is Algeria's second sector and although it is expected to take a knock in 2009, energy export income and public spending are still helping it surge forward. Apart from projects focused on energy resource exploitation infrastructures, public funded housing schemes, transport infrastructures and commercial real estate look set to reap the benefits of multinational investments, especially those coming from The Gulf. The government is behind the sector in Tunisia too, driving civil engineering, housing and tourism projects, undertaken mostly by private enterprise. The government has given priority to modernisation of transport services which will mean new infrastructures such as motorways, rail networks, underground lines, and airports. The Tunisian construction materials segment has been on the up in recent years attracting investments due to its supply of raw materials, government support and tourism, which means Tunisian firms in this sector are bound to invest in modernising in coming years. Other segments which may permit openings are those of sand processing for export, sheet glass and porcelain production and sale of swimming pool materials. For years in Egypt the construction industry has been one of its most dynamic and until now it has weathered the financial crisis better than others. Apart from housing and transport infrastructure needs, the office and commercial premises segment has taken an upturn. Both the quantity and quality of projects taking place to build up the country as an export hub offer foreign businesses possible openings in technical and managerial support services. Moreover, once the crisis is overcome, residential housing demand is set to continue on the way up thereby forcing constructors to acquire (or hire) more construction machinery.

In the Middle East, the construction industry has enjoyed great health in recent times in Saudi Arabia, and could be set to benefit from solid domestic demand above and beyond its neighbours. Estimates point to Saudi population hitting 30 million by 2024 and in the coming 5 years alone, some 1.5 million housing units will be needed to match demand among younger generations. Some 80% of equipment and material for the sector is imported. Dubai, on the other hand has borne the brunt of the recession and financial difficulties are hinted at in the short term.

The region is caught up in an ongoing process of industrialisation and urbanisation to which we must also add tourism in many states. Against this backdrop, authorities are increasingly demanding businesses comply with **environmental** rules and regulations, which means owners need to cover needs and therefore interesting opportunities for private sector suppliers. Moreover, such opportunities come with the corresponding funding from international organisations.

In Turkey, adaptation of the law to EU environmental regulations is driving major demand in technology, consulting, construction of facilities and material supply, with openings in modernisation and replacement of water treatment plants, management of council services and waste management and disposal. In Morocco environmental damage and increasing pressure on water resources will require work, materials and services from the foreign private sector. One such example is that of the Saharan Water and Desalination Projects or FODEP, the industrial decontamination program or the MDP which foments clean development. Morocco is also developing a national plan to boost the contribution of renewable energy (wind and solar) from the current 4% to 10% by 2020. Algeria is struggling with serious environmental problems of desertification, water shortages, pollution and uncontrolled urban spread. Public backing in what is considered a strategic sector, will present opportunities for foreign investment in construction and upkeep of water treatment plants, building of rubbish tips, recycling plants, incinerators etc. Promotion of renewable energies is a cornerstone of energy policy in Algeria, with plans to build three hybrid solar/gas power stations and a wind farm. Tunisia is one of 17 states that could find itself totally lacking water resources by 2025, hence it urgently needs to store, treat, reuse and desalinate all the water it can. On the energy front, Tunisia is committed to cutting energy use by 3% from 2008-2011 increasing reliance on renewable sources such as wind farms. Egypt's major concern is water pollution – i.e. of the Nile, which is why waste water treatment projects are being projected along with a clean up for the Cairo area, coupled with irrigation using recycled water and further hydraulic initiatives. Although it relies heavily on natural gas, the authorities are increasingly backing the future role of renewable sources, aiming that they meet 20% of requirements by 2020, which would see Egypt become the region's top wind producer. Its involvement in the Mediterranean Solar Plan suggests that it should consider pushing solar energy production with a view to exporting to Europe.

In the Middle East, Saudi Arabia is the world's third largest water consumer per capita, as demand rises in tune with the population and the economy. Apart from the major government plan to build more desalination plants by 2020, the coming years are set to see further involvement of both domestic and foreign players thanks to the country's favourable regulatory framework. The main waste water system is attracting heavy investment which opens the door for possible joint ventures with local companies. In the Emirates there is increasing interest in renewable energy. Most local needs are met by gas, which has suffered supply problems of late, which has raised awareness on the need to look for both conventional and renewable alternatives, (wind, solar, thermal and nuclear), which will provide opportunities for supplying technology and involvement all-round in sector projects. Other openings are to be found in special consulting for and management of biomass plants and recycling for power generation.

Advanced economies

A slight upward growth could return to advanced economies by 2010, and, for the mid term (2011-2014), forecasts point that the average growth rate of those countries will be between the 2-3%.

A glance at the **agro-food** sector provides a number of facts: Germany is Europe's main fresh fruit and vegetable importer and its biggest per capita consumer of fruit juices. An upward trend is being observed in pre-packaged products, with a rise in value added foods on the shelves, attractively presented and in smaller amounts. Moreover, German buyers expect high quality and have a high level of awareness that supports a major organic fresh produce market.

The French agro-industry is a world leader in innovation, technology, R+D and quality. French consumers are increasingly health conscious and more demanding in terms of product quality and origins. Innovative and healthier dietary products with the organic label are winning market share across the country. The ongoing rise in popularity of convenience foods among younger generations coupled with high birth rates in recent years is driving up processed, frozen and baby foods as well.

The British agro-food market is highly sophisticated. Faced with a rise in obesity (now the country with the highest index in Europe), there is increasing awareness of the need to lead a healthier life. This has seen a rise in demand for natural ingredients for home cooking and created new openings for low calorie, added extra and fresh produce that combine time saving and convenience. Other opportunities are emerging in extra organic and natural foodstuffs, the so call "super-foods", gluten free products and organic fare sold in discount food outlets. At the same time consumers are still game to try new varieties of wines, labels and quality products too, although during the current crisis, the trend has leaned more towards more economical and promotional sales.

The main rise in demand in the US in recent years has been for high quality, nutritional food, with notable surges in demand for organic, kosher, gluten-free and other foodstuffs that make for a healthier diet, while some sectors have embraced higher levels of gourmet food purchase. Nevertheless, it is thought that the current economic situation is set to hit the aforementioned products. Another area with potential openings is convenience food, due to the North American lifestyle (long working days and little free time). Meanwhile, despite the current financial malaise, wine sales are holding up and opportunities exist for breaking into states where consumption is still low, such as Arizona, Colorado and Minnesota.

Japan has a highly mature and competitive food and drink market. Japanese consumers set store by the safety and traceability of foods, and as such opportunities are best found in healthy products, such as juices, fruit and vegetables, organic foods, olive oil, anti-biotic free foodstuffs and gourmet items. Japan imports 40% of all its pork, making it the world's largest for the product, whilst wine imports and the whole associated culture are going from strength to strength.

Germany, France, the UK, the US and Japan are both the world's largest producers and per capita spenders on **pharmaceutical products**. Despite the current downturn, estimates until 2013 hint at positive, albeit moderate growth in the sector. All five have been major importers of pharmaceuticals recently, and all except Japan have been trodden markets for Catalan output.

Germany is responsible for a tenth of world production and is the third largest market. Nevertheless, it is not well situated at European level in the introduction of innovative therapies and furthermore, there is friction between the government and industry on pricing levels and reimbursement. As for medical instruments, the high volume of imports can be accounted for by its level of intra-industrial trade, as the domestic sector is in good health and indeed exports 85% of output. One area to watch is the rise of hospital purchasing cooperatives, which may accumulate a buying power that could send down both drug and equipment prices in the sector.

France is Europe's third largest pharmaceutical market after Germany and the UK and has one of the world's highest per capita spending figures for medicaments. On the downside, the pull of France as a prime clinical trial location is on the wane, due to competition from other European countries and Asia. The French medical instrument market is ranked fifth worldwide, with 80% coming from imports (some instruments are then reexported), and forecasts tip it to expand an average 5% per annum until 2013. Health sector areas with greatest perspectives for expansion in the mid-term are: telemedicine, non-invasive surgery and surgical and medical instrument production. Other opportunities are being glimpsed for such goods as: medical treatment kits, disposable equipment and products to treat hospital waste. Meanwhile, France remains Europe's prime cosmetic market, with the main stars, depilatory and hair products, while aromatherapy goods are gaining ground. There is also a rising trend in male product lines and demand for bio-cosmetics under the French *Cosmébio* label (only natural ingredients).

Britain is another country with high per capita spending, which has led the government to reclassify many former prescription medicines, making them available over the counter, which has meant many active ingredients are now for sale without prescription at chemists'. Given the ongoing metamorphosis of the National Health Service, areas such as; hospital and outpatient clinic management, geriatric care, development of new facilities and on-line services may all provide openings for new business. The UK cosmetic market is one of the most dynamic on the continent and has resisted the crisis well and is set to surge in the coming years. Best sellers include: anti-ageing formulas, skincare products, hair care and colour products, oral hygiene and sun protection ranges.

The North American pharmaceutical market is the world's largest, having the highest per capita spending, although this is set to drop from the present to 2013. The pharmaceutical environment in the US is seen as difficult over the short term due, on the one hand to plans of the Obama administration to bring 50 million people into the social security system, which could change the relationship between patent and generic drugs on the market. On the other, repeal of restrictions of federal financing of therapies based on stem cells back in January 2009 may drive further innovation in this area.

Japan, the world's second largest pharmaceutical market, is tipped to continue expanding strongly in response to the country's ageing population. Moreover recent changes to the domestic regulatory framework have recently made it more accessible to international pharmaceutical companies, thereby heating up competition and driving a process of consolidation in business dealings with Japan. Other factors to bear in mind include the lack of availability of many international household name products, the comparatively low cost of generics, and the opening up of the market to sales of over the counter drugs. Together with the US it is the world's biggest consumer of cosmetics, where the top sellers are skincare and make up lines, with the rising stars; men's and baby ranges. The perfume and cologne segment is dominated by foreign brands, popular, above all with younger segments of the population.

Biotechnology is an area, which has stirred up a lot of interest among many businesses, especially pharmaceuticals and chemical companies in advanced economies for some time now. However, the large number of smaller enterprises currently involved may well see projects cut, given the shrinkage in the market as a result of the international financial and economic crisis.

The US is now the world's leading biotech power and is set to stay on top for some time. Furthermore, the bio-pharma segment will have taken note of the January 2009 repeal, lifting restrictions on federal financing of therapies and research, based on stem-cells. White biotechnology, (which uses live cells or enzymes to create products that had been previously made from hydrocarbon derivatives or other sources) is favoured to continue growing, despite restrictions on financing. In fact the US is currently in a healthier position than Europe to develop this sector.

Together with the UK, Germany tops the European biotech league, and some analysts hint that by 2015 up to a third of the German economy may rely on biotech related business one way or another. It manages to attract some 40% of all the continent's capital risk investment, with key activities focused on therapeutic products, platform technologies, diagnostics, bio-IT and proteomics. Meanwhile, in the UK, the top firms specialise in red biotechnology, given their associated experience, as well as the relevance of products in neurosciences, oncology, infectious diseases, vaccines, tissue engineering and stem cells. Britain has also developed expertise in biocatalysis, biotransformation and biocatalytic manufacturing, as well as expanding its incipient marine biotech segment.

The forte of the French biotech sector is found in the large number of research institutes, high tech parks and the number of scientists working in the industry, backed by a strong public drive. The country boasts of a high level of technological transfer to the private sector, typically represented by local SMEs, although multinational players such as: Aventis-Pasteur, Roche Diagnosis and Sanofi-Synthelabo are present as well.

Deregulation in Japan has led to an influx of foreign capital to set up joint ventures and a closer collaboration between local and overseas research centres. Big in Japan is the bio-medicament segment, with 40% of turnover, led by products derived from discoveries in genomics and protein analysis. The major focus of interest is orientated towards senior citizens and innovations that contribute to finding solutions to environmental demands.

The international crisis, which is affecting advanced economies more heavily, could slow down growth seen in both the **environmental and renewable** energy sectors, at least in the short term. However, the foreseen rise in world population, higher levels of industrialisation of emerging economies and greater prosperity in the mid-term all point to an upturn in the different segments which make up these sectors.

In Germany, the environmental sector is weathering the storm well. Some estimates hint that the sector could be one of its strongest by 2020, enjoying a 14% share of GDP. Indeed, German firms have enjoyed a big slice of the international cake and it would be no surprise if they were to lead the future of certain environmental sub-sectors such as generation and storage of energy, energy efficiency, material efficiency, waste management and recycling, sustainable water management and sustainable mobility. In terms of renewable energies, it tops world output of photovoltaic, wind and biofuel energies.

In France, both energy management and renewable sources are at the top of the French political agenda, thereby explaining forecast annual growth of around 20%, although this may be optimistic in light of the current situation. Wind and solar power head rankings of renewable power generation, whilst a rising star is the sub-sector of energy efficiency, spurred on by regulations for new commercial and residential constructions that dictate they must be either carbon-neutral or self-sufficient in energy, whilst the government is also committed to renovating public buildings and providing incentives to improve energy efficiency of existing edifices. This will generate a large demand for ventilation, heating and air conditioning systems, solar and geothermal equipment, as well as for materials new to the sector, such as the so-called “super insulators” like windows with advanced properties, assembly and integration of new products for the trade.

