



INSIGHT



in-sight (in'sit)

n.

1. The capacity to discern the true nature of a situation; penetration
2. The act or outcome of grasping the inward or hidden nature of things or of perceiving in an intuitive manner.

Foreword

Dear Readers,

2016 has been a rollercoaster of a year in the world of politics and economics, and a great deal has changed since the issue of our last publication. Much to everyone's surprise and dismay, the Brexit vote has been confirmed, terrorism is taking its toll on Europe-bound tourism, and the U.S. have a very influential trump card to play.

We have a lot to add to this discussion, but we decided to stray away from the mainstream debates and focus on something completely different. The medley of seemingly unrelated articles we present to you in this issue is woven by the common themes of technology, data, and economics.

2016 is the year when Virtual Reality (VR) is set to become mainstream and, given the rapid advances in technology we are witnessing, we will soon struggle to discern the real from the virtual, as the distinction between the two will become increasingly blurred. VR is showing lots of promise however, and the applications are mind-blowing, to say the least. Once consumers and professional practitioners manage to get their hands on (and heads in) VR tech, the benefits will start to become apparent, whether it is something of convenience - such as online shopping or experiencing a holiday in outer space - or something which can save lives such as a VR simulation of a keyhole surgery.

VR is of course only a small part of the puzzle which will define our lifestyle in the near future. The exponential growth in computational power does not seem to be slowing down. What this means is that, by 2023, computers would have reached the brainpower of humans. By 2045, computational power would surpass the combined brainpower of all humans on the planet, and while this augurs well for the future, it also presents some challenges with respect to, for instance, jobs.

Soon, we will be in a position to replicate the thought process of an accountant, an auditor, an engineer, an architect, or a lawyer, using sophisticated self-learning algorithms and artificial intelligence. We argue that there is a silver lining, and that technology would create more jobs than it destroys.

The same rationale applies to economic migration – another topic which is touched upon in this issue. There are always going to be winners and losers directly attributable to migration, but evidence is showing that the overall effect is largely positive.

Needless to say, with the continued growth in the Maltese economy, strains on the environment are inevitable, especially given Malta's limitations with respect to size. We believe that the key here is to develop incentives such that the interests of private operators are aligned with the interests of society. In one of our articles, we will be discussing such economic incentives, and explore how negative externalities, that is the effect of private operators on third parties, can be internalised.

As always, whilst we thank you deeply for your readership and constructive feedback on our publication, we remain hopeful that we are delivering on our promise of providing you with a dish of fresh, unconventional and thought-provoking insight – food for thought.



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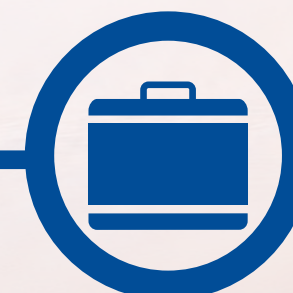
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Heads-up and heads in – the year in which Virtual Reality finally becomes a reality



It has already been almost two decades since the Wachowski brothers revolutionised the cinematic world with their post-apocalyptic, dystopian narrative involving enslaved humans, unknowingly trapped in a hyper-realistic Virtual Reality (VR) called 'the Matrix'. The movie was critically acclaimed, not only for its state of the art special effects and art direction, but also for its novel premise, inspiring countless other clones in the industry.

Whilst we are nowhere close to experiencing VR in a way which would be undiscernible from actual reality, technology is moving at such a fast pace that we are edging closer to this state. VR is already here, and entering a matrix-like world is only a question of when, not if.

From the inexpensive Google Cardboard (which is exactly that – a piece of cardboard headset which houses your smartphone) to HTC's Vive and Sony's PSVR (coming out October 2016), VR is set to become the next big thing. And not only for games and media entertainment, but also for a host of other applications which promise to re-invent the way we interact with the outside world, whether it is shopping for that perfectly sized polo shirt, viewing a penthouse (which is still on plan) and admiring its computer-generated vistas, or trying your luck at a game of poker against the VR alter-ego of your friend.

The world wide web transformed the way we do business and interact socially, resulting in speed and immediacy, consequently freeing up time for leisure or for engaging in more productive tasks. Nevertheless, we are still shackled and limited

by the physical interface with which we interact – a flat two-dimensional screen which doubles as a metaphorical window for us to access the virtual world. But what if we can actually inhabit that virtual world and relish in the best of both worlds (virtual and real), combining a fully customised experience whilst doing away with the clutches of 2D space?

Take shopping for example. Clearly, there are benefits (at least for females and metrosexual males) to actually visit a brick and mortar shop, try things on, and experience first-hand the items on display. However, this endeavour is time-consuming and decidedly costly. This 'search cost' drives a wedge between our wants (demand) and what is available to buy (supply), ultimately leading to a less than optimal purchase - let's call this satisficing our need¹. With online shopping, on the other hand, search costs are significantly reduced, but this advantage comes at the expense of actually experiencing the product in a three-dimensional space, whether this is needed to assess the proper fit of clothes, or to properly perceive textures and colour hue under different light conditions. VR proposes to partially bridge this gap. Within a VR shopping context, users can immediately access what is in stock at a particular store. The beauty of it is that all items of apparel would be perfectly sized (no more rummaging through endless piles of XXL sweatshirts), and users can immediately see how it fits (through the use of a pre-created avatar).

Moving away from virtual shopping, the extent of applications of VR is staggering and mind-blowing, to say the least. Media entertainment, encapsulating movies, games, and even theatrical performances, is surely set to be redefined in the way it is experienced in a virtual 3D environment, giving users a 360 degree experience.

Virtual tourism is another interesting concept. Imagine popping your VR headset, choosing a destination (which could be anywhere on the face of the Earth, and beyond), and experiencing a computer-generated landmark or a 360 degree video. Whether this would impact real tourism remains to be seen though.

VR is also expected to make waves in the creative industries, especially in artistry and design. It will not only allow, say, interior decorators, to flex their creative muscles on the fly in a 3D environment, but also facilitate customer feedback by showing results as they would appear in real life. Interior design, along with property viewing, will never be the same again. The property market would also seem to benefit from VR's distant cousin, AR (Augmented Reality). Instead of recreating a 3D space from scratch, AR juxtaposes computer-generated assets onto a real life environment, just as the latest internet craze superimposes 'Japanese cartoon pocket monsters' (read 'Pokemon') in real life parks, schools, gyms and almost about anywhere you can imagine.



Imagine popping your VR headset, choosing a destination and experiencing a computer-generated landmark or a 360 degree video.



// **VR and AR are tremendous steps in technology and, should they snowball into mainstream, ought to offer material enhancements in quality of life, both in consumption, and in service delivery.** //

Wide-ranging effects

It's difficult to chart the wide socio-economic effects arising from the proliferation of VR – this ultimately depends on whether the technology is adopted fast enough, or whether it is sidelined as a sort of gimmicky niche product reserved for tech junkies. It must also evolve and develop in tandem with computational power in order to fully realise the concept and dreams of application developers, otherwise it risks falling short of customers' high expectations.

In terms of the economic impact of VR, the media industry can expect a surge in demand as audiences flock to experience something new, providing a quick buck as studios jump on the VR bandwagon, raking in millions in the process. Whilst 3D cinema provided a tantalising appetiser in the form of enhanced depth of field and immersion, VR can provide the starter, entrée, and dessert of media entertainment. But does it stop there? Or does VR have the legs to be able to carry it in the long term?

If it does take off in other fields, in particular in the delivery of a service rather than in its novel way of consumption, it has the ability to transform existing business models, and this has implications in other inter-related spheres. Learning in a VR classroom could become the norm, and so does working remotely from the comfort of one's couch. And while this may prove to be beneficial to the environment, transferring actual traffic to bandwidth traffic, it does have its downsides, especially considering the extent of physical isolation and alienation occurring with current social networking sites, let alone with immersive technology such as VR.