The UK has passed an important series of legislative measures and regulations in order to drive the environmental and renewable energy sectors forward, whilst enjoying notable foreign investment in this area. Wind power generation is the leading light of the sector, together with solar energy and power generation from waste incineration.

The stimulation packages for the North American economy lead us to suggest there will be greater commitment focused on the environmental and renewable energy sectors in the US in the coming years. There are big pollution clean-up projects planned or underway and finance for local waste water treatment and drinking water quality improvement schemes in progress, with grants and loans for water supply and potability schemes in rural areas, with additional backing for environmental care programs. Renewable energies are set to benefit from wider tax breaks for new wind farm facilities until 2012, with loans earmarked for projects seeing a rise in research funding. Fiscal incentives have been introduced in a number of areas, whether it be to push up hybrid vehicle sales, train personnel in these sectors, widen consumption of renewables or even offer breaks to gas stations that install alternative fuel sources at the pumps among others.

In Japan, a government plan aims to see waste recycling rise from 10% to 40% in the next ten years, while cutting greenhouse gas emissions by 6%. Furthermore, following the Kyoto Accords, Japan aims to attain 25% of all energy needs from renewable sources such as wind, biomass and bio-ethanol in the near future, thereby providing openings in consultancy work specialising in renewable energy and energy saving systems. Although the main sectors today are those of water treatment, the recovery, reuse or conversion of materials, other sectors tipped to generate opportunities are those of the production of anti-pollution equipment and materials and services connected to the environment and products and technologies specialised in preserving resources.

Although emerging economies have taken great strides in the field, the reality is that advanced economies are still leading the way in the field of **ICTs.** The US remains number one in terms of both production and consumption and is highly competitive, while

Japan, although suffering badly from the general downturn and foreign rivalry, is still a world power in ICTs and electronics, hosting many of the world's giant companies. In Europe, the UK has overtaken Germany as the top market for ICT products and services, while France is enjoying an upturn in the sector and rosy prospects, where the telecom sector may be set for a boom, despite the crisis, with growth tipped at 5% per year on average until 2012, with an ongoing process of consolidations in sector businesses. A number of opportunities for foreign companies have emerged in mobile telephone infrastructures, satellite equipment, optic fibres, mobile phones, internet services, security systems, m-commerce, and e-learning among others.

In the UK, government plays the leading role in the sector, with considerable spending in e-government services, health and security, with the latter tipped for big development in the future. In the telecom sector, mobile phones, with a market penetration of 125%, are highly popular, and although the crisis has led to a drop in spending of users, the mid-term outlook is brighter.

In the US spending on ICTs may be set to slow down in the near future, given the current economic and financial situation. Nevertheless, it is thought that financial services spending will rise in the mid-term, and furthermore, federal and state spending may continue on the up with more money available for national security and e-government. As for internet, business openings look to be headed in the direction of enhanced web security, integration of web server applications and technical management simulations. Furthermore, opportunities have also been spotted in intelligent transport systems, wireless applications, games and entertainment and health systems among others. In realm of telecommunications, some estimates put 3G owner figures as high as 60% of total users by the end of 2013.

Japan is a leading light in the ICT and electronic sector worldwide and has recently launched a series of innovative handsets onto the market. It has been a pioneer in mobile internet access and is leader in high-speed connections and per capita patent issue and researcher numbers. The current context of the crisis and consolidation of overseas competition from countries like South Korea and China may spark changes in the internal workings of Nippon firms in their sector, leading to a possible rise in the concentration of activities. On the other hand, it still needs to develop a software industry that can compete in an international terrain.

Executive working version for the 5th OME International Foresight Forum

Appendices

Appendix 1. External contributions

Long-run economic transformation after the crisis: technology, globalisation and the environment

Recent experience teaches us that the future is certainly not an extrapolation of the recent past. Witness the difference between the stagflation of the 1980s and the great boom of the late 1990s. However, the near future is more likely to follow longer-term historical patterns. On the basis of a long-term view, we can say that after the collapse of the global financial bubble in 2007-08, the world is ready for a global Golden Age. Whether the international community wastes or seizes the opportunity to unleash the enormous potential available for the benefit of all is an open question. The technological opportunity space ahead is defined by ICT (information and communications technologies), full globalisation and the environmental imperatives.

With information and communications technologies, globalisation is the logical growth trajectory, but full globalisation is incompatible with the *American Way of Life* (we don't have seven planets), while it is also threatening jobs and incomes in the advanced world. The conversion to sustainable products plus sustainable production and transport systems may well be the most fruitful "salvation" path for recovery. Widespread renovation provides the best opportunity space for wealth and profit creation in the OECD countries. It also enables full globalisation, increasing job creation and well being in all parts of the globe and widening markets for all countries. And we are at the precise historical moment when such a shift in patterns of production and consumption can – or, perhaps, should – be made.

The lessons of history

What is the basis for making those statements? What we have learned about the regular historical sequences of diffusion and assimilation of technological revolutions. The analysis of how technological revolutions are assimilated in the economy and society shows powerful regularities and identifiable specificities. There is a technological revolution coming together every 40 or 60 years (at maturity of the previous). Each of them drives a great surge of development that is broken into two different periods, one led by finance, the other by production. A major financial collapse marks the beginning of the switch. That is what we are experiencing now for the current ICT revolution.

But each of these regular revolutionary changes in technology is highly specific. The nature of the potential for growth is different each time because of the characteristics of the new technologies and, for that reason, each revolution brings a paradigm shift in the direction of innovation and the criteria for competitiveness. But that is only the available potential, it will be the social forces and their institutions that will define what part of the new opportunity space will be deployed and how.

Thus, each great surge is unique due to historical, political and other contingent factors, but the recurring patterns have fundamental causal explanations that have to do with the way the economy and society assimilate successive surges of technical change.

There have been five technological revolutions in 240 years: the first was the "Industrial Revolution" (machines, factories and canals) from 1771; then, from 1829, we had the age of steam, coal, iron and railways; from 1875 there was the age of steel and heavy engineering (electrical, chemical, civil, naval); in 1908, with Ford's Model-T, began the age of the automobile, oil, petrochemicals and mass production and in 1971, the year Intel's microprocessor was launched, our current age of information technology and telecommunications was initiated. This information era is only half way through its diffusion path. If history is a guide, it has twenty to thirty years of deployment ahead. The next revolution is likely to bring the age of biotech, bioelectronics, nanotech and new materials, in some combination, depending on unpredictable scientific breakthroughs. Each of these revolutions drives a great surge of development and shapes innovation for half a century or more. Of course, this is a stylised description, because social reality is always much richer than the models that help us understand it.

Yet, why do we call them revolutions? Because they go far beyond the powerful set of new industries; they also transform the whole economy providing a new techno-economic paradigm – or common sense best practice – for all. What is most visible is, of course, the powerful cluster of interdependent new and dynamic industries and infrastructures. These result in explosive growth and structural change including the replacement of the industries that had been the engines of growth during the previous surge. On the other hand, each of these revolutions provides new multi-purpose technologies, infrastructures and organisational principles that are capable of modernising all the existing industries too. The result is a quantum jump in innovation and productivity potential for all. The whole process involves a massive change in the overall direction of change, transforming the opportunity space and the ways of living, working and communicating.

A shift in lifestyles

Each technological revolution provides a new inter-related set of life-shaping goods and services at “affordable” prices. The age of steam, coal, iron and railways saw the emergence of *Victorian living*. The British “middle classes” established an industry-based urban lifestyle (different from that of the country-based aristocracy) which spread to new upper classes elsewhere. In the age of steel and heavy engineering, which was the first globalisation, we had the Belle Époque. The British, European and American upper and middle classes established a cosmopolitan lifestyle spreading to the upper classes of the world. In the age of the automobile, oil, petrochemicals and mass production there was the *American Way of Life* adopted at first by the upper and middle classes that established a suburban energy-intensive lifestyle spreading to the working classes of the advanced countries and to the middle classes of the developing world. In the current age of information technology and telecommunications there could be sustainable global lifestyles. The question is whether the affluent educated classes of the developed and emerging countries will establish an ICT-intensive knowledge society with a variety of environmentally friendly lifestyles and consumption patterns.

What is important to note is that each of these styles becomes the model of “the good life” and, as such, shapes the desires of the majority and guides innovation trajectories.

To have an idea of the depth of change involved in each of these transitions we can observe the emergence of the *American Way of Life* as a paradigm shift from the 1910s and its consolidation as the general “lifestyle” after World War II (to a great extent, that lifestyle is still with us). The essential shift was from energy-scarce living when energy was expensive and often inaccessible to energy-intensive homes and mobility, with energy being cheap and its availability seemingly unlimited.

The shift covered every aspect of life: from trains, horses, carriages, stage coaches, ships and bicycles to automobiles, buses, trucks, airplanes and motorcycles; from local newspapers, posters, theatres and parties to mass media, radio, movies and television; from ice boxes and coal stoves to refrigerators and central heating; from doing housework by hand to doing housework with electrical equipment; from natural materials (cotton, wool, leather, silk) to synthetic materials; from paper, cardboard, wood and glass packaging to preference for disposable plastics of all sorts; from fresh food bought daily from specialised suppliers to refrigerated, frozen or preserved food bought periodically in supermarkets and from urban or country living and working to suburban living separate from work. All these changes took time and were strongly aided by advertising, business strategies and government policies.

The intrinsic characteristics of ICT are compatible with "green" production and living. The techno-economic paradigm shift beginning in the 1970s was meant to move society from the logic of cheap energy (oil) for transport, electricity, synthetic materials, etc. to the logic of cheap information its processing transmission and productive use. As a consequence it is possible to shift from preferring tangible products and disposability to preferring services and intangible value; from unthinking use of energy and materials to taking advantage of the huge potential of ICT for savings in energy and materials. Essentially we can shift from unavoidable environmental destruction to potential environmental friendliness, but paradigm shifts confront inertia and contingencies; they are turbulent and take time.

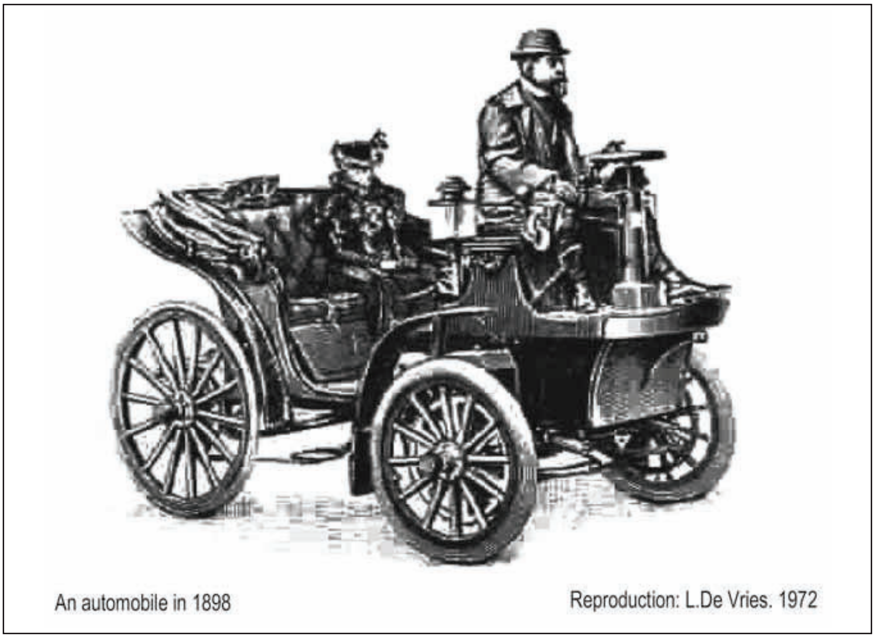

Figure 1

The first automobiles looked like horse-driven carriages (see figure 1). The driver sat in the same place as he would have done to hold the reins, the engine below him was measured in horse-power and every other part was made by the same engineering shops that made the carriages. It takes decades to arrive at a design that is consistent with the essence of the new technology. But, once it happens, you know it! Today's automobiles, for all their sophistication, are not fundamentally different from a Model-T Ford.

And so it is that in spite of the potential of ICT for changing the way we live, mass production disposability and high use of energy and materials are still prevalent. Why? Because, in the crucial 1990s – precisely when ICT producers were defining their growth strategies – there was cheap oil and cheap Asian labour. So it was not necessary to change the old marketing habits of planned obsolescence through fast "fashion" changes. Yet to continue on this route we would need seven planets!

A major transition

Nevertheless, conditions may now be changing in the direction of favouring the full shift. Two main events are leading us there: on the one hand, the financial crisis showing the need to find an opportunity space to guide the recovery and, on the other, the threat of global warming (combined with the limits to availability of natural resources).

The recent financial meltdown marks a structural shift in the economy that is typical of the way technological revolutions have propagated and been assimilated by business and society. Each great surge of development has seen a major financial crisis midway along the diffusion path of the technological revolution driving it.

Due to natural human resistance to radical change and the difficulty of social absorption of revolutions and new paradigms, each great surge is broken into two different periods. They can be called Installation and Deployment and each lasts about 20 to 30 years.

The installation period is led by financial capital, which is mobile and can rapidly shift investment from the mature and declining industries to a major experiment with the new technologies, making fast millions in the process. It is a time of *laissez faire*, of Schumpeterian "creative destruction", when the new paradigm battles against the old, when investment concentrates in new-tech and finance and income is polarised making the rich richer and the poor poorer. This period leads to a major financial bubble and ends with its collapse.

What follows can be called the "turning point" (even though it can last more than a decade, as it did in the 1930s) because the State comes back actively and because control of investment shifts back to the hands of production capital. By this time, some of the small companies led by bold engineer-entrepreneurs have turned into giants that can serve as engines of growth of the economy and take long-term decisions without short-term pressures from the stock market. Of course, this shift can only happen because there is a fundamental change in the social mood. From admiring the success of the financial "masters of the universe", public opinion turns to demanding strict control of finance. The losses incurred by people who had never before engaged in financial gambles together with the ensuing recession and loss of jobs and the revelations about the irresponsible and even fraudulent behaviour of the financial world cause popular indignation which puts pressure on politicians to bring the State back into the picture.

If and when the appropriate changes in the institutional framework are made, the 20 or 30 years of the Deployment period will begin. It will depend on measures to restrain the casino behaviour and guide finance towards funding the real economy as well as on policies that will expand demand through State expenditure, income distribution and regulatory guidance towards the most promising and most socially rewarding technological opportunity spaces. This brings a time of "creative construction" and widespread application of the new paradigm for innovation and growth across the economy and of spreading of social benefits. Deployment is led by production capital and spans from a "golden age" of increasing growth and well-being to the maturity and exhaustion of that paradigm. Then the cycle repeats itself with the next revolution

We can see the sequence in the historical record, where golden ages have regularly followed the boom and bust episodes that end the installation periods. Figure 2 puts the five surges in parallel in a stylised way. The pattern is in reality much less mechanical than shown; there are overlaps and delays and various other unique features in each case, but the basic sequence follows a fundamental causal chain.

The "Industrial Revolution" produced canal mania and panic in the 1790s in England, which were followed by the great British leap during the Napoleonic wars. The age of steam and railways saw the railway mania and panic of the late 1840s in the UK, followed by the Victorian Boom. The age of steel and heavy engineering, which wit-

THE HISTORICAL RECORD: BUBBLES, RECESSIONS AND GOLDEN AGES

GREAT SURGE		INSTALLATION PERIOD "Gilded Age" Bubbles	TURNING POINT Recessions	DEPLOYMENT PERIOD "Golden Ages"
1st	1771 The Industrial Revolution Britain	Canal mania	1793–97	Great British leap
2nd	1829 Age of Steam and Railways Britain	Railway mania	1848–50	The Victorian Boom
3rd	1875 Age of Steel and heavy Engineering Britain / USA Germany	London funded global market infrastructure build-up (Argentina, Australia, USA)	1890–95	Belle Époque (Europe) "Progressive Era" (USA)
4th	1908 Age of Oil, Autos and Mass Production / USA	The roaring twenties Autos, housing, radio, aviation, electricity	Europe 1929–33 USA 1929–43	Post-war Golden age
5th	1971 The ICT Revolution USA	Emerging markets dotcom and Internet mania financial casino	2007 -???	Sustainable global knowledge-society "golden age"?

We are here

Figure 2

nessed a battle for world hegemony, where the US and Germany challenged the British leadership, saw the great crashes in the Southern Hemisphere of the London-financed global market infrastructure build-up in Argentina, Australia (and also the US). After that, we had the Belle Époque in Europe and the "Progressive Era" in the US. By the time the "roaring twenties" built up the installation bubble of mass production, the US had taken the lead with the new technologies (after intensive growth supplying Europe in WWI). The crash of 1929 brought the longest "turning point" yet. It lasted through the 1930s and until almost the end of WWII. What was installed in the 1910s and 20s was the basis for the age of automobiles, oil, plastics and mass production. After the war, the so-called "Western World" saw the greatest boom in history and the emergence of a fully established Welfare State. Those technologies had matured and exhausted their innovation and productivity growth potential, by the end of the 1960s. It was then that the microprocessor gave birth to the Information revolution in 1971 in Silicon Valley, US. By the 1990s, there were bubbles and crashes in the emerging markets of the globalised economy, there was the boom and collapse of the dotcom and Internet mania and finally the financial casino boom of the 2000s, which collapsed in 2007 and has sent the whole world into recession. Will this lead to a sustainable global knowledge-society “golden age”? That will depend on enabling regulation and policies geared to favouring the real economy over the paper economy, to shaping and widening markets and to insuring social stability.

The return of an active State

The structural shift also involves a shift in the agents of innovation. During Installation, the drivers and innovators are finance and the new entrepreneurs, with the State in a facilitating service role. During Deployment, production and the State move to the driver’s seat as innovators and agents of growth, while finance returns to a facilitating service role. Under present circumstances, it will not be easy to tame the enormous power of the financial world however much it may have been weakened by the losses and the scandals. The conditions for moving finance out of the casino and into backing innovation in production will depend on having enough political pressure for effective policy change. This time the role of civil society could be crucial. This particular paradigm has empowered people far more than political organisations had in the past.

At present, all the conditions are there for unleashing a truly global golden age of growth. The Installation period has left a powerful legacy: The new paradigm has been learned by both producers and consumers; the new industrial giants are ready and able to serve as engines of growth; most of the old industries are rejuvenated; the new infrastructure (Internet) has widened and deepened access to consumers and suppliers and a huge potential for innovation and growth is installed but needs a direction. Its deployment in the next two or three decades will be shaped and guided by three forces: Government policies; consumer values and business strategies. To bring about a golden age the three must be: (a) consistent with the potential of the paradigm; (b) mutually compatible and reinforcing and (c) a positive-sum game for all participants.

The post war Golden Age (in the OECD countries) was shaped by: The Welfare State policies; the values of the *American Way of life* and the strategies of economies of scale, disposability and planned obsolescence. The “Third World” did not fully participate; it produced cheap energy and raw materials and provided additional peripheral consumers. This time, sustainable globalised growth across the whole planet can do for world population what social democratic policies did for North America and Europe during the fourth surge. The revamping of infrastructures, production systems and consumption patterns can do for investment what the post-war reconstruction did in the 1950s. And full access to telecommunications can guide consumption towards services and intangibles as much as universal electricity, suburban housing and automobiles did for guiding consumption towards energy intensive lifestyles. The profile of the dynamics of demand will shape the "golden age" to come. And it is policies that ultimately define that profile.

Is this utopian or realistic? It would have sounded utopian to say in the mid-1930s depression that Blue collar workers would have lifetime jobs and fully equipped suburban houses with a car at the door. Yet, it proved realistic because increasing wages created many more millions of consumers for mass production and intensive growth. It also sounded utopian to say that most colonies would gain independence, yet it was realistic because, they did so (with peaceful or violent means) and then the rising middle classes in the developing world adopted the *American Way of Life* widening world markets for mass production. Similarly, it would have sounded utopian or rather outlandish to have said in the late 1960s that some of the values of the hippie movement (back to natural materials, organic food, etc.) would become the luxury norms. Yet it proved realistic. Innovations in natural textile fibres have transformed the world of fashion, while innovations in distribution logistics have made organic foods the premium segment in supermarkets. Indeed, major shifts in consumption patterns are possible and viable, especially when they also shift profit-making opportunities and can lead to enduring positive-sum games.

Consumption patterns are guided by the values defining luxury and the "good life". These usually emerge at the top of the income scale and spread down by imitation. Part of the paradigm shift to sustainability is already happening among the wealthier and more educated classes: small is seen as better than big; natural materials are better than synthetic; multipurpose is better than single function; "gourmet" food is better than standard; fresh organic fruit and vegetables are healthier; exercise is important for well being; global warming is a real danger; not commuting to work is possible and preferable; solar power is luxurious and Internet communications, shopping, learning and entertainment are better than the old ways, etc. Environmentally friendly values will spread by desire and aspiration (not by guilt or fear!). But business interests and government policy must converge. Will they?

Full globalisation is only possible in practice if it is environmentally sustainable. The current globalisation pattern with materials – and energy-intensive production centred in Asia and consumption concentrated in the developed countries has obvious limits that will be reflected in market prices and lead to behavioural changes.

There is an almost unavoidable path of the current patterns that will result in rising prices of oil and raw materials as the economy recovers. This will in turn increase the costs of packaging (which is done with energy-intensive cardboard and plastics) and of freight (by oil fuelled trucks, trains, ships and planes). The continuing increase of CO_2 intensified by globalised growth will augment the visible effects of greater global warming, leading to a rise in the climatic risk premia of insurance and in the cost of projects for facing or avoiding catastrophes. The overall effect will be a change in the economics of the production, transport and distribution of tangible goods that will in turn lead to changes in business strategies and in government policies. This will result in the massive relocation and geographic re-specialisation of physical production into optimal local, regional and global networks, in the gradual shift from tangible to intangibles in the composition of world production and in the redefinition of the consumption patterns for the "good life"

Choosing the future

Of course, the future is open to socio-political decisions and the range of the possible is very wide. On one extreme, there is the option of letting finance continue deciding on investment, with its short-term gambling focus and we can end up with a "Gilded Age" of shining prosperity on the surface and with continued polarisation of income within and between countries. That will mean confronting violence and migratory pressures along a bumpy road of successive booms and crashes. Alternatively, policies can be set up to favour the growth and expansion of the interests of production, facilitating long-term job-creating investment across the globe. This would lead to a global "Golden Age"; a positive-sum game with increasing prosperity for all, a major expansion of world demand and trade, providing healthy profits for business (in both production and finance) all in a more peaceful atmosphere. The choice is in the hands of every country, region and company, but especially in the hands of the international community.

Indeed, the technological stage is set for the global golden age of the 21st Century. It will require imagination, determination and knowledge to get all the welfare potential they offer while preserving the planet for future generations. The forces favouring a sustainable route to growth are coming together while the resistance of the financial world is still very strong. It is up to government, business and society to agree on the convergent actions to bring forth the best of the possible futures. Successfully effecting this transition is the major task of our time.

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Value Creation has changed: interaction and creativity

> "...the future is no longer determined by the present, and the symmetry between past and present is broken."
>
> (Ilya Prigogine on the consequences of his Nobel prize winning theories on self-organization and the end of certainty)

What Prigogine is referring to in the above quote is, at the end of the twentieth century, the end of the determinism in the natural sciences which had its roots in the eighteenth century. Prigogine describes in the chemical experiments for which he was awarded the Nobel prize the emergence of order out of disorder in conditions far from equilibrium. Moving from the control parameters of equilibrium he describes chemical activity which can only be grasped by an understanding of a temporal paradox, order and disorder at the same time in a radical sense. At the very point of challenging traditional science in putting forth his theory of self-organization, Prigogine also boldly states that, if what he is saying is true, then it also has far-reaching and radical consequences for the social sciences, in particular for our understanding of social communication.

Time and the way we tend to look at processes as things

For Prigogine the future is not determined by the present, the present is rather the ongoing constructing of the future. We can understand what he means in saying this by looking at an expression like "value creation". We have come to understand "value" as a thing, while as a matter of fact it a process, the social process of valuing. At first it may seem unimportant to make such a difference since at any given time the "snapshot" of the process can be taken as a given "thing". But we then forget something very important: when we reduce value to a "thing" we take for granted a habit of thinking that the future is determined by the present. That would mean that the future is the predictable manipulation of "things" we find in the present. We remain in a paradigm of certainty and the known. We lose the notion of processes which, on the other hand, are the living self organizing processes of valuing, whereby the future is not determined by the present, and it is in a radical sense uncertain with the possibility of the emergence of genuine novelty. Human social interaction is a prime example of Prigogine's conditions of far from equilibrium conditions: we are as our lived present constructing a future within the constraints of the past in which novelty can emerge. To bring value creation alive by considering the process of valuing and the emergence of values is to move from the eighteenth century to the twenty-first century.

There is an important consequence of making this move. Coupled with the insight into the self-organizing nature of social interaction is the insight into the importance of the local nature of the interaction whereby local would be defined as those with whom one interacts in a way which makes a difference, irregardless of spacial proximity. Self-organizing processes cannot be controlled, even by those participating in them. That is not to say that everyone involved is not acting with strong intentions, some with undermining and manipulative intentions, but in the resulting conflicts and struggles the outcome remains unpredictable.

The way of thinking which easily separates “things” from the self-organizing processes is also a root cause of crises, such as the current crisis of investment capitalism, whereby over years those making key decisions of financial policy have become increasingly divorced from the everyday reality of those doing the everyday business, the local interaction where people have a concrete sense of living self-organizing processes as the expression of grounded values.