The dangers of VR

In Vanilla Sky (2001), a poor Hollywood adaptation of cult classic Abre los Ojos (1997), main protagonist David Aames (played by the famous and charismatic scientist Tom Cruise), willingly submits himself to be trapped in a dream-like world (a sort of VR programme called Life Extension) after a car accident leaves him scarred for life. In this virtual world, he lives the best moments from his past, which are spliced retroactively in a lucid lifelike dream.

If you think we are far off from this sort of science fiction, think again! Science fiction may well become science reality in a couple of years' time. Google Vice President of VR Clay Bavor is bullish about making VR mainstream. One of the principal applications he sees for VR is re-living past memories. A new prototype camera, currently in development, can record 'moments' in VR, which can then be viewed later on in life, say, to revisit a fleeting moment in time, sitting at a dining table with a lost loved one, or experiencing life as it was back then. But herein lies the danger. Whilst VR therapy applications

have successfully aided people suffering from depression, it can also conversely lock people in a perpetual state of depression, blocking them from going back to reality. And when we reach the stage of photorealism, it would be hard to discern the real from the virtual. But then again, who are we to dictate what version of reality people should inhabit?

VR and AR are tremendous steps in technology and, should they snowball into mainstream, ought to offer material enhancements in quality of life, both in consumption, and in service delivery. However, one must tread carefully this seemingly innocent path, for the effects are not only economic, but also social (alienation and isolation), psychological (behavioural effects), and philosophical (what version of reality is reality?).

After decades of hype, VR is finally here. The question is not whether we will embrace it, but whether we are ready for such a technological leap of faith.

Rise of the machines

The next economic revolution?



One of the defining characteristics of human beings is our ability to develop new technologies with the aim of improving our quality of life, aiding our survival and broadening our horizons ever further. Technology has altered the way people live, travel and interact with one another.

In the early days of mankind, humans lived as hunter-gatherers. Society's daily goal was to gather enough food and ensure the survival of the group. The domestication of animals allowed for the development of agricultural societies in which people constructed fixed settlements and began

to adopt specialised roles. The industrial revolution allowed society to make more effective use of natural resources, contributing to increased material well-being, densely populated urban areas, the development of highly specialised manufacturing techniques and an improvement to the general quality of life. The introduction of computers and information technology revolutionised our way of life. The automation of simple, time-consuming tasks improved efficiency, while communications technology has facilitated interaction and trade with individuals despite geographic constraints.



The rate with which mankind has been able to develop increasingly advanced technology is staggering. After all, the first commercial dial-up internet connection only became a reality in 1992. The future of computer technology will see advances in the fields of Artificial Intelligence (AI), and machines will see progressive improvements to their durability, dexterity and functionality. This will serve to open the doors to a new economic reality where automation of work spreads beyond manufacturing, and into logistics, transport and services.

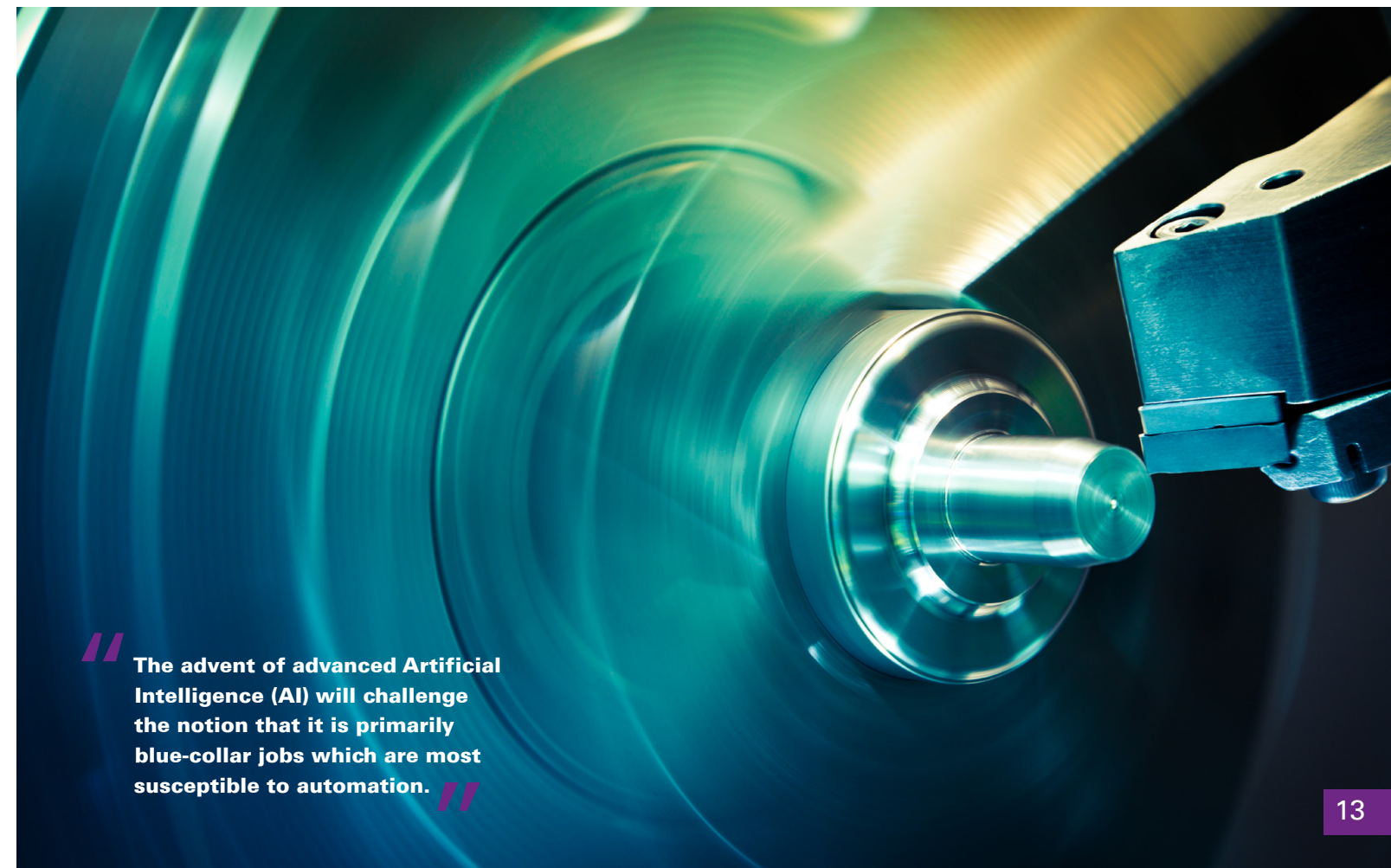
While only a few years ago some of these concepts may have seemed like pure science fiction, today it is clear that they are the reality waiting around the corner. Vehicles such as Tesla's Model S and

the Mercedes-Benz S Class are available with a plethora of advanced driver aides which can in effect autonomously pilot the car down the road. The technologies still have certain limitations and shortcomings, and regulations prevent the use of continuous autonomous driving. However, the technology exists in the here and now. As shown by the European Truck Platooning Challenge organised by the Dutch Government in April 2016, similar technologies can be applied successfully to heavy goods vehicles to create convoys of autonomous vehicles following a lead human driver. This promises to deliver real world cost savings in terms of both reduced labour costs and increased fuel efficiency.

The advent of advanced Artificial Intelligence (AI) will challenge the notion that it is primarily blue-collar jobs which are most susceptible to automation. In May 2016, BakerHostetler, a prestigious American law firm, announced it would be licensing ROSS Intelligence's new AI ROSS. ROSS is a platform built on top of IBM's Watson AI (which famously defeated human competitors on the televised game show Jeopardy! in 2011), capable of conducting legal research and effecting searches on past court rulings. This allows the legal professional to channel their energy and focus on devising strategy and advising their client as opposed to incurring the cost (both in terms of time and money) of trawling through hundreds of case law pages prior to court hearing. Other firms which have also taken out a license for the use of the ROSS platform include Latham & Watkins LLP, and Von Briesen & Roper s.c.

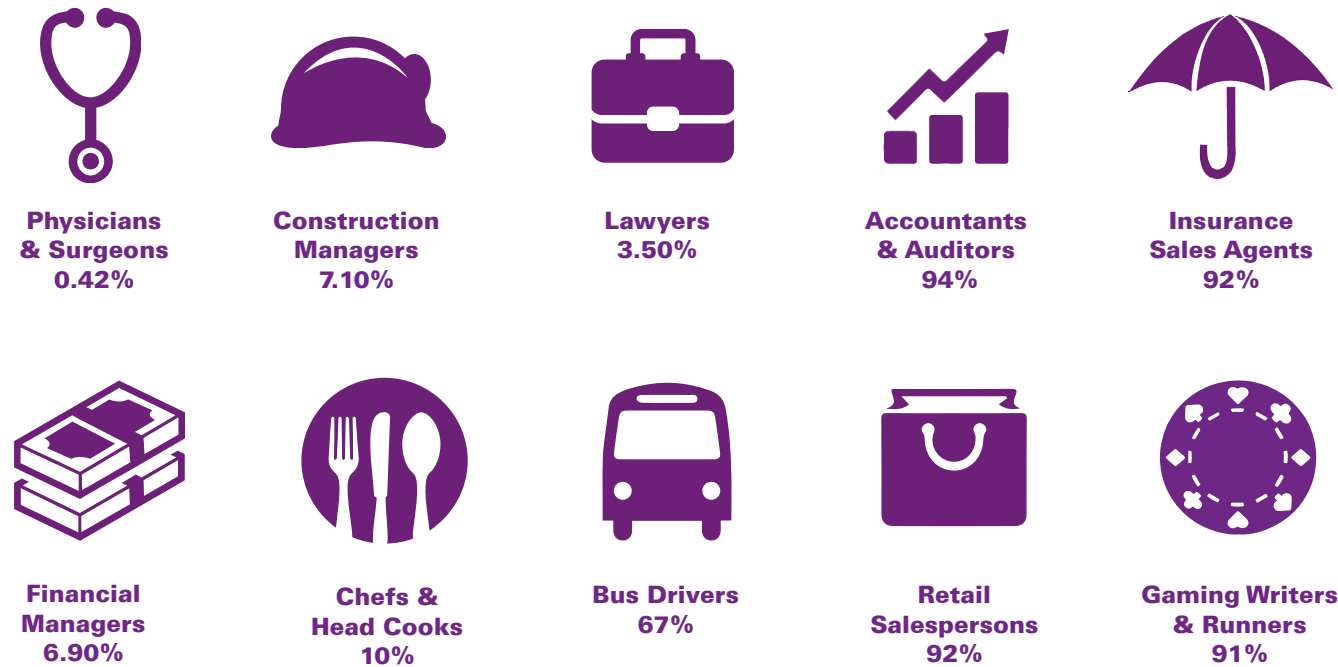
In order to better predict what might happen to the future labour market, it would be best to divide up jobs into three distinct categories: jobs which technology cannot as yet automate; jobs which technology can automate but not in a cost-effective manner, and jobs which technology can automate in a cost effective manner.

In this moment in time, machines struggle to successfully recreate the more 'human' elements of a job. Creativity, empathy and social skills are still areas where people have the edge over machines. Jobs which are heavily dependent upon these characteristics are unlikely to be replaced by machines in the near future, rather technology will most likely continue to be adopted as a tool to aide and assist workers.



The advent of advanced Artificial Intelligence (AI) will challenge the notion that it is primarily blue-collar jobs which are most susceptible to automation.

Jobs at risk of computerisation



Source: "The Future of Employment: How susceptible are jobs to computerisation", C. B. Frey & M. A. Osborne, 2013

Technological limitations are not the only factor inhibiting automation. A significant capital investment is required in order to install machines capable of replacing human workers. The more complex the task the more significant that investment is likely to be. Certain low paid jobs may remain safe from automation as the low cost of labour makes the required investment unattractive to businesses. However, as technology becomes more affordable over time and pressure for higher wages increases, the situation can change quite quickly. Ed Rensi, former CEO of McDonald's USA, commented that pressures for an increase in the USA's minimum wage from \$7.50 to \$15 per hour would drive more fast food outlets to automation. Rensi cited a specific robotic arm, with a unit cost of \$35,000 which would be capable of bagging french fries. The cost of that arm is equivalent to over 4,800 man hours at the current US minimum wage of \$7.25, and only around 2,300 man hours at the proposed \$15 minimum wage.

Jobs most likely to be affected by automation are ones for which the necessary tasks can be successfully carried out by a machine, and for which the current cost of labour is high enough to justify the capital investment required for automation. A study carried out by researchers from Oxford University² showed that jobs in transportation, production, administration, sales and service fields are more likely to be susceptible to computerisation within a couple of decades. By contrast, jobs in healthcare, education, arts, community service, science, engineering, business and management fields are less likely to be affected. It is worth noting however, that the potential for automation is more closely related to the specific nature of a particular job than it is to any particular industry. The Oxford study concludes that within a couple of decades around 47% of currently existing jobs in the US could be at high risk of computerisation.

So what does all this mean for the future labour market? Current trends seem to support the idea that the spectrum of jobs available will continue to become even more polarised. As automation takes over, it is likely that a large proportion of jobs will shift either to relatively low-skilled and low paid jobs for which automation is not viable, or alternatively to highly-skilled and well paid jobs for which automation is not possible.

Not all is doom and gloom. While it is natural for us to be concerned about such a major shift in our economic system, technological revolutions are by no means something new. The adoption of machines and computers in the workplace has seen numerous jobs relegated to the pages of history with several new jobs and opportunities emerging in their place. It is likely that automation will render some jobs obsolete but it is also likely that new opportunities, unimaginable today, will emerge and serve as the next generation's bread and butter.



² C. B. Frey & M. A. Osborne, 2013. "The Future of Employment: How susceptible are jobs to computerisation"



You have to be daft not to realise that buying orange properties is the most lucrative deal you can make. And by orange properties, we don't mean buying land to grow citrus trees, but orange-tinged properties like Vine Street and Bow Street. Of course, we are talking about Monopoly. No, not that type of monopoly where you are charged exorbitant prices for mediocre products, but the type where dice are rolled, houses are built in an instant, and friendships are ruined forever.

The superiority of orange properties doesn't occur by chance – there's a very specific reason why players happen to land on orange more often. In a two die roll, the probability of getting a 7 is higher than getting any other number (>17%). Couple this with the fact that the 'Jail' panel is between 6 and 9 steps off the 'oranges', and a clear pattern emerges. Here at KPMG, we performed a simulation of a game of Monopoly being played ad infinitum, to demonstrate how one can elicit a 'best response function' (optimum play strategy) using predictive analytics. So in essence, once you know the underlying mechanics (in this case, probability of dice and panel placements on the board), you can devise an optimal strategy based on observable patterns.

Taking this example to a real business environment, the 'rules of the game' are reversed. Here we are still interested in an optimal strategy (say of marketing, customer targeting, or of preventing bad debts), but the underlying mechanics – customer behaviour and preferences for instance – are hidden in a sea of data. Finding the proverbial needle in a haystack and unearthing patterns between variables is the main objective of Big Data Analytics.

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But is every type of correlation useful?

Certainly not. Trying to find meaningful correlations in an endless sea of data is akin to trying to find your perfect soul mate – difficult and painful to find, inevitably requires a great deal of sifting through spurious relationships, and yet immensely rewarding when found (if such a relationship even exists).

Caution needs to be exercised because not every correlation necessarily implies a causal link. We can give an endless series of examples involving ridiculous correlations between variables. And you might be surprised at how close certain variables correlate.