The end of certainty is the end of the fantasy that we can simply rationally choose and realize our intentions as autonomous individuals or groups of individuals. We are social through and through and we act as the expression of strongly felt values. Economic value can be vital part of the valuing process or it can become an abstraction, divorced from reality. This means value creation has changed; it has changed in two key respects. It has changed in regard to our understanding of the self organizing processes of social interaction and, building on this, it has changed in regard to the creative possibilities of a new understanding of communication shaping new technologies which are transforming how we work together.

New interaction technologies have become the basis of new habits of conversation which are radically changing the expression of values and providing new opportunities for the local sense of identity as regions. In the following I would like to take up the importance of self-organizing local interaction and the potential for creativity which it holds. This brings a new focus to the importance of the sense of identity which emerges only in regions. Values only emerge and can be strengthened in such a regional context. A weakening of regional identity would lead directly to a weakening of global economic potential. Strong regional values strengthen the process of globalization.

The self-organizing processes of social interaction

When one imagines the number of regions involved in global economic activity and the millions of people who make up these regions it is quite mind-boggling to understand how any coherent patterns and effective and coherent decisions emerge. It is certainly not possible to understand this in terms of the eighteenth century concept of autonomous individuals. Thinking by analogy in terms of complexity and self-organization in the manner of Prigogine, however, we find that models of complex systems demonstrate that non-linear interactions between large numbers of entities, each responding to limited numbers of others on the basis of their own local principles of interaction, produce, in conditions far from equilibrium, i.e. without control, coherent population-wide patterns with the potential for genuine novelty, both creative and destructive, when the agents are sufficiently diverse. In other words, the very process of local interaction has the inherent capacity to spontaneously produce coherent population-wide patterns without any blueprint or implemented program for those population-wide patterns.

Such is the move from the eighteenth to the twenty-first century. It is far too narrow to simply think in terms of autonomous individuals planning and then acting in terms of the manipulation of “things”, objects they can optimize at will as a basis for the future. The coherent economic patterns which emerge and become the basis for further action are emerging from self-organizing processes, which we can and must strive to influence, but which cannot by any means simply be controlled.

The paradox of intention and improvisation

What we have to learn, then, if we cannot control such interaction, is how we influence and participate more intensely in it. Here again Prigogine’s notion of paradox is crucial. We do have to plan intensely and develop detailed strategy, not on the assumption of then directly realizing these intentions, but in the knowledge that all other serious players are doing the same. This leads to the inevitability of conflict and competition, a conflict in which only those who have an adequate knowledge of the context and are well prepared can participate. The paradox is then that we develop strong intentions and strategies in order to be able to improvise in the conflictual struggle to reach a decision as a way of constructing the future.

Developing intention and improvisation are the enacting of the process of valuing, the expression of who we are, what we think we are doing and the motivation for doing it.

If in the economic and financial conflicts we are no longer aware of the grounded values which emerge in the local life of regions, we run the risk of losing our selves and our values to self-serving anonymous interests. This leads inevitably to such crises as the one we are currently experiencing.

The creative possibilities of new habits of conversation

Managers do what they have to do in conversation. Everything we do, we do in conversation. The habits of conversation which emerge shape the plans, strategies and intentions which form the basis for improvisation in the conflictual struggle of doing business and competing for the future. Again and again management finds itself caught in habits of conversation which hinder creativity in the development of new intentions, plans and strategies. Here the innovative new interaction technologies emerging on the basis of social media offer the opportunity for the emergence of new habits of conversation. But the technology in itself is neutral; we could compare it to a artist's paint brush – in itself neutral. But in the hands of a Picasso or Miró it becomes a tool for expessing creative new forms of art.

Networking – a new definition of local interaction

Networking and the social production which it enables are examples of the emergence of a new definition of local interaction, enabling new habits of conversation. It has the potential to put cooperative-competitive interaction and the enabling, conflicting constraints that relationship imposes, right at the center of the the creative-distructive processes of organizing. Important for the expression of values is that power, politics and conflict are played out as joint action in a new dimension enabled by the new interaction technologies. Novel organizational developments, good and bad, are caused by the political, social and psychological nature of human relationships as shifts in valuing. It has become less possible, as in the past, to remove ambiguity and conflict. Power must no longer be thought of as unpleasant and difficult to discuss and politics no longer seen in such a narrow sense. Values are the core motivation of power and politics and these are pervasive in social interaction.

Strengthening the identity of regions in the process of globalization

The role of a sense of identity in value creation is key to understanding the importance of regions in the self-organizing processes of networking in moving toward globalization. At the core of the economic struggle to compete for the future is the struggle for recognition, shaped by the unique values of each region. Values are, as Alexis de Tocqueville, defined them in trying to understand his experience of America in the first half of the 19th century, "habits of the heart". They are the source of a sense of identity and the basis of spontaneity and risk-taking in local interaction. We must not allow the alienating reduction of values to abstract financial and economic statistics, as "things" to be split off from the social processes of valuing. We must hold the two together as the paradox of holding strong ideals and at the same functionalizing them in our everyday tasks and projects.

Value creation: a future under construction in the present

At the beginning of his last book, called *The End of Certainty*, Ilya Prigogine poses what he sees as a central question: "Is the future given, or is it under perpetual construction?" His answer to the question is very clear: he sees the future for every level of the universe as under perpetual construction and he suggests that the process of perpetual construction, at all levels, can be understood in nonlinear, non equilibrium terms, where instabilities, or fluctuations, break symmetries, particularly the symmetry of time so that new order emerges in disorder. He says that nature is about the creation of unpredictable novelty where the possible is richer than the real. When he moves from focused models and laboratory experiments to think about the wider questions of evolution, a move that many scientists would question, he sees life as an unstable system with an unknowable future in which the irreversibility of time plays a constitutive role. He sees evolution as encountering bifurcation points and taking paths at these points that depend on the micro details of interaction at those points. Prigogine sees evolution at all levels in terms of instabilities with humans and their creativity as a part of it. For him, human creativity is essentially the same process as nature's creativity and this is the basis for his call for "a new dialogue with nature" which moves away from domination and control. These features, unknowable futures emerging in here-and-now disorderly interactions in the present, represent a paradoxical form of causality which can be defined as transformative causality. The key paradox here is that entities are forming patterns of interaction and at the same time, they are being formed by these patterns of interaction. If we were to think of human organizations and societies in these terms it would mean that interdependent individual agents are forming patterns of organization / society in the interplay of their intentional acts while, at the same time those individuals are being formed by the patterns they are creating where what is being formed is personal identity including ways of thinking. This is the causality of the perpetual construction of the future as movement into the unknown. The resonance with a changing understanding of value creation is very powerful.

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Strategies. Creating change

The task

Strategic foresight requires two parallel skills – anticipating change coming at us from the world and creating change within our own spheres of influence. This talk is about the latter.

In the emerging discipline of strategic foresight, the rate of change varies from continuous to discontinuous. In other words, change occurs relatively slowly and predictably over long periods of time, interrupted by rapid, disruptive change. The long periods of continuous change are the eras that we studied in history, a coherent period of time with a unique identity that differs fundamentally from what went before and what happened after. Eras begin and end with disruptions, short periods of rapid change that reset the parameters of the era. Some major disruptions over the last 20 years have been the fall of the Berlin Wall, the appearance of the World Wide Web, Y2K and the bursting of the tech bubble, the attacks on the World Trade Center and the recent financial crisis. While disruptions do not change everything (Nothing does!), they change enough in specific domains to constitute a new era – a new way of doing things, new trends and issues, and new formulas for being successful.

So just as eras occur in the world, they also occur within organizations. New management, an acquisition or merger, a new line of business – all can create a new state of affairs within an organization. The difference, however, is that disruptions within organizations are usually chosen rather than forced by the outside world. Those who choose to create a new era are called transformational leaders. These leaders are not necessarily the managers or authorities in charge of the organization, though they may be. Rather they are people who see the possibility of a new era, commit to move in that direction themselves, and work to persuade others to follow them.

The job of creating a new era is not easy, and it can even be dangerous because the transition from one era to another is treacherous, risky, expensive, time-consuming and filled with mistakes and setbacks. Joseph Schumpeter, the Austrian economist, called the disruptions between eras "waves of creative destruction." He was talking about the periodic transition from one lead technology to another, exactly what Dr. Perez was describing. Unfortunately, it is not possible to simply leave one era and enter the next one. Rather it is necessary first to abandon, if not destroy many of the good things of the old era in order to make room for the new.

The story of the Exodus is a classic story of such a transformational change. Moses first had to convince the Hebrews to leave Egypt. Even though they were little more than slaves there, they still knew that way of life and were reluctant to leave. After that was the desert – a good reason not to leave! Whether it was 40 years or not, crossing the Sinai desert in those days was no easy task. But cross it they did, finally arriving at the Promised Land. Every story of transformational change follows this same pattern.

But can't successful organizations simply build on their strengths and go directly to the new era without having to cross the desert? A good question, and would that it were so. Unfortunately, there seems to be an iron law of change that requires destruction before creation. If you want a new kitchen or a new road, you first have to tear out the old one. If you want to start a new career, you first have to acquire the skills and start at the bottom. If you want to have a secure retirement, you have to invest your money and take it out of use for a long time. One step backwards before taking two or more steps forward.

And no one likes that part of transformational change. It is messy, chaotic, disorganized. Perfectly good procedures that have worked for a long time must be abandoned in favor of new, untried procedures. Job skills that made people successful become outmoded. Tasks that were performed efficiently now take longer and cause more problems.

And so people begin to disagree. Why is this taking so long? Why can't we just go back and do it the old way? Why did we start this change in the first place? Long-buried conflicts flare up anew. Some actually try to use the disorganization associated with the change as a chance to advance their own interest at the expense of others or even of the whole enterprise. So people who "resist change" are not be so stupid after all. Why would anyone *want* to go through such a period? Actually few people do. But there are good reasons for doing so – the world has changed since the old era began; as a result, the old era has outlived its usefulness; it's time to create a new era with better outcomes, and this is the only way to do so. So the bad news is that you have to cross the desert to get to the Promised Land,

So leaders face enormous resistance when they promote transformational change. Questions and issues arise from all sides:

- What should we abandon (from the old era) and what will replace it?
- How long will this take?

- How expensive is it going to be?
- Can you guarantee that it will be worth it?
- What if we abandon the things of the old era, but we are not able to replace it with the things of the new?

All very good questions for which there are no satisfying answers. Transformational change is more like exploration than construction. No one has ever attempted this type of transformation, in this organization, at this time, under these circumstances. Explorers prepare for their journey as best they can. But if neither they nor anyone else has ever been there before, they clearly cannot have a lock-solid plan. They have to assemble a highly motivated team, be opportunistic and flexible as things happen, and keep their eye on the ultimate objective even though the way there may not be entirely clear.

Most attempts to create transformational change fail, but not all. Most venture capital investments also fail, but not all. And the ones that succeed pay for all the rest. Arriving at the Promised Land will make all the difficulties worth it – that is, if we actually do get there! And there's the rub: Destruction happens before creation. You have to leave the old era before arriving at the new one. And leaving the old era is no guarantee that one will arrive at the new one, or whether there is even a new one to be arrived at! So leadership is difficult and dangerous, but the reward, when it comes, is enormous.

So if transformation is advisable or even necessary, how does one go about it. The good news is that there are many ways; the bad news is that no one knows which ones work! The author undertook an informal survey of books about organizational change some years ago and came up with 16 different theories about how organizations change. So the right strategy depends heavily on the situation – the objective, the organization and its culture, the leaders and their skills, and external circumstances. With such variability, it is no wonder that most change initiatives fail.

For better or worse, therefore, the author has assembled a few principles for creating change that he and others have found useful in promoting transformational change. There are just about as many of these lists in the literature as there are books and articles in the literature, but these are the ones recommended here:

1. Have a very good reason for promoting the change in the first place

As described above, transformational change is a risky and expensive business, and no one should take on the task lightly. What is more, few will enroll in the campaign to create the change unless there is a good reason for doing so.

The rationale is contained the Case for Change. The Case for Change includes the fundamental reason(s) for the change, such as how the world has changed or how the current organizational practices have become obsolete. Jack Welch, the legendary CEO of GE, said, "If the organization is not changing at least as fast as the world, then it will be out of business." The case needs to be compelling, "If we don't do this,…" It also needs to be honest. Simply making stuff up will not work under the scrutiny that the case will receive during the change process.

2. Be honest about the process

Secondly, the case needs to describe the process for making the change, as best as one can, before embarking on the journey. No one can know the exact process ahead of time because the change process is exploration. It is doing some brand-new at this time in this way. Those who need details are not ready for the journey because there is no way of providing them. Without being excessively pessimistic, the leader needs to enroll people who as much as they can about lies ahead.

Unfortunately, the tendency will be to downplay the difficulties in trying to get people to sign on. We see that tendency in the many people who try to persuade us to do something, such as sales people, vendors or political leaders. "All you have to do is…" Play up the benefits; downplay the costs. But the costs of the change are directly proportional to the scope of the change. There is no free lunch, and no free change. Skillful managers can minimize those costs, but they cannot eliminate them. If the case for change is not honest about difficulties at the beginning, then the actual difficulties will stall the process in midstream when they become apparent.

3. Articulate a vision for the result of the change.

Finally, the case needs to include the outcomes, the benefits, the results, indeed the vision of the Promised Land. There has to be a payoff for people to sign on in the first place. Why leave the old era if the new era does not promise anything more?

Many people require a *clear* vision of the future for the change process to work. But clarity is a relative thing. How can one be perfectly clear about something that has not happened yet? Visions can be compelling and motivating even if they are not altogether clear. Dr. Martin Luther King, Jr.'s speech (*I Have a Dream Speech*) is one of the best examples of articulating a vision in American history.

- "I have a dream that one day on the red hills of Georgia the sons of former slaves and the sons of former slave owners will be able to sit down together at the table of brotherhood.

- I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin but by the content of their character.

- With this faith we will be able to hew out of the mountain of despair a stone of hope. With this faith we will be able to transform the jangling discords of our nation into a beautiful symphony of brotherhood." – August 28, 1963.

Dr. King's high rhetoric has all the elements of a true vision:

- It is an *image*, not just an idea. The speech is filled with *images* of oppression and freedom, not just references to them.

- It is about the future, not about the past. When asked, most people want a return to the "good old days," which were actually not all the good.

- It is attractive, appealing, even *compelling*. Many believe that Dr. King was compelled to be a leader in the civil rights movement, that he had little choice by his own character and values. And he is clearly trying to compel others to follow him

- It is *bold* and ambitious, yet plausible. Dr. King's vision for a country free of the discrimination that had so marred its history is bold, to say the least. But it is also plausible, even if barely so, because some progress had been made already.

- It is the *best* we can be or do. Clearly there could be no higher calling for citizens of a great nation than to build the kind of race relations that Dr. King envisions.

- It is *unique*; it is our time. If we don't do it, no one will. The time is now. If we do not act now how, then the moment will be lost for a long time. As John Gardner once said, "We are the people we have been waiting for."

- It is motivating and energizing. It moves people to do extraordinary things, to put in that extra effort, to be part of something bigger than themselves, indeed to be part of history.

None of us can possibly match the historic importance of that speech or that time in history. But every call to transformational change needs to include the same elements, even if in a muted form. Creating transformational change in a company is just as important to the people involved as creating civil rights was to the people of the United States at that time.

4. Commit to achieve the vision, or significant parts of it, no matter how long it takes and how hard it is.

Most people embark on transformational change with the best intentions. They believe in the worth of their vision, and they are prepared to work for it. But in the end, the work is longer and harder than they anticipated, and they give up. They simply were not prepared for the difficulties involved. We do not blame them. Transformational change is extraordinarily difficult, and it takes a very long time.

On the other hand, lack of commitment is the single most important source of the cynicism that most people have about change. They've been there before – excited about the possibilities, signed on and ready to go, only to be let down with the process fizzles out. Are they going to sign on the next time? Maybe, but they will need a more compelling case. A third time? Or more? After a while, no case for change is good enough. They've been fooled by high sounding visions before; they will not be fooled again.

So as with the case for change, do not begin a transformational change until you have an open-ended commitment to do what it takes to make some observable progress. One does not have to achieve the vision to be successful. Dr. King did not see the visionary future of his speech, but he certainly made measurable progress toward it. No one was disappointed in his commitment, nor did they feel let down by his effort. Don't start unless you intend to finish.

5. Communicate!

Everyone one knows that communication is essential for the success of any enterprise – communicating with team members, with bosses, with employees, with customers, with suppliers, with regulators. One can hardly have too much communication, although it does take time and sometimes money to do well.

Nevertheless, when we think of communication, we usually only thing of one-way – telling people things in meetings, telephone calls, memos, emails, websites, ads. So we think of communication as primarily outbound, but the most important communication in transformational change might be inbound – i.e., listening. We are ready for the process; we have committed to the vision; we have steeled ourselves to the difficulties of change. Now all we have to do is *push* it through – push, outbound!

No, take a breath and listen. Listen to what people want, why are they part of this organization, what do the like and not like, what are they doing with their lives? And during the change, what warnings are they giving, what problems are they seeing, what suggestions are they making? Part of our commitment unfortunately is not to pay any attention to resistance. "Those people are just against the change!" Some, even many may be, but not all. Some are offering genuine information that will be important for a successful outcome.

And even more important, they might be sharing their aspirations, their hopes and dreams. The vision has to touch what is most important to people for it to be motivating and compelling. And the leader cannot touch that unless he or she knows what it is.

And there is a role to outbound communication as well, but again, not what people often think. Most outbound communication is information about the process – details about what is going on, new processes, new procedures, etc. Those are important, but not as important as continued communication about the vision. Why is all this happening? Why are we doing this? People signed on to work for the vision, but the vision is easily lost in the details and the difficulties. Someone needs to manage the process and communicate the details. The leader's primary communication, in addition to listening, is to continue to focus on the vision. The vision is why all of this happening, why we started this in the first place. The US Public Broadcasting System's documentary on the civil rights movement was entitled *Eyes on the Prize*, an apt phrase for any leader to follow. Focus on the vision, and others will manage the details.

6. Generate trust

Most of these principles came from an exercise that the author conducted for school superintendents in Texas some years ago. He was asked by a regional service center to offer the superintendents a workshop on change management, but he was asked not use the term "change management." The superintendents were sick of that term.

It's not ordinary practice so disguise the learning objective in a workshop, but the author went ahead anyway. He created a simple exercise in which the superintendents were to list the change projects they had been part of in two columns – those that had done well and those that had not. (Unfortunately, the second list is usually longer than the first!) He would then ask them to tell how the two columns differed – what did the good projects do well that the bad projects did not.

The author had never done this exercise before so he tried it first on a staff group at the service center before doing it with the superintendents. The staff group came up with four characteristics (key success factors) for the good projects that we not present in the others – vision, commitment, communication and trust. The next week, the superintendents came up with exactly three of these – vision, commitment and communication. When the author mentioned that the staff group also put trust on the list of key success factors, the superintendents were amazed. "You mean they do not trust us?" A silly question on the face of it!

> "No, they do not trust you. You are personally trustworthy people, to be sure; it is your positions they do not trust. They have been disappointed by authorities who promoted change so many times before that they do not trust anyone in your position."

Trust is absolutely necessary in any successful change process because so much is unknown and process itself is disorganized and confusing. One must be able to trust the leaders and others which means that they can count on people to tell the truth and to do what they say will do. When people's words are consistent with what others find out to be true and when they are consistent with that person eventually does, then they can be trusted. If once they are found not to be telling the truth or they do not do what they say they will do, then they cannot be trusted.

Unfortunately, mistrust is much more common in an atmosphere of confusion and cynicism. It takes a long time to build up trust, and unfortunately, only one or two unfortunate incidents to destroy it. So what is the leader to do? Take the risk; trust until proven otherwise. It is true that some people cannot be trusted, but you do not know who they are until they show it. Fortunately, most people can be trusted so the odds are that giving people the benefit of the doubt initially will reap more rewards than mistrusting everyone from the outset. Yes, some will take advantage of that, and they must be dealt with. But others will respond enthusiastically to the trust that is extended to them.

Without trust, no one follows the leader; no one can count on their team members, and the change process goes nowhere. Trust is the least recognized success factor in transformational change, even as it is the hardest to achieve.

Conclusion

Transformational change is the process of creating a new era, in the world for some or in organizations or small groups for most. It begins with one or more leaders who see that the old era is no longer suitable for the present, much less the future. They articulate a vision for the new era and enroll others in the campaign to bring that vision about. They and their followers face enormous obstacles from the skepticism and resistance of the majority to the difficulty of abandoning old practices even before new ones are not ready. They engage in that process nevertheless because it must be done sooner or later and they want it done sooner before the world comes in and dictates the terms of the change.

While we use historical examples to illustrate the process, the same principles apply to small enterprises, and even to businesses wanting to capitalize on a new opportunity. Change is change whether it is created in the small or the large.

Resources

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Peter Bishop
Associate Professor of Strategic Foresight and Coordinator of the graduate program in Futures Studies, University of Houston

No Future – how to embrace complexity and win

According to the weather service the sun will rise tomorrow at 6:46. There is a fair degree of confidence in this prediction. A meteor might hit the earth between now and then or space aliens might tow the earth to a new location. But these are low probability events when compared to tomorrow's sunrise. What about the future of the global economy? What can be predicted about economic performance over the next five years?

It is probably safe to say that in one form or another economic activity and the global flows of goods, services, capital, labor, and ideas will continue over the next five years. Productive economic activity and some degree of cross boundary, over the horizon interaction, has characterized human societies for millennia, so it is a safe bet that some form of economic growth and globalization will continue into the future. But the expectation that economic growth might be plus or minus a couple of percentage points and that global flows will continue does not tell us much about what to actually do.

Which sectors will be winners? Where will margins be squeezed by competitors or declining demand? Which technologies will diffuse fastest or change the rules of a specific market (like MP3's for music or the iphone for smartphones)? How will supply chains change? Where will innovation come from? Without a more precise prediction of what will happen specifically, to your sector, to your products, to your market, to your sources of capital, to your margins – what good is general forecast that things will muddle on more or less as usual? Isn't there a model that offers safe and accurate predictions of how global flows and prospects will enter into the value-chain that generates revenues and profits?

The short answer, not a surprise, is no.

Economic change is too open ended. As pragmatists point out and recent cyclical events underscore, things can change quickly and yesterday's anticipatory assumptions – the basis for the predictions used to make decisions – can look fairly foolish only days or months later. The potential for variance is too large and the number of causal factors that might account for such variance greater still. Worse, even if we had perfect information, knew everything about everything, phenomenon like economic change and globalization are fundamentally indeterminate. This compounds the fact that we do not in fact know everything about everything.

Thus when it comes to the future ignorance combines with the creativity of our universe to render prediction either a game of imposing our will on what ever happens or a way to deceive ourselves. The former may be justifiable in circumstances where the ends are so important that the means can be imposed – even if the outcome is often not at all what was intended originally. The latter can be important for our confidence and maybe, at least up until now, psychologically necessary for making the choices and taking the risks that generate change. But fundamentally, the impossibility of prediction is good news for our ability to imagine and exercise freedom.

Either way – because of our ignorance or fundamental indeterminacy – there is **no future,** in the sense of predictability, for complex phenomena.

If there is no future, then what?

Lacking an effective way to predict the future of economic change what options are available if we still want to take the future into account when we make decisions in the present? What is the alternative? Do we give up and let fatalism reign? I don't think so. Like the thinkers obliged to revise their view of the cosmos when Copernicus overthrew Ptolemy, there are new ways of looking at the world based on an acceptance of both ignorance and fundamental indeterminacy or openness. This is what embracing complexity is about.

One way to still exercise our volition, indeed moral obligation to address the flaws in the world around us and pursue our aspirations, is to improve our anticipatory systems in ways that take fundamental openness into account. The alternative to the predictive approach is to construct stories about the future that are inspired by the present and past but do not pretend to offer a probabilistic assessment of how likely any one future may be. This Futures Literacy approach has the virtue of achieving two goals that are critical for decision-making.

First rigorously imagined exploratory scenarios help to reveal the anticipatory assumptions, the images or idea of what the future will be like that people use to make choices. Second these non-predictive stories about how things work in the future can be quite imaginative, painting a radically different picture of the future. This, in turn, allows a re-evaluation of the anticipatory assumptions being used to make decisions in the present.

Rigorously imagined exploratory scenarios that are at the core of a Futures Literacy approach are not the same as the typical scenario used by businesses and governments. The more common types of scenario are used to plan, like in a chess game. The purpose of these scenarios is to think through different ways of getting to the same goal using given resources and given rules of the game. The scenarios are just different ways of getting to the same objective.

Another common type of scenario is the what-if simulation, meant to test and improve the capacity of an emergency crew or military contingent to react to different situations. Flight simulators for pilots are a good example of this kind of scenario. All sorts of wildcards like freak storms or mechanical failures along with many different types of airplane and airport can be simulated.

However when it comes to complex evolving systems like the future of economic change and globalization, there is little point in developing either planning or contingency scenarios. Dealing with the indeterminacy of open systems requires a radically different point-of-view – one that does not seek to know or predict what might happen in the future. Instead the aim is to better understand how our ideas, images, expectations and assumptions about the future enter into our decision making in the present. This involves two key steps: one is becoming more aware of our typically implicit notions of the future; and two is challenging and developing alternatives to our current picture of the future.