For instance, honey producing bee colonies in the U.S. are inversely correlated with juvenile arrests for marijuana possession, implying that as bee colonies declined over the years, juvenile arrests increased in parallel. Also in the U.S., the per capita consumption of mozzarella cheese is strongly correlated with civil engineering doctorates by a magnitude of 0.96 – a correlation coefficient of 1 is consistent with perfect correlation. So unless civil engineers are building dams of cheese, this

correlation is nonsensical. We can also throw in a Maltese example for good measure. We found a strong positive correlation (0.76) between the civil marriage rate and the suicide rate, which might naively point us towards the (dead wrong) conclusion that civil marriages are more depressing than canonical marriages.

Of course, we have no problem in dismissing spurious correlations when the examples are obvious, but what about correlations between seemingly related variables. Is there a correlation between labour turnover in a particular firm and employee satisfaction ratings? Possibly. Can we say that GDP growth is driving the increase in the consumption of healthy foods? Unlikely. The underlying problem inherent in a time series is that such data is generally non-stationary, meaning that they have means, variances and covariances which are not constant. The implications of this is that non-stationary data cannot be used for predictive analytics or forecasting because of the risk of spurious correlations.



So what *can* be done?

Fortunately, there is a lot which can be done to circumvent this issue. First, one must be aware of the potential causes of spurious correlations. Two variables may be correlated purely by chance, like pirates and global warming, or they may be driven by a common element. For instance, soaring ice-cream sales and the incidence of wild fires may be both driven by the increase in average temperatures, but that doesn't mean that eating more ice-cream raises the probability of forest fires.

Secondly, statistical and econometric techniques, like de-trending, differencing, and error correction models, help in alleviating the problems of data non-stationarity. Furthermore, some variables may be explained by a host of different other so-called 'explanatory' variables. In this case, regression analysis would be better suited than a mere correlation exercise.

Lastly, and perhaps most importantly, Data Analytics must be based on a reasonable and testable hypothesis. Finding meaningful relationships in a dump of raw data is possibly related more to the arts than to the sciences. Sure, the underlying mechanics are math-based, but having an 'a priori' hypothesis of variable relationships, elicited from pure insight, context and/or logic, goes a long way to finding patterns in the data without falling into the trap of spurious regressions. Of course, one can also adopt a *carte blanche* approach and probe the database to find patterns, which are then analysed further to weed out the nonsensical ones (data mining).

Who can stand to gain from Big Data Analytics?

Basically anyone with large amounts of data can benefit from Big Data Analytics. Whether it is a casino or gambling service provider interested in real-time betting activity to immediately address a customer situation going sour, a government agency wishing to predict, and consequently address, tax and benefit fraud, or an online retailer looking to recommend new products to clients in order to boost profitability.

The method of unearthing patterns is not rocket science, but it can be overwhelming to a data owner, especially if a large volume of data is generated every day or even in real-time. The issue is not so much about owning the data (most organisations already have sophisticated IT systems and data collection processes), but about knowing where to look, how to connect the dots, and how to elicit insight and ultimately turn it into an effective business advantage. The last mile involves getting that insight into the boardroom, and developing an evidence-based decision-making culture at the 'top'.

Whether it is a case of cutting operating costs, identifying relevant KPIs for performance management, improving customer service, or seeking business opportunity development, we believe that, much like a pirate's secret stash of treasure, a wealth of information is still locked away and hidden in plain sight, waiting to be uncovered.



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Internalising externalities & sustainable development



Our everyday choices shape the environment we live in, either positively or negatively. It has long been argued that there is a strong inter-linkage between the economy and the environment. If we were to simply divide the economy into two main sectors, production and consumption, we would notice that exchanges of goods, services and factors of production occur between these sectors. Natural resources provide essential inputs to production processes which transform raw materials into finished goods and services.

Different types of waste are generated throughout the lifecycle of the product, from the extraction and transformation of raw materials, manufacturing and production of goods, to its distribution and consumption of the end product. The environment therefore acts as a waste sink for waste products that may result directly from production or from consumption. For example, emissions caused by a typical manufacturing company may have harmful effects on the surrounding environment – sometimes production processes may even be sufficiently large to the extent that these could be the source for trans-boundary pollution. At the consumption

end, kerbside waste causes a visual impact on the surrounding environment. Therefore, waste created from our simple economy could be quite significant! Now, this scenario is rather surreal – our real economy is made up of multiple sectors beyond our simple scenario. The reader should imagine the complexity and magnitude of interactions that take place between the economy and the environment on a daily basis.

Very often, economists speak of the concept of 'externalities' which is a concept intertwined with the previous idea. Let's take the classical factory example – those emissions that are caused throughout the manufacturing process are ultimately borne by society in the form of damages. These damages could be various: noise, air and visual pollution. These are not paid for by the manufacturing company and the individuals that suffer the damages typically receive no form of compensation. This is perhaps, the classical case of what is known as *market failure*. The private market is unable to facilitate compensation for the damages incurred, and as such, economic actors do not pay the 'correct price'. Thus, the market is incapable of internalising externalities.

The quest for sustainable development

Market imperfections such as externalities interfere with the concept of sustainable development. The concept is perfectly defined in the famous 1987 Brundtland report as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs". If externalities are not in some way internalised, the environment around us is likely to suffer. Hazardous wastes involving toxic materials may increase, chemical pesticides may leak into aquifers, and carbon dioxide emissions may increase, to the detriment of the present and future generations. Taking the case of the use of chemical pesticides in irrigation, chemical residues may infiltrate the aquifers, contaminating water that is used for drinking, washing, irrigation, and livestock production. Such chemical pollution may end up in our food and drink – one of the basic necessities for survival. However, the market fails to include such negative costs (e.g. to include the *environmental cost* of chemical leakages) in the producers' costs. Thus, the market charges the *private price* as it is incapable of coming up with a *social price* that is reflective of the environmental damage caused by private economic operators. We may conclude that the presence of environmental market failures lead to unsustainable production methods.



Is there a solution?

The existence of environmental market failure provides justification for government intervention in an attempt to *internalise externalities*. Efficient policies aim to correct market failures to eliminate or reduce any divergences between private and social prices. However, it is technically difficult to implement policies to correct environmental externalities. There are practical difficulties to accurately measure the external costs caused by private operators. A principle which has been enshrined in various environmental legislations across time is the renowned *Polluter Pays Principle*. This self-explanatory principle was first introduced by the OECD in 1972 and later in Principle 16 of the 1992 Rio Declaration on Environment and Development. The latter conference put requirements on national authorities to:

“promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.”

Later, this was then enshrined in Article 191(2) of the Treaty on the Functioning of the European Union, which states that environmental policy must be based on certain basic principles, one of which is the polluter pays principle. This principle is also incorporated in various Maltese legislation. For example, the Prevention and Remedying of Environmental Damage Regulations (L.N. 280 of 2015), put in place a framework of environmental liability, and thus this principle is legally enforceable by Maltese courts. The incorporation of this principle thus creates an impetus for Government to intervene and correct market failure.

// **State intervention through public policy is essential to align private motives with social objectives to achieve sustainable development.** //

The need for policy making

Environmental policy making is required to put the polluter pays principle into action. This can be done through market-based instruments. The absence of market incentives lead to social costs to be borne by future generations and hence, sustainable development may be compromised. State intervention through public policy is essential to align private motives with social objectives to achieve sustainable development. Incentives can be grouped into three: *price rationing, liability rules and quantity rationing*.

Price rationing is more known as ‘emission charges’: fees levied on the discharge of pollutants into air, water, soil or even noise generation. Such charges are typically designed to reduce the quantity or improve the quality of pollution by urging polluters to cover part of the costs associated with environmental degradation. As a polluter has to pay a tax to pollute, they have an incentive in terms of tax saved for the polluter to reduce the level of pollution. This should also encourage producers to seek innovative ways of production and also develop new technology with a view of reducing environmental degradation. However, since pollution costs differ across producers (because of various factors such as location, age of capital stock, nature of products or services produced), cost differentiation is necessary. Another form of emission charges are ‘product charges’, which are rather an indirect attempt to influence consumer behaviour by putting a charge directly on those products that are hazardous to humans

or the environment. Environmental charges of this sort could be levied to control pollutants at any stage in the product cycle.