In exploratory scenario exercises there are few fixed parameters (givens). An illustrative way of presenting this point is to think about a person ageing. It is commonplace to expect that as a person gets older their tastes, values, and capabilities all change. When recounting the story of a person's future we naturally take into account the fact that what a child wants to become at 10 is not likely to be what they want at 25. We also know that what our parents or grandparents wanted us to become, or could even imagine us becoming, is too limiting. Not only do vocabularies (what can be articulated as an aspiration) change, but so too do enabling and constraining conditions (like authoritarianism, mass-production, etc.). It is obvious that a European child born to the war torn middle of the 20th century could not tell the same story about their future as one born today (without in any way making a judgment about the superiority or inferiority of their speculations).

Combining the assumption that changing contexts change not only what is possible but what is imaginable with the value statement that it would be wrong to insist that future generations must hold the same values as we do today, eliminates one of the key expectations typically attached to a foresight or scenario exercise. Most often the implicit (sometimes explicit) expectation of a scenario exercise is that it will help people to change what they do today by contrasting current choices with either a more desirable future or a more probable future.[1]

The normative future offers an "ideal" benchmark, while the probable future (typically based on a pseudo-predictive model using trends and driving forces) offers lessons on what to do or not to do if one wants to either accelerate or avoid the scenario that, from today's perspective is deemed more or less probable. Both are rooted in a planning paradigm that uses scenarios as a way to improve blueprints for the future (be it for a path over time (time-series) or for an outcome (cross-section)).

An alternative, what I call Futures Literacy approach, uses scenarios as a tool for calling into question current decisions without any expectation that the scenario used today will correspond to the scenario developed tomorrow. Jettisoning the planning premise may seem like a subtle distinction. For instance critics of foresight in general might point out that in any case, both in practice and in principle, scenarios are usually assigned a low probability and hence are not a dependable planning tool. But by altering the premise that underpins the way decision makers typically use scenarios, particularly by explicitly not accepting the dual planning oriented imperatives of fixing a target[2] for the future and seeking the highest probability prediction (despite formal proclamations to the contrary), the scenario method advanced here is at once more modest and less constrained.

It is modest in terms of the imposition of today's values on a long-run future. It is modest in terms of the predictive value of the scenarios. And it is modest in terms of the realization that even if the scenarios are highly imaginative and get "outside-the-box" that so often constrains thinking about the future, there is no way to know if we are inventing the vocabulary of tomorrow or not. Yet, this approach is also less constrained, less modest, when it comes to throwing off the limits imposed by both the search for predictive accuracy and projecting today's values into the future. And it is much more ambitious when it comes to both detecting and acting on the potential of the present.

1. It is also common to use scenario exercises to build up better communication and a shared understanding of values and expectations. But this type of scenario exercise does not usually target specific policy issues.

2. A single target because even if the scenario process generates multiple scenarios the policy choice is made in terms of avoiding the bad scenario or achieving the good one. Sometimes policies are elaborated or judged in terms of being able to accommodate multiple scenarios and this polyvalence is deemed a useful criterion. However this is still a planning perspective only using a set rather than a single target.

So what about the crisis and the "next" economy?

Current economic events are frightening and painful for many people and companies. What seemed fairly certain and predictable only a year or two ago now seems uncertain and obscure. It is commonplace to hear that the current crisis makes it impossible to continue with "business-as-usual". Everywhere people are saying it is time to change, time to adapt to a new world, that old solutions will not work.

Yet, almost in the same breath decision makers are demanding that every choice reduce uncertainty. After all the say, everything is so uncertain already, don't add to a bad situation. So the decision-making rule is: "don't do anything that will increase the already excessive uncertainty." Choose initiatives that have a solid track record of working effectively, of being predictable and tested.

This is today's paradox. In the face of greater uncertainty there is greater insistence on predictable, quantifiable, low risk choices – in order to offset uncertainty. Unfortunately if the first premise is right then looking for "tried and true" solutions is simply a way to make even bigger mistakes. False certainty is worse than no certainty. And yet, if we look around us many of us are convinced that the world is changing. Part of this is, as is only natural, the "hubris of the now". Our sincere belief that this moment in time is the most ____________________ (fill in the blank): fastest, biggest, most complicated, most overloaded, most dangerous, the most Madoff, etc.

Still, as the kinds of analysis presented by Carlota Perez or Doug Griffin (see this volume) point out, there are significant, historically specific changes taking place that distinguish the current conjuncture from the preceding period. And the financial crisis, rather than being just an aberration of bad morals and bad regulation, is indicative of systemic changes in the underlying structure of our economies and societies. From this perspective we are living a moment when the swirling clouds of evolutionary complexity part, offering a glimpse of a landscape where three features stand out *and* what needs to be done becomes clear. It is time to embrace experimentalism.[3]

3. This text is adapted from an article by the author, published in Optimum Online, http://www.optimumonline.ca/article.phtml?id=332, and Ethical Markets, http://www.ethicalmarkets.com/2009/01/30/to-experiment-or-not-to-experiment- – -that-is-the-question/

The shocking

The first feature revealed by the "crisis" and the current collapse in the credibility of people's assumptions about the future is that the emperor has no clothes. The financial system's detachment from the "real economy" is evident for everyone to see. The idea that globalization and a "flat world" assured us of never-ending prosperity, is not true. At the same time what is happening at the moment, the feeling of abrupt discontinuity, fear of deindustrialization and the dangers of trading with India, China and Brazil, is not because of a conspiracy or incompetence.

There are people who are looking for scapegoats, someone to blame. I would argue for a different take on the blame game. Not one that entirely exonerates individual actors or groups of actors of responsibility, but repositions that responsibility to the limited power of volition and explicit collective choices. In other words it turns out that in the kind of hyper-complex evolutionary system we currently are in, i.e. industrial societies rooted in private property, market transactions and modest elite reshuffling through elections, the disconnect between the financial system (that should play a key role in both the Darwinian process of reallocation and management of liquidity) and the rest of the value creating (output of utility) system happens regularly (again see Carlotta Perez).

Without getting into why this happens, the evidence that it has happened is fairly overwhelming, particularly at the moment. The key question is how to restore the systemic attributes we care about? Here I don't think it is asking the financial folks to become more self-aware, humble and prescient. Let them continue to be predators, playing their profit hunting role, as aggressively as they can – including going after speculative, tail-chasing bubble activity when they can't find anything else better to eat.

This obsessive exuberance serves us well – on the one hand it means that many projects that would never be tried or explored in a more sober, controlled system actually get funding to do wild and experimental things (anyone want to live in a system that can pre-emptively control excess and risk, that doesn't pursue evolutionary experimentalism?); and on the other hand it sends a signal that the way in which utility and profit were produced in the past no longer interests the carnivores – a critical signal of the need to change the allocation of power.

Only the allocation of power is not changed by the bankers, at least not willingly or on the basis of their way of seeing the world. The shift to a different way of organizing wealth creation is a much broader process, one that has up until now occurred mostly inadvertently and with massive amounts of horrific destruction. I'm not saying that anything is inevitable – the future of hyper-complex evolutionary system is unknowable and fundamentally indeterminable – but don't blame the bankers or ask them to turn into lambs.

Let them continue to hunt, but in new jungles. Simply closing off (regulating) the old hunting grounds such as the pyramid scheme of chasing their own securitized, triple A financial instruments or continuing to channel funds into failing automotive companies or their own industrial era white collar, Taylorist activities like retail banking, just puts them on a diet. The challenge is bigger and more society wide, how to open up new fields of value creation – along with the rules, institutions, organizations, business models, etc. that go along with this kind of change.

The traces of emergence are around us but blame and nostalgia won't provide us with the insights to act now on the potential of the present. It is a common event in the history of firms and sectors that eventually they get drawn away, initially by innovation and the good profits that go with it, to a point where the core role of what they produce is forgotten. There are famous examples of firms and indeed even whole nations that lose sight of the essential, focusing on doing things that end up being peripheral and ultimately non-resilient. This is the great danger, as IBM's Lou Gerstner explained, of success.

The routine

The second feature that is made more apparent by the current "crisis" is that every morning, when each of us wakes up and starts about our own day, the "real economy" is still there. This is the continuity of human activity that creates wealth in the form of useful output. It is important, very important and not easy in these queasy days at the end of the industrial era, to admit that wealth creating activity includes not just the familiar physical objects that come off automobile assembly lines or the "white collar" services offered by Wall Street brokerages but also the "unique creation" that defines peer production, experience market events, "do-it-yourself" craft, and co-produced relationships arising in fluid networked communities.

What we see in the world around us today is shaped profoundly by what we think will continue to be in the future. Included in our anticipatory assumptions are things we just take for granted as being part of the future, like jobs will be important, companies will be the main way of organizing economic activity, schools and universities will be the key source of knowledge, nations will compete, identity will be given to you, society's values and standards will become more lax because of greater tolerance and diversity, older communities will be poorer communities, and bureaucracy will always be with us.

Now, taking a page out of the foresight methods discussed above, what if we imagine a different future, how does our perspective on the present change? Very briefly here are seven challenges to conventional wisdom if we imagined the future – as a story, not something that is probable or even desirable – in the radically different configuration of what I have called elsewhere the Learning Intensive Society.

First, if "banal creativity" becomes the predominant source of intangible value-added in an economy dominated by "unique creation" then what matters for further productivity gains is not the extent of increases in the technocratic skills of the population but rather their ability (capacity) to refine their own tastes. This implies that the dominant classroom model of teaching, with its industrial era behavioural patterning (passivity, obedience), needs to be reduced to a minimum – especially for youth. The pre-eminence of the refinement of taste in the context of unique creation also implies that there is no need to continue with the race to push ever more people up the traditional industrial era hierarchy of skills.

Second, following on from the predominance of unique creation, industrial ways of organising production, including the firm, give way to much more spontaneous networks of "pro-sumers". A collapse of the divide between supply and demand could significantly reduce the organisational advantages of the administrative firm; but only if we can imagine new institutions and cultures that can sustain the necessary transparency, trust, ease-of-payment, diversity of contractual relationships, and new forms of property rights.

Third, the traditional notion of competition that sees multiple suppliers of a fairly similar product vying to sell to a large number of consumers on the basis of quality/price falls by the wayside since unique products no longer fit this model. This also has implications for two related industrial era notions – the GNP definition of wealth which aggregated the transactions across the supply-demand divide and competition between nations (treated in a sense as firms). The shift to an economy dominated by network based co-production and much more direct transaction/cooperation relationships opens up greater scope for mixing of monetary and non-monetary exchange. It also connects up to a much more personal universe of things and services but also, perhaps more importantly, it opens up the potential to organise work for life instead of the industrial era's adaptation of life for work. Which connects to the next point.

Fourth, one of the basic driving forces of the evolutionary processes (that include failure and extinction) that give rise to transition scale changes is the search for identity in the context of freedom, hence it is not the provision of security but the building of capacity that is crucial for avoiding fundamentalisms. Capacity emerges from experience, by doing rather than being told. Situations where people engage in learning by doing is dominant. But this means that there are a lot of experiments. And if there are experiments there will be failures. Which leads to the next challenge to conventional wisdom.

Fifth, ex-ante industrial planning (administration/bureaucracy) approaches to managing both the perception and probability that a negative risk turns into reality become a source of failure. Just the opposite of what we believe now – that planning is the way to avoid failure and that failure should be avoided at all costs. In the context of much denser, more spontaneous and dynamic networks diversification as well as a general move away from choices that create path dependency are sufficiently risk reducing to allow for reliance on "more risky" just-in-time experimentation. It is more dangerous to avoid experimentation and the failures that come with it than to suppress risk and seek to avoid failure.

Sixth, sustainability depends on improving the capacity for self-organising systems to function. This works because, as already mentioned, we can imagine major breakthroughs in the institutions and cultures that underpin transparency and trust. Adherence to basic common values is a more stringent requirement, internalized constraint rather than externally imposed (policing). While at the same time new ways of identifying and sharing much more fluid and varied collective realities (network standards) means that governance systems have a greater capacity to clarify the nature and temporality of both conflicts and imaginative solutions. Forms of governance function on the basis of experimentation not administration and rest on a greater underlying capacity throughout society to make decisions; a sort of literacy for the post-industrial world.

Seven, last but not least, taking all of the preceding points together could mean that changes in the overall age profile of a population (typically referred to as aging) is NOT a problem at all. People with more experience of refining their own taste, constructing their own identities, networking their work to fit their lives, will be simply better at creating the kind of wealth that defines a Learning Intensive Society. This means that contrary to today's expectations the richest society are the ones with the highest average age.

The jackpot

Taking this imaginary future as a way to look at the present reveals a third feature of the present, that there is a jackpot of riches waiting to be created by reconnecting the "real economy" with the financial system. We face a historically rare opportunity. Economic and social change partially depends, at least in the systems we have today, on a financial system that plays its traditional of specializing in both the (re)allocation of capital and the management of liquidity – in ways that correspond to the present nature of what is being produced and accumulated in the form of assets (capital). Without this essential system the new types of output and the new ways of producing this output, including the emergence of new business models on a viable basis, cannot happen.

Time to experiment

In this time of crisis the reflex of retrenchment, consolidation and refuge in familiar routines is understandable. But it should also be self-evident that financial system innovation is essential for developing the potential of the present. History is replete with examples.