Subsidies are another economic instrument that may encourage pollution control. Subsidies assist firms in meeting their compliance costs by reducing the financial impacts of obligations. This form of incentive is also useful when emissions are difficult to measure and quantify. For example, subsidies could be used to persuade farmers to switch to environmental benign methods of irrigation. However, the use of subsidies could be considered to be counter-productive because they tend to keep the size of the polluting industry above socially optimal levels, and consequently, overall emissions may increase. Polluting firms would not be encouraged to exit the market and thus such economic instrument has an effect on the size of the industry.

Within an EU context, subsidies are subject to State Aid rules and are thus not favoured by the European Commission. However, such incentives have been used in the EU. For example, in France, industrialists, farmers and associations receive grants and loans to build reservoirs and water treatment plants. Also, French water agencies provide zero-interest loans and grants for industrial water reuse and the minimisation of water pollution at source as well as the prevention of accidental wastewater discharges (OECD, 2009:54)³.

Another interesting economic instrument is the use of tradable permits. Perhaps, this incentive is mostly associated with the European Emissions Trading scheme which puts a cap on the level of carbon dioxide emissions caused by businesses, through the creation of a market for carbon allowances. This form of permit system can be used in conjunction with economic standards, where a scientific standard of sustainable level of say, water abstraction, can be set. Subsequently, the amount of water than can be abstracted, that is less than the standard, could be traded amongst economic operators, subject to the necessary permit. Whilst this concept works in theory, there are those who argue that this mechanism fell short of expectations because the ETS encouraged firms to invent ways of circumventing the system, instead of fostering innovation to reduce their dependence on fossil fuels. Furthermore, the system proved to be inflexible in its structure and unable to adjust in the face of economic conditions. Of course, putting such a system in place may bring about a plethora of other challenges, including the consideration of transaction costs. Despite this criticism, a similar cap and trade system to tackle sulphur dioxide that was put in place in the United States in the 1990's proved to be successful in pollution abatement. In fact, the Environmental Defense Fund⁴ reports that sulphur emissions decreased at a faster rate than predicted and at one fourth of the projected cost.

Locally, the concept of internalising externalities has also been implemented, albeit to a certain extent. For example, in 2004, the Eco-contribution was introduced in order to reflect the environmental cost associated with the disposal of certain products such as electronic and electrical equipment, plastic used in packaging and plastic bags, mattresses, tyres, batteries and accumulators, etc. However, as from last year, the eco-contribution for electronic and electric equipment was removed. The eco-contribution was also removed from other products, and replaced by an equivalent increase in excise duty. According to the Waste Management Plan for the Maltese Islands 2014 – 2020, the eco-contribution legislation and mechanism is under review by Government.

Despite measures taken to implement the polluter pays principle, it is expected that in the near future, EU member states will be obliged to use economic incentives to internalise such externalities. In particular, the proposed action plan for a circular economy that was issued by the European Commission in 2015, stresses the importance for National Authorities to make use of such instruments as a way of closing the loop and achieving a circular economy, which is an economy that promotes resource efficiency with minimal environmental impacts.

Despite measures taken to implement the polluter pays principle, it is expected that in the near future, EU member states will be obliged to use economic incentives to internalise such externalities.



⁴ Environmental Defense Fund. 'Acid rain pollution solved using economics', [Online]. Available from: <https://www.edf.org/approach/markets/acid-rain> [Accessed 24/08/2016].

Collaborating with your competitors for better benchmarking

No KPI is an island

Whether reading the newspaper, a magazine or watching an informative YouTube video, numbers and statistics come in many forms - the number of Syrian refugees seeking asylum in the EU rose to over 368,000 in 2015⁵; the real GDP growth of Malta in 2015 stood at 6.3%⁶; today's temperature can reach 26°C and so on. All of these are interesting in isolation to some extent, but real meaning to such figures can only be given by valuable comparators. Is over 300,000 refugees

a lot and is it too much for Europe to handle? Is a 6% increase in real GDP a good result for Malta? How does it compare to last year and to the EU average real GDP growth? Is 26°C high or low? Is it in July or in January? In Malta or in Sweden? Whatever the answers and interpretations to the above questions, benchmarks give meaning to numbers, whether they emanate from a weather forecast or a Key Performance Indicator (KPI) dashboard.



High quality benchmarking is effective in helping an organisation understand what it excels at and in which areas there is a real need for improvement and further investigation.



Benchmarking as a tool for business

A good benchmark provides real context to KPIs and statistics whether internal (against own performance in different areas, past performance or expectation) or external (against competition, related industries or even beyond). This is what makes benchmarking an effective management tool.

High quality benchmarking is effective in helping an organisation understand what it excels at and in which areas there is a real need for improvement and further investigation. This insight can be used to understand what performance improvement programs may be needed and to prompt enquiry and analysis where it matters most, and can contribute towards the robustness of other tools, such as the balanced scorecard, in providing more meaningful targets. It also paints a picture of the organisation and its position in the industry over different processes, functions and divisions as well as provides some insight on the abilities of competitors. This identification of real strengths and weaknesses can deliver an evidence-based source of information for identifying and

leveraging sources of competitive advantage thereby providing quality input to the strategic process.

The bottom line is that benchmarking can shed light on things managers didn't know about their organisation, no matter the type of benchmarking pursued. For instance, internal benchmarking is the process of identifying best practice examples and other meaningful insights by comparing similar processes within a given organisation. External benchmarking takes the process outside the confines of the organisation. The most obvious form of external benchmarking is competitive benchmarking where comparisons are drawn from other organisations within an industry. However, external benchmarking can also be extended to unrelated entities. This makes it possible to encounter best practice examples for similar processes from a completely different angle. For instance, a hospital can gain innovative insights from check-in procedures and room allocation from the hotel industry.

The difficulties with benchmarking

Benchmarking is an established management tool and has been one of the most widely used globally during the new millennium⁷. Notwithstanding the tool's popularity and potential benefits, it doesn't come without its challenges.

One of the most apparent issues with effective benchmarking is the availability of valuable, comparative information. Access to information is simpler in internal benchmarking, even though finding comparable information internally is not without its difficulties. There needs to be at least more than one instance of similar processes within the same organisation, thereby potentially limiting the effectiveness of internal benchmarking to the size of the undertaking.

The issue of availability of information becomes more apparent when benchmarking against other entities. Depth of benchmarking analysis within this context is limited by the extent of publicly available information, which tends to be financially focused and which becomes

increasingly limited the smaller the organisations get. This is especially problematic in Malta where very few companies are listed and the vast majority are SMEs publishing only abridged accounts.

The value extracted from a benchmarking exercise is also highly dependent on what is done with the benchmarks, meaning that benchmarking results have to be actionable. Clear objectives for the exercise should be set to understand what needs to be benchmarked and for what purpose. Benchmarking is an exercise that should be aligned with other initiatives and the overall strategic framework of the organisation. Excessive focus on cost reduction can promote silo-thinking and detract from the finance function's ability to contribute to strategy. Executive sponsorship is a critical success factor for any significant organisational initiative. This includes an understanding of the value that effective benchmarking can have, as well as acknowledgement of the costs involved.

Collaborate for better benchmarking

Collaboration in the business world has been successful in many forms for several decades, from Joint Ventures to Public-Private Partnerships. Collaboration also has the potential to overcome some of the hurdles and mitigate some of the risks involved in benchmarking.

Take, for instance, the issue with access to comparable information. Collaborating with other organisations for a benchmarking exercise would open doors for mutual information sharing. Agreement between the parties for which areas are to be benchmarked could be set, aligning the exercise to accommodate the objectives of all parties involved.

Collaboration also has the potential to overcome some of the hurdles and mitigate some of the risks involved in benchmarking.

The additional benefits of an intermediary

Some clear obstacles for collaborative benchmarking still remain. The most obvious stumbling block is the issue of confidentiality and willingness to share sensitive information with direct competitors. This is mitigated by the presence of a reputable independent intermediary.

Such a system would allow for a coordinated effort without divulging any sensitive information to competitors through an anonymised benchmarking exercise. This works similarly to comparing a student's exam mark to a table showing the summarised and anonymised performance of the class, giving context to the mark without having to disclose it to any of the students. This also serves another purpose – it eliminates the fear of coming out bottom of the list.

Intermediaries could also act as the main coordinators of the benchmarking effort. This could take the form of coordinating discussions on shared objectives and scoping, collecting and collating information, cleansing of data and producing individual anonymised reports. A centralisation of effort also tackles another issue with benchmarking - costs. This model allows participants to share the cost of the centralised effort, making it more efficient for all parties.

Benchmarking can be effective whether it is done within the confines of your own organisation, looking to competitors for best practice or by stepping outside the borders of your relevant industry for creative solutions. It can be done as a sole effort, through collaboration, directly or through an intermediary. The bottom line is that benchmarking provides value-adding context to current information but results need to be actioned in order to provide strategic insight or realise any improvement opportunities.



Migration – burden or blessing?



Immigration has always been a hotly debated and divisive topic of discussion. Mention it in passing and you're likely to get a few mixed, perhaps polarised reactions, especially in the wake of mass emigration from Syria to mainland Europe, and its purported links to terror. But what about the economic effects of immigration? Is there support to the seemingly common view that immigrants steal jobs, depress wages, and pose a burden on the host country's welfare system? Or is their net contribution mostly positive?

Let's start with some cold hard facts. Malta has seen its number of full-time and part-time foreign workers mushroom in the last 15 years. In 2000, total working migrants totaled around 2,000. In stark contrast, we now have almost 22,000 EU and third country nationals working in Malta, comprising around 12% of the total working population. And as expected, the bulk of these foreign workers are EU citizens – around three quarters of the total.

Expats or immigrants? What's in a name?

The term immigration usually conjures up images of people from Africa or the Middle East, attempting to cross perilous seas in a bid to start a new life away from their war-torn countries. But immigration is a far wider concept, encapsulating not only refugees seeking asylum, but also EU citizens (and non-EU citizens from developed economies) who decide to settle and work in Malta for various reasons, namely of a financial or economic nature. Whether one calls such individuals expats (a term usually reserved exclusively for highly skilled Caucasians) or immigrants, is irrelevant from an economic perspective. What matters most is the skills composition imported into the host country, and how different this skillset is from that of the native worker.

What does the literature say on migration?

The literature discusses three main economic areas which are affected as a direct result of immigration – the labour market, the public purse, and economic growth. Even though such areas are interwoven, it is helpful to discuss these areas separately in order to have an informed debate.

Perhaps the most obvious of all effects is the one which is the most analysed in the literature. In the simplest labour market model with perfectly elastic capital supply (meaning 'no constraints on supply of land and machinery'), immigration results in a downward pressure on wages for native workers who are directly competing with immigrants.

On the other hand, an upward wage pressure exists for native workers who are considered as complements. In this case, literature suggests that the overall average effect on wages could be negligible, or even positive.

The story could be somewhat different if the assumption on perfectly elastic capital supply is

relaxed. In this case, there is a larger detrimental effect to competing native workers, but still, the average wage effect would be close to zero.

Take the case of Malta for example – an open economy with a constrained capital supply. Even though the rise in the share of foreign workforce increased from 1.6% to 5% when comparing two periods of time (2002-2006 vs 2010-2014), the rise in average wages remained at a constant 10%. This may be explained by the fact that the increase in jobs held by foreign workers is mainly driven by two thrusts: the lack of available skills in the higher end segment of the labour market in specific industries, and the lower willingness to take on low skilled jobs by native workers. This has contributed to the sustained growth of niche industries, such as gaming, which would have otherwise been constrained by the relative scarcity of Maltese labour, and which are nowadays considered as forming an important pillar of the Maltese economy.



Whether one calls such individuals expats (a term usually reserved exclusively for highly skilled Caucasians) or immigrants, is irrelevant from an economic perspective.

The links to the public purse and to economic growth are easy to see here. Whilst the amount of income tax and social security contributions by foreign workers totaled just over EUR 15 million in 2000, this has grown to over EUR 103 million in 2014, comprising around 10% of the total income tax and National Insurance revenue collected by the Maltese Government. This by no means indicates that foreign workers are taking up jobs of Maltese workers. In fact, the Maltese workforce continues to rise, and the amount of income tax contributions doubled from 2000 to 2014. What is implied here is that the rising demand for labour by industries is too strong to be fully met by Maltese workers alone.

In terms of economic growth, the story for Malta has also been largely positive. Apart from the supply side argument of having a more diversified economy resulting in enhanced resilience to negative shocks - facilitated by the creation of new industries - and the fact that migrants enhance the human capital element of our economy, foreign workers have also contributed to a rise in potential economic output through the multiplier effect channels. Studies suggest that, between 2000 and 2014, foreign workers have contributed to an average of around 0.6% growth per annum.



// What is implied here is that the rising demand for labour by industries is too strong to be fully met by Maltese workers alone. //



So are we saying that migration has a net positive effect?

Overall, yes. There is a large body of evidence which shows that migration is beneficial for the economy. Foreign workers fill important niches (both in fast-growing and declining sectors), contribute to labour market flexibility and to human capital development, boost the working-age population, and make a positive impact on the public purse.

Of course, the extent of economic effects varies across countries, and within each economy, there will always be winners and losers. Furthermore, the effects will very much depend on the type of migrant. An illegal immigrant waiting to be granted refugee status is definitely a burden on the economy, but a highly-skilled migrant contributes much more to the public coffers than he or she receives in benefits.

That is not to say that negative effects on the host country are not experienced. Whilst Malta is still amongst the top performers in the EU in terms of low unemployment rate, the share of foreign workers has been rising over the years, meaning that supply of Maltese workers is not keeping up with demand for labour. A rise in the female participation rate, which is still low by any standards, would be a partial solution to this.

Furthermore, a disproportionate emphasis on employing expats in a few key sectors may have wide-ranging distortionary effects on wages, especially for local businesses (even those which are not necessarily direct competitors) which need to compete for workers by offering higher wages.

The property market can also be affected. A sudden rise in migrants, particularly those in the high-skilled segment of the labour market, will lead to an upward pressure in property prices and in rents. This will not only occur in hot-spot areas, but also in other localities in the periphery of business centres. Coupled with the limited supply of land, and the surging demand, this can potentially be costly for first-time property buyers, and for the economy as a whole if the property boom is not sustained.

In the end, it is time to dispel the ill-informed perception that migration, often driven by public antagonism, is bad for the economy. However, one needs to disentangle the various channels by which migration affects the economy to truly study and address, through policy, the pockets of potential negative effects, even though these may not be significant enough to outweigh the many positives.

Sustainable development - a dream?



We often speak of sustainable development, commonly understood to mean development that meets the needs of the present generation, without compromising the ability of future generations to meet their own needs. We have all heard of this concept, numerous times, yet it remains a rather complex and challenging notion, one which is very difficult to grasp and realistically achieve. We have now reached a point where we need to properly understand it and introduce measures to adequately achieve this seemingly abstract and elusive reality. However, in order for this to work we need to adopt a collaborative approach. One where both the private and public sector collaborate and collectively decide on the way forward.

...But what do we exactly mean by Sustainable Development?

In the world of environmental economics, this concept rests on four distinct but interlinked pillars. Firstly, it relates to the need to preserve natural resources for the benefit of future generations by exploiting natural resources in a sustainable, prudent and rational manner. Secondly, Sustainable Development also calls for the equitable use of natural resources, and thirdly, to promote the principle that the use of resources by one economic actor should take into consideration the needs of other economic actors. Lastly, the fourth pillar necessitates that environmental considerations are deeply integrated into economic and other development plans, programmes and projects and that development needs are taken into account in applying environmental objectives⁸.