The invention during the Renaissance, over four centuries ago, of such primordial ingredients of the financial system as double entry bookkeeping and the then exotic financial instrument called a "bill-of-exchange" were critical to enabling new business models and new markets to emerge. It is easy to forget that instruments and institutions that we take for granted today like bonds, stock markets and even central banks did not always exist but had to be invented and refined through experimentation.

What to experiment on

Past experience shows that finding the right fit between the emergent system of wealth creation and an appropriate financial system requires experimentation in at least four underlying socio-economic sub-systems – identity, property rights, transaction systems, and shared meaning. One take[4] on today's context suggests experimentation along the following lines:

4. Miller, R., (2006), "Equity in a 21st Century Learning Intensive Society: Is Schooling Part of the Solution?", Foresight, Emerald, Volume 8, Issue 4. And, Miller, R. and Bentley, T. (2003), Unique Creation, National College for School Leadership, UK.

- **Identity.** The emergent “learning intensive society” is characterized by “unique creation” in highly fluid and diverse networks. If there is no easy way to prove and own your identity in a practically useable form then there are very high costs and low incentives to opening an account, making an investment, accumulating assets or taking responsibility (recognizing liability). Citizenship, birth certificates, social security cards and a panoply of rights that we take for granted now need to be extended into cyberspace – it is time to establish the infrastructure of cyber-citizenship.[5]

- **Property rights.** The new relationship between property rights and finance needs to be based on accounting systems that rest on clear and operational property rights systems that validate and valorize two key asset classes: i) creativity in all its cumulative and composite richness (copyleft), and ii) human capital as the verified acquisition of competences – things you know how to do – that can be deposited in a “knowbank”.[6] A willingness to undertake creative experiments equivalent to those of 19th century, like the daring decision to introduce universal compulsory schooling, could easily establish the accounting and assessment methods needed to bring property rights and accounting systems back into realignment with the emergent systems of wealth creation.

- **Transaction systems.** Composite creative works that are formed from a collage of accumulated inputs and spontaneous teams that coalesce for joint activities/joint production of utility (social, business, personal) can only work if there is an easy way to measure value and make payments. For a variety of reasons, including inadequate identity and property rights systems as noted just above, the development of a state backed token that can be used for peer-to-peer payments has not emerged. The problems are not technological but institutional.[7] Central banks did not take initiatives in this direction at the time of the dot.com boom for fear of destabilizing financial sector business models. Now that the sector has to be rebuilt anyhow what better moment to experiment with new forms of payment that can help create new valuation markets and facilitate the viability of new business models in a broad, global-local transaction economy.

5. Miller, R. (1997-99), Rules for Radicals, monthly column for ezine, intellectualcapital.com

6. Miller, R. (1996), Measuring What People Know: Human Capital Accounting for the Knowledge Economy, OECD, Paris.

7. Miller, R., Michalski, W. and Stevens, B. (2002), “The Future of Money”, OECD, Paris.

- **Shared meaning.** Language is an obvious enabler of networking but it is the kind of standard that takes centuries and innovations like nation states and compulsory public schooling to become ubiquitous. The equivalent challenge today is to establish a more rapid, task and context specific ability to arrive at shared meanings. This is a key enabler of a learning intensive networked society. Already much grass roots experimentation is happening with what some are calling the "semantic web", a glimmer of what might be imagined as Web 3.0. Now is the time to be more explicit in encouraging experiments in achieving transparency (finding what you need not just what you already know).

Resistance to experimentation

Collective action to introduce experimentation along these lines provokes resolute and often nasty defensive reactions. This is a normal since the emergence of new systems that function on the basis of different logics reshuffles the stocks and flows of capital and power.

A recent rather low key but costly example of this resistance to change happened during the dot.com boom. This explosion of creative and risky ideas both inflated too fast and collapsed because powerful interests not only protected existing systems of property rights, payment, valuation, and accounting – but also, maybe more importantly, stymied experimentation with alternatives. During the dot.com boom experimentation was fenced-in to a narrow range of "wild entrepreneurialism" that left institutions, accounting practices and power untouched.

Some might say that the current context is different. Given the breadth and depth of the failure of the existing systems the choice of experimentalism may seem like a "no brainer". Turning to experimentalism could even appear like a good way to show some regret over how things turned out and a willingness to try something new. "Hey, let's run a few pilot projects to see if they work. What have we got to lose?"

Fear of experimentalism

Plenty. Embracing experimentalism, as defined here, means abandoning administration. This is a huge and frightening loss. Administrative systems use simplification in conjunction with command and control to achieve planned outcomes and manage risk. Administration has been brilliantly, wildly successful, but at a price.

But using administrative methods to address the reality of complex evolving systems entails a loss of information and freedom.[8] By resting on the "Newtonian" world-view that the universe can be explained, predicted and planned, the administrative approach – even in its most reflective mode – contains two insurmountable limitations: first the premise of predictability means that failure is due to inadequate planning and hence logically failure is avoidable, failure is someone's fault, and fear of failure inhibits learning through experimentation;[9] and second the presumption that the future of complex systems can be explained undercuts the modesty and imagination needed to question the assumptions that limit our perceptions of the potential of the present.[10]

To embrace experimentalism is to let go of the organizational forms and practices of planning and administration that are logically at odds with failure and hence, fundamentally at odds with learning. It is to take another, more spontaneous, diversified, fluid and open path to achieving our goals and managing risk.

The courage to do it

Today we look back at the crash of 1929, the immense costs of the Great Depression, and denounce what now seem like pointless political conflicts, obvious policy blunders and the excruciatingly slow pace of institutional innovation.

Will history repeat itself? What will our epitaph be? Will hindsight's verdict in fifty years be that we systematically and purposefully sought out experimentalism and the new capacities like Futures Literacy as a new way to take advantage of the opportunities created by the complex evolutionary processes within which we live? Or will they once again lament our inability to imagine changes in the conditions of change and do something about it?

8. Miller, R. (2006), "From Trends to Futures Literacy: Reclaiming the Future", Centre for Strategic Education, Seminar Series Papers, No. 160, Melbourne, Australia.

9. In an administrative system the verdict of success or failure, hence the dynamics of experimentation occurs most tellingly through the birth and death of organizations. This is too "lumpy", too limited by the administrative form, for unique, networked, co-creation activities.

10. Miller, R. (2007), "Futures Literacy: A Hybrid Strategic Scenario Method", Futures: the journal of policy, planning and future studies, 39, Elsevier, Pp. 341-362.

At least our choice is simple – will we give up on trying to predict the future and embrace experimentalism or not?

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The international regulatory framework for the economy: a threat or a guarantee?

Introduction: The hardware and software of policy and lessons of the crisis

A certain analogy is to be found between political systems and computer hardware, whose capacity to process software applications, or in this case, policies is always going to be limited by a number of factors. If there is no fit between hardware and software it is difficult to achieve the right results. From a user's point of view the difference between what is hardware and software, is by no means always clear, given that nowadays any hardware will come with a number of pre-installed software applications, which will make the hardware work on its default settings anyway. Therefore, any reply to the question in the title of this paper will therefore depend on the type of hardware available to us on an international scale and the types of software we run on it.

Crises have proved to be very instructive events. They oblige us to look at such episodes head on and stretch those mechanisms we have to deal with them to the limit, mechanisms which all *appear* to be adequate when things are working, but whose defects are exposed when things go wrong. Crises are also blessed with the virtue of putting orthodox and unorthodox approaches in their rightful place. As the orthodox ones are burdened with being responsible for getting us into the crisis, then the less orthodox ones are wheeled out and branded as the solution to ills not of their own making, (although they may not be able or know how to rid us of them either).

The ability of a State to react in times of crisis: Is this a surprise?

The current crisis has shown us that the hardware of a state is not as weak as some led us to think. The assertion that contemplated states being totally unable to cope with the ever accelerating process of globalisation have been shown up for what they really were: namely theses made up by right-wing ideologists to discredit public policies as ineffectual, which have been eagerly subscribed to by wide swathes of the political left to cover up their inability to design and apply policies that would meet the challenges faced, simply blaming all our woes on globalisation. Moreover, such theses had failed to take into account that only recently with the wane of colonialism has the world seen the birth of sovereign states, now harbouring the vast majority of the planet's inhabitants, which are able to help their citizens progress.

All in all, it has been proved that today's states, especially the most developed ones, are still the most powerful entities that have existed throughout history and best able to face up to the problems inherent in the march of capitalism, and above all its ups, downs and rock bottoms or crises. Contrary to that postulated by so many ideologues and academics, 21st century states have been far more able to cope with the international economic downturn than their predecessors a century before them. How could this be otherwise, when we take into account their huge power, both economic (expressed by their capacity to spend) and institutional (mastery of resources afforded by the current legislation)? Indeed, it has been the timely and vigorous action of these same states that has prevented the current crisis deteriorating further into another, Great Depression than that already experienced by the capitalist system.

We have not been able to count upon the process of European integration: Another surprise?

The crisis has also shown that Maastricht, which modified the EC Treaty, bringing in its provisions on Economic and Monetary Union, was neither able to design the right hardware, nor couple it with a software that could make it work well. Indeed, a clear-sighted glance at a few unquestionable facts illustrates this assertion:

- In July 2008, The Central European Bank (the key new element of hardware created by Maastricht), raised interest rates. No further comment is necessary here, but it does beg the question as to whether this decision stemmed from simple lack of responsibility, ignorance or, as it is tempting to think, a combination of the two?

- The EC has been incapable of taking any measure off its own bat that would be a real help to combat the crisis. On the contrary it has been the Member States, (however much European Council summits and meetings may try and wish to make us believe otherwise), that have acted alone. However, if steps have not been taken by the Community itself, then the blame must be put on Maastricht not wishing to modify its own hardware in order to act, (above all in not authorising a modification of spending levels either through changes in taxation or by generating debt, as proposed by the Delors Report).

- The software of economic policy fed into the hardware of the sections of the Treaty on restrictions on public deficits, which had already been shown up as early as the start of the millennium as being totally inadequate the moment the major European Member States found themselves in deep water, was blown apart when it had to face up to reality of the crisis, exposing it for what it really was; namely an ideological creation dreamt up by the authors of Maastricht i.e. treasury bosses and central bank governors of Member States at the time, (as indeed some of the sharpest US commentators were able to point out). The end result is that for the first time in its history the process of European integration is in turmoil, with some of its founding legal provisions being constantly breached. Due to a lack of suitable and matching hard and software when it comes to "Economic Union", the reality of the crisis has even led to questioning one of the pillars of the Treaty of Rome – namely, what to do with State Aid in relation to the problem in hand, which is leading to a constant camouflaging of systematic breaches of its provisions in the form of all types of aid packages introduced by Member States in order to counter the crisis.

The multilateral plan. Shortcomings of plans on capital flows and exchange rates: The same old story

Widening the outlook from regional to multinational plans, it is apparent the crisis has exposed two well-known (at least they should be) shortcomings, but ones that had nevertheless been seemingly completely forgotten by those pulling the strings of mainstream policy, both in political and academic spheres in recent decades.

- The first is the lack of an international legal framework regulating capital flows. Sixty years ago, when Bretton Woods came into being, setting up such a legal framework was simply not put on the table, given that the main aim was to avert trade wars between major capitalist powers that had devastated the world economy in the past, especially during the Great Depression of the thirties, a point to be given further consideration later. Therefore, all international commitment to liberalizing capital flows was sacrificed in order to achieve this prime objective. When, several decades later the political outlook had changed, no-one (either from the right, centre-right and most culpably of all – from social-democratic spheres) dared to raise the issue of a need for international legislation on capital flows such as that of another multilateral system of another kind already in place – and one that was really much more stable – that of international trade.

- The second is the absence of a true international reserve currency able to act as a peg for the exchange rate and international price systems. Since the economic meltdown in 1971 of the Bretton Woods monetary system, some national currencies, especially the dollar, have taken on the role of international currencies. However the current status quo not only generates an untenable inequality between states, but also creates a destabilising factor which pervades the entire world economy which, unsurprisingly, but also highly significantly, is not attracting the attention it deserves. By this, I am referring to the situation which favours or makes the activity of speculating in financial or money markets indispensible, when it comes to covering or hedging against exchange rate variations among the major currencies, with the calamitous fallout it has produced (as we have all now discovered with the crisis) of currency hedge funds and other related financial products.

The multilateral plan. A pleasant surprise: the rediscovery of GATT's real hardware and pre-installed software

Moving on to the area of international trade, an individual who forms opinions from what is published on the front pages of the press, would be inclined to think that more or less the same is happening in the areas of monetary and capital flows – i.e. nothing, which provides obvious grounds for criticism, when the present crisis should be forcing us to come up with mechanisms to deal with it. What is more, the same individual would be able to back up their opinion by pointing to two facts: a) the failure to seal the Doha Round of WTO Negotiations started back in 2001 with a target limit set at three years, and b) the inability to find new instruments to combat the dangers spawned by the current crisis, where there is however at least almost total unanimity on one issue; that protectionist spirals would end up destabilising the world economy.