With that being said, collaboration is essential...

We already explained in a previous article the existence of an inter-relationship between the economy and the environment. It is safe to argue that both the public and private sector are at fault for adopting a linear approach towards economic growth that is causing environmental degradation, increase in waste, and consumption of water resources. What needs to be stressed now is that beneficial sustainability practices should be deeply rooted in production processes and service provision that are undertaken by the private sector. Such practices minimise environmental impacts thereby, maximising resource use and conservation. This is precisely the main premise of a circular economy, one that is high up on the European Commission's agenda.

To achieve this is not a simple task. First, Government needs to set *realistic and short-term targets* to achieve sustainable development. A number of environmental targets have already been identified by the European Commission as set out in the related Directives. In this respect, Malta is not always on track with regard to certain targets. For example, municipal waste should be reduced to 50% of the total amount of waste that was generated in 1995 by 2020. Data sourced from Eurostat for 2014 indicates that 79% of the waste generated is still being landfilled⁹. Similarly, the Renewable Energy Directive requires Malta to generate 10% of its energy from renewable energy sources. As at 2014, the proportion of energy in gross final consumption that is generated from renewable sources stood at 4.7%¹⁰.



Although some progress has been registered in some sectors such as renewable energy source adoption by the domestic sector, the lack of meaningful and significant progress on such targets, calls for the adoption and subsequent implementation of measures aimed at urging private firms to willingly take initiatives in favour of energy conservation and waste minimisation. This should be supported by the state in a number of ways. As such, Government needs to adopt a consultative process with the private sector when introducing and updating regulations, since collaboration will be key to a successful implementation. For example, an article published by the Guardian in 2013 highlights that the

United Kingdom's landfill tax has successfully managed to promote innovation and increase the recycling rate from 7% in 1996 up to 43% in 2013. Thus, active collaboration, instead of a confrontational approach, should be adopted to instil a truly sustainable development culture. Participation by those that will be impacted by a new measure or regulation is essential both for better planning and for Government to introduce measures that are feasible and attainable by the private sector. In addition, the active engagement and participation of the business community would increase collaboration and interest in conserving the environment.

Requiem for a dream?

Whilst a collaborative approach is preferred, governments should nevertheless intervene in the presence of market failure. Those who advocate for state intervention argue that this is necessary to regulate and particularly monitor progress. If the private sector is left on its own then the market would fail to *internalise externalities*. A push by the public sector should be instigated to encourage sustainable operations and even track progress by introducing mandatory reporting. In the United States, public sector support plays a crucial part in mandating, monitoring and guiding the development of sustainability development. However, this needs an intelligent programme that aids businesses build a deep understanding of the root issues and raise awareness of the importance that environmental sustainability plays in economic development. Not to mention, that

achieving environmental sustainability plays an important role in the overall well-being of society.

Furthermore, public intervention could also be instrumental to support the implementation of sustainability practices by the private sector. In this context, the public sector may also consider the introduction of innovative financial instruments and funding mechanisms for private firms to raise the necessary investment to achieve sustainable practices. There are those who argue that unless private investments in sustainable development are publicly supported, firms will fail to undertake any risks associated with investment. Thus, funding incentives should be considered to cover any incremental costs associated with investing in clean technologies.



“ Active collaboration, instead of a confrontational approach, should be adopted to instil a truly sustainable development culture. ”

Should the public sector also push for reporting?

On another front, the disclosure of sustainability metrics is also important towards the achievement of sustainability goals. Mandated disclosure puts environmental issues at the top of corporate agenda and hence, sustainability matters become more directly linked with business operations, decisions and also values. In this regard, it is necessary for the public sector to establish and enforce a number of sustainability indicators. The state has the role of regulating and monitoring sustainability reporting as well as provide guidance with respect to the development of key information metrics that would be informative to measure progress. Reporting is particularly essential within the local context, because some firms will not act until mandatory requirements are in place. Regulations should set a minimum bar to help firms incorporate such matters into their day-to-day operations. Although there are a number of motivated companies that demonstrate commitment to sustainability matters, the introduction of mandated reporting will establish a level playing field in the market, and perhaps even allow leaders to demonstrate their competitive advantage. A number of studies have indicated that mandated reporting is capable of positively influencing management practices, and the stronger the enforcement, the greater the positive impacts on sustainable development goals.

Mandatory disclosure of sustainability metrics is only the beginning of a long road paving the path to a sustainable development reality. Perhaps, the best strategy is for government to introduce this concept gradually – first by addressing larger firms that have a significant impact on the environment, and then progressively cascading tailored strategies to SMEs drawing from the lessons learnt. This is not to downplay the importance of reporting, but to give the market time to adjust and implement measures that achieve sustainability goals. Reporting may require a change in the firm's culture and working practices which require time and adjustment from the bottom-up. Only when sustainability measures are deeply rooted into a company's operations, can management effectively start reporting on the progress in achieving sustainability goals.

// **Mandatory disclosure of sustainability metrics is only the beginning of a long road paving the path to a sustainable development reality.** //



Economic Updates

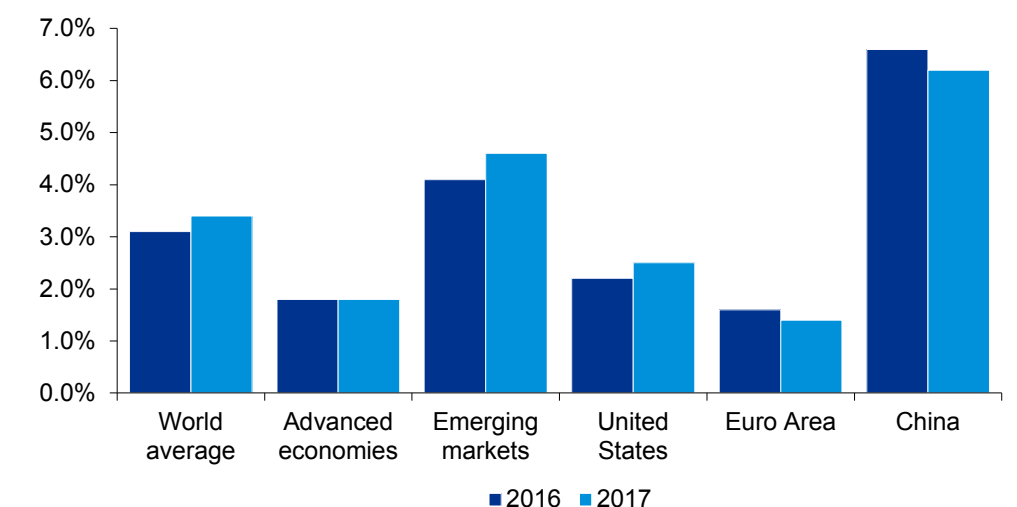


Global Overview

2016 is a year that will be indelibly etched in our collective memories. A series of terrorist attacks orchestrated by ISIS cells and lone wolves have unnerved the European public. This has only served to add to the tensions resulting from the mass migration of refugees out of Syria and other war-torn regions. The publication of the 'Panama Papers' has brought to light the role tax haven nations play in assisting tax avoidance by several notable personalities and politicians. Over in the UK, the much-awaited 'Brexit' referendum shocked global markets after the Leave campaign claimed a significant victory. Finally, in November the United States will, once again, go to the polls in what is likely to be another historic election.

Global economic trends have remained consistent over the past few years. Global growth is mainly being fuelled by strong performance in developing economies in Asia. Growth in the US has been moderate but is expected to continue improving. In the Euro Area, low inflation, uncertain economic performance in key member states and the effects of the Brexit decision have all played a role in limiting immediate growth prospects. Over in China, the recent slowdown in economic growth is expected to continue, as investors look to relocate their business to other developing nations which offer superior competitive advantages.