Nevertheless, the reality is that such viewpoints are carry an essential flaw, as they neglect precisely, (in the case of GATT at least), the very nature of its main hardware and pre-installed software. The best way of explaining this is imagine a situation where there is an upward spiral of progressively freer trading. What would then be the point of having GATT? The answer is apparently simple enough for everyone – precisely to set in motion that upward spiral of freer trade in the first place. And it is exactly in that way that people see GATT, regardless of whether they are in favour of it or not – as a means of achieving greater freedom in trade, both in developed nations, (especially in the past) and many developing nations, (that now aim to use GATT as a way of achieving greater trade freedom, fomenting freer trade with developed nations, especially in areas such as agriculture).

However, the above answer comes straight up against another very simple question: What article of GATT, (i.e. what component of its hardware and pre-installed software) obliges it to make trade freer? Indeed the answer is quite simple: There is none.

On the other hand if we ask what the two core articles of GATT are, the answer is simple enough:

- Article II, which requires a lower limit or *bound* of trade freedom to be established, which cannot be breached by a more protectionist policy or legislation, which therefore makes this an article that does not compel greater freedoms to be sought, but simply forbids any measure of further deliberalization: an article that does not demand the opening up of an upward spiral of free trade, but simply ensures it does not restrict it beyond a certain point, and

- Article I, which sets out the concept of "Favoured Nation Status" which is ipso facto an anti-protectionist guarantee offered to all GATT signatory states (and which are now WTO members).

It is with the idea of guaranteeing the pre-installed software of Articles I and II of GATT that all the hardware of the WTO is geared to, (and above all its mechanism of conflict resolution, whose efficiency is unmatched by any apart from the process of European integration). However, when it comes to sparking off that spiral of greater freedom in international trade, it has neither the software installed nor the hardware, so it is hardly surprising that the software of ongoing and indefinite freedom that the Doha Round wanted to push forward has not been able to go ahead.

The logic of GATT is really quite simple to understand if, instead of accepting orthodox doctrines, we take into account historic fact coupled with typical business logic, namely:

- GATT came into being in 1947 as a mechanism to avoid the formation of protectionist spirals among the major capitalist blocks that had contributed to the spilling of so much blood just a few years before.

- The business logic refers to the radically different effects trade freedom and simple deliberalization have on enterprise. If a state liberalises trade, this does not directly and immediately affect export companies of other countries: it simply opens a door that other companies already present in that market may well have already passed through satisfactorily and that those not already there may never pass through anyway. However, if deliberalization takes place, all the strategies of foreign firms exporting to a such a market will be blown off course, thereby putting the future of an enterprise itself at stake – i.e. the (real) risks of deliberalization are not just the other side of the coin of the (only possible) advantages of liberalization.

It is therefore hardly surprising that GATT is focused above all on preventing upward protectionist spirals and trade wars between capitalist blocks. And this is the positive part – because GATT has continued to work very well in this particular realm. Indeed, due to GATT, (and the entry of China in 2001 – the really important advance achieved in Doha, far more than that of the start up of a new round of talks), the system of international trade has been weathering the crisis free of notable tensions. Although problems have arisen and there have been a number of protectionist swells, it is also true that regardless of the extent of the crisis, no trade wars or similar major conflicts have broken out. In order to value this, one should dwell on the following: if China had not been a member of the WTO, would it have been so easy to deal with the assertion that to a large extent our problems stem from the amount of Chinese imports, (an argument that lends itself to intentionally leftist issues such as those of social and environmental standards etc.) and that therefore these should be curtailed? And would anyone then be brave enough to hazard a guess as to what the outcome such an action may have had?

In the case of GATT and therefore of the WTO which governs and runs it, the question posed in the title has a clear answer: that it is indeed a guarantee, although to a great extent by default, because those who have been using it for years were not particularly aware anyway and besides, they wanted primarily to use the agreement for the one purpose (that of ongoing and indefinite liberalisation) for which they lacked both the hardware and preinstalled software.

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Catalonia and Europe in a post-crisis reglobalised world

Is it possible to cut down on the imbalances that brought us into this crisis, while simultaneously laying the foundations for a more solid pattern of growth? Are there synergies to be taken advantage of on a worldwide scale from changes taking place in China and the US? And where does Europe fit into this scheme of things? How can such patterns of reglobalisation affect Catalonia – and what openings can be exploited?

Introduction: emerging forward out of the crisis...or backwards

Despite uncertainties surrounding the length and impact of the crisis, history has generally shown us that in major episodes such as the present, one thing above all is true – that you do not come out of crises the way you entered. In other words, there will be a number of marked differences in the makeup of the post-crisis world with respect to the situation prior to the event. This is of supreme importance at the present, not just in terms of the wide-sweeping changes already seen to be in motion before the crisis – such as the growing might of emerging economies or changes in patterns of demand and production brought about by an evolution in society and technology – but because so often there is a notion that the parameters used to monitor the degree of recovery bear a certain similarity to those of the pre-existing status quo. It should be therefore pointed out that on the contrary, ability to judge post-crisis scenarios will rely, first and foremost on the ability to reset economies, steering them back onto more solid growth patterns, more suited to new global developments, and hence less weighed down by the fragile and unsustainable factors that have ended up leading us into this “Great Recession” in the last few years.

With the above in mind, it is worth considering a couple of questions. Firstly: what different scenarios will the world economy be likely to throw up, and which of these is the most desirable? Secondly: from the angle of Europe and most notably Catalonia, what implications will such scenarios have? General wisdom suggests that the ideal case would be that of “reglobalisation” which would be able to keep protectionist temptations at bay, and avoid sending us into an automated rerun of pre-crisis habits with all the perilous imbalances they churned up. Such a situation would provide the chance to re-establish incentives and challenges for the most dynamic sectors within the Catalan economy, which prior to the crisis had shown themselves able – almost heroically at times – to overcome all the obstacles generated by the pre-existing pan Spanish growth model. Nevertheless, it should be stressed that there are also powerful forces and vested interests – on a worldwide scale and nearer at home too – that are working in such a way as to see that the famous "recovery" – following the bailouts – takes the shape of a return to former practices. The well known saying: "A major crisis is too good an opportunity to let it go to waste," can be interpreted in many ways.

Reglobalisation

When looking at global scenarios it is indeed clear that the drop in world trade figures early on in the crisis has proved to be one of the most critical indicators of this Great Recession. Many comparatives, among those the successively updated figures of Eichengreen and O'Rourke (2009), bear witness to this fall on a scale comparable to that of the Great Depression, which has therefore given rise to suspicions that the usual protectionist temptations given into in such times of recessions will once again take centre stage. However, the reality is that, with the exception of a few isolated cases that must be kept track of, it seems that the lessons of the thirties, when protectionism exacerbated the situation, have been well learned.

In addition, there is also the risk of some forces trying to take advantage of the first green shoots of recovery by carrying on with the financial and trading practices for the decade leading up to 2007-2008, with all the associated resulting imbalances that at the time were supposedly justified and alleged as "benign". The fact is though, that it is both highly unrealistic and by no means desiderable at the present to once again confide in huge amounts of cheap overseas finance disembarking on the shores of economies such as those of the US, UK and Spain, (to name but three states which have topped IMF official rankings on net capital importers in recent years). This is especially true when considering the types of incentives provided according to the type of investments which had been the driving force behind these flows of capital and which, through a variety of mechanisms – such as real currency appreciations, notably in Spain, in which the rate of inflation only led to further accentuating a real appreciation – have helped contribute to a productive model that has ended up hindering competition in traded products – those which are really subject to international competitive forces. On the other hand it has led to non-traded products reaping benefits, exempt from (so many) of the pressures of international competition, and related incentives for innovation and modernisation. This is why anyone wishing for a return to the levels of the bare statistical globalisation indicators prior to the crisis would at least be overhasty, if not indeed misguided.

In contrast to the above, a more desirable and solid alternative could be that provided by a so-called *reglobalisation,* which represents the combination of an open trade and financial system, but which *takes advantage* of the crisis in order to deal with the excess and imbalance generated in recent years. At a time when the economy still had something to share with common sense, some analysts recalled that a shrewd criterion to counter international imbalances would be for those countries with surpluses, such as China to drive internal spending (in consumer spending and inward investment) to improve its standards of living and contribute to reducing external imbalances, while those countries burdened with deficits were to improve their marks in such subjects as domestic saving and rechanneling of resources towards traded activities with greater levels of productivity and competitiveness.

A reglobalisation appears to be a reasonable starting point in order to establish the parameters of a post-crisis world as it reduces imbalances, simultaneously building a more solid recovery. However such a task requires important and clear definitions to be made. On the one hand – as pointed out by Dani Rodrik (2009) – a Chinese economy more focused on internal spending and investment would not have to (and indeed appears completely unwilling) to surrender the great gains it has reaped, not only in the modernisation of its productive structure which has attracted foreign direct investment during decades in its traded sectors, but also in terms of its undervalued currency. Rodrik's proposal to insist China revalue its currency to realistic levels, which would thereby contribute to making the world economy more stable, would require leaving measures of industrial policy in the hands of this Asiatic superpower, as seen in the case of Japan and the NICs some years ago, which will encourage further modernisation, while improving living standards as well as acting to help redress part of the existing worldwide imbalance.

With China's path mapped out, what implications will reglobalisation have for the US? In addition to straightening out its savings – which will be hugely complicated by having to finance debts generated by bailouts to prop up the economy in the crisis; even if we are to accept Krugman's assertion that "deficits saved the world", there are serious problems raised by servicing such amounts in the midterm. Another consideration is that a more realistic exchange rate for the dollar would combine to form a sound staring point to bringing about a turnaround in the "structure" of its foreign trade. Further to this, Abe (2009), in an analysis which can be further extrapolated to other countries with current account deficits, points out that opportunities to move up the export league table are to be had in areas of advanced technology applied to problems of a scientific and innovational nature, along with those connected to the environment, as well as in specialised professional services in a variety of fields. It is no coincidence that these are areas that marry with new needs and demands in our societies and which afford an outstanding potential for public-private sector and inter-enterprise collaboration.

And where does Catalonia stand?

Although discussion on the major developments usually revolves around the relationship between the US and China (the so-called G-2), the above implications are hugely important for Europe. WTO figures for 2009 still leave room for doubt as to whether China has now overtaken Germany as the world's top exporter of goods. Nevertheless, the EU is still the major force in overseas trade, which is why it has been especially hard hit from the fall-off in world trade, and as such is also set to benefit from a recovery. The internal financial position of the EU is still delicate to say the least – with the contrast between Germany's surplus and the deficits of the other major EU states – but it is more moderate than the difference between the US and China.

Catalonia has been especially badly hit by the hallmarks of the model in place prior to the crisis and therefore would continue be dragged down, were the things to take up from where they left off again. A "Spanish growth model" furnished with mechanisms such as appreciation in real terms, but also coupled with socio-political ingredients – has encouraged development and created activities and jobs with a low productivity non-traded sectors, whilst failing to look after the traded sector. This sector has borne the brunt of the challenges that world trade entails, and as Catalonia has traditionally been driven by the traded sector, concentrating a proportionally far higher amount of its trade in export and internationalisation activity, the community has taken a harder blow than most domestically. It is so often the medium-sized enterprises – deserving of recognition, (indeed in Germany they are referred to as "hidden champions") – which have been the true heroes in holding their ground in a model littered with incentives that have proved a bane to our economy and which will now be key factors in the new situation unfolding in order to redress the balance, (in which greater exports are required) to push forward a sound recovery, (and this is why companies and entrepreneurs are needed who are able to rise up to the challenge worldwide competition represents).

An environment of reglobalisation, would give Catalonia a boost to help it on its way in the important and not least urgent task of trying to adjust the model in place before the crisis, this time devising incentives which are most suitable for taking full advantage of all the potential of the creativity, innovation in response to new demands and needs. Indeed the role of *incentives* is vital and can no longer be held at arm's length by simple rhetoric any more. It was Adam Smith, who pointed out in his inquiry into "The Nature and Causes of the Wealth of Nations" over two hundred years ago on how different nations employed different methods in the allocation of resources and that not all have managed to take the same advantage of the worth of a product and on the decisive factor which “depends on how (capital resources) are used” that in turn define the types of employment and “added value” created.

Catalonia is having to face up to greater challenges than many places in Europe in areas such as savings, (and underlying values), productivity, (and underlying values and activities, innovation in the broadest sense of the word) as well as the institutional quality framework and the quality that should be provided by the right kind of incentives to help face up to and overcome such awkward challenges as those currently faced. We should not miss out on the ideal opportunity afforded by this far-reaching crisis to carry out a major change of tack, rather than allowing, due to a given course of action or indeed a lack of it, that another historic occasion to form stronger and better links to a world undergoing such rapid change at this time.

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Appendix 2

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Annual Report 2009-2010 Reglobalisation

Underlying transformations and new opportunities in a post-crisis world

Executive working version for the 5th OME International Foresight Forum

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