Real GDP growth

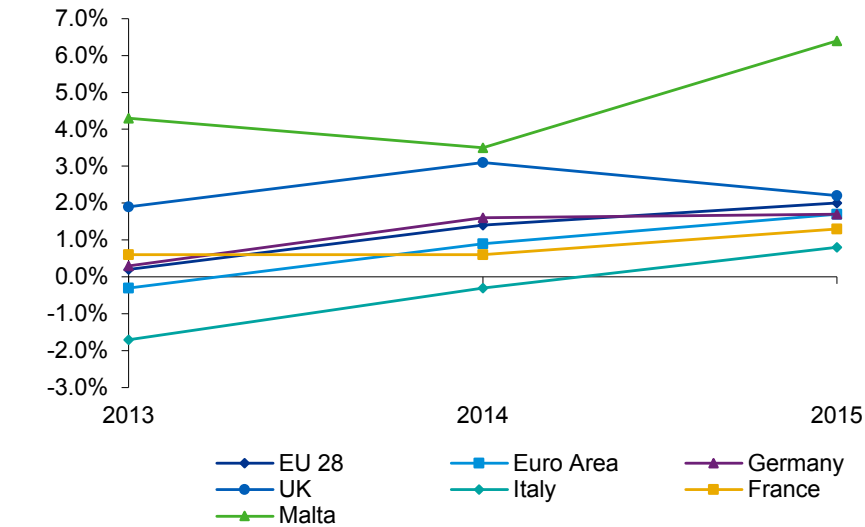


Source: IMF World Economic Outlook Update July 2016

Over the past few years, events have unfolded in such a way that the European Union is now faced with a multitude of challenges. On their own, each challenge is complex. Together, they require carefully considered action and a focused, unified approach from all Member States. Three main challenges stick out in particular; overall economic performance, Brexit and migration.

The economies of the Euro Area are still recovering from the recent financial crises. Austerity measures may have served to bring public finances under some degree of control, but that has come at the cost of a swift economic recovery. Trends over the past few years show growth in major EU economies converging between 1% and 2%. This may be indicative of a slow return of consumer confidence, however it may not be sufficient to encourage the levels of investment necessary to build up the much needed resilience to economic shocks with European economies.

Real GDP growth



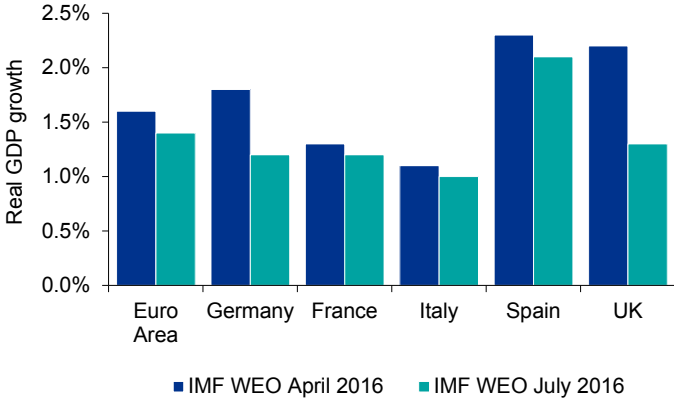
Source: Eurostat

Malta has managed to remain an outlier in terms of positive economic performance. The country has continued to attract foreign investment and has succeeded in developing a strong service-based economy. It is worth noting that the exceptional level of economic growth recorded in 2015 was in part due to significant public sector investment in the energy industry.

The results of the UK referendum on European Union membership sent shockwaves through global markets. The unexpected Brexit decision has

damaged investor confidence in the UK. As a result, some spill over effects are likely to be felt throughout the rest of the EU. In the July update to their World Economic Outlook publication, the IMF revised downwards their projection for real growth across several major European nations. While naturally the UK will see the most significant impacts from the decision, key trading partners such as Germany and Spain will be affected as declining prosperity in the UK will negatively impact exports of premium German products, and may contribute to a downturn in the Spanish tourism sector.

Projected economic growth during 2017



Source: IMF World Economic Outlook April 2016
Source: IMF World Economic Outlook Update July 2016

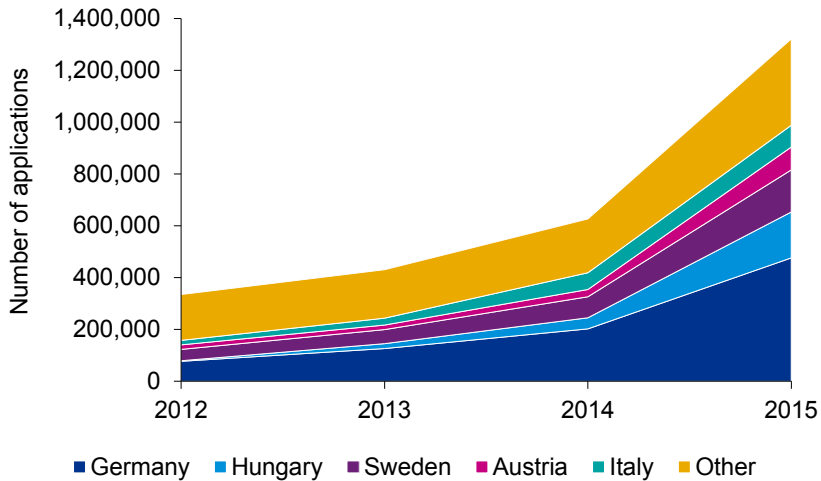
Brexit also brings negative implications for the Maltese economy. The UK is the largest source market for the local tourism industry, and UK remains an important trading partner across other industries as well. The economic performance of the UK, as well as the strength of the Pound relative to the Euro, will impact the consumption decisions of the British public. One possible advantage for Malta is the country's excellent track record with security issues. The current risks associated with North African countries like Tunisia and Egypt will help to keep the island competitive. Additionally, the risk of terrorism in Europe may draw in some travellers seeking to holiday in a less high profile destination.



This brings us to the final challenge facing the EU - that of migration and terrorism. The rise of ISIS across the Middle East and North Africa has displaced millions of individuals who have travelled to neighbouring nations and Europe in search of safe refuge. This rapid influx has placed yet another burden on Europe's welfare systems, which were already under significant pressure following austerity measures put in place following the financial crisis. Unfortunately, the mass migration has also stirred up racial tensions in Europe. Fear of terrorist sleeper cells entering the EU masquerading as asylum seekers, combined with the anger that follows at times of economic uncertainty, has led to acts of hatred carried out against migrant communities.

Moving forward, it is important for European nations to take steps to encourage faster growth within their economies. The return of confidence to investors will spur the creation of jobs and ignite that all-important 'feel good' factor in consumers. History has shown that at times of poor economic performance society becomes restless and angry, and a scapegoat is always found and blamed. Employment and a fair distribution of wealth are priority targets for Europe. Economic prosperity will bring social stability and cohesion, reducing the risk of home-grown terrorism, and pave the way for sustainable growth in the years to come.

Asylum applications in the EU



Source: Eurostat



The past year has been a relatively good year for Malta. Real growth in Gross Domestic Product for the year 2015 is estimated to be in the region of 6.3% - an impressive figure especially when compared to other EU Member States. The second quarter of 2016 registered respectable real GDP growth of 3% over and above the same period in 2015.

The Maltese economy has, over the past few years, succeeded in developing a strong tertiary sector, with services now responsible for the bulk of local gross value added.

Between Q2 2015 and Q2 2016, all sectors of the economy registered growth, with the exception of the construction industry which saw a small decline of around 0.8%. From the industries which experienced growth, the fastest growing sector was mining and quarrying, followed by electricity, gas, steam and air conditioning supply, water supply, sewerage, waste management and remediation sector, most likely due to the overall health of the economy and growth in other sectors.

Other areas which have seen significant growth are the information and communication, professional services, and finance and insurance industries. The level of foreign investment in IT and gaming services has also resulted in an influx of expatriate workers with a knock-on effect to the local rental market. Demand for properties has risen, and several enterprising locals have taken the opportunity to invest in buy-to-rent property.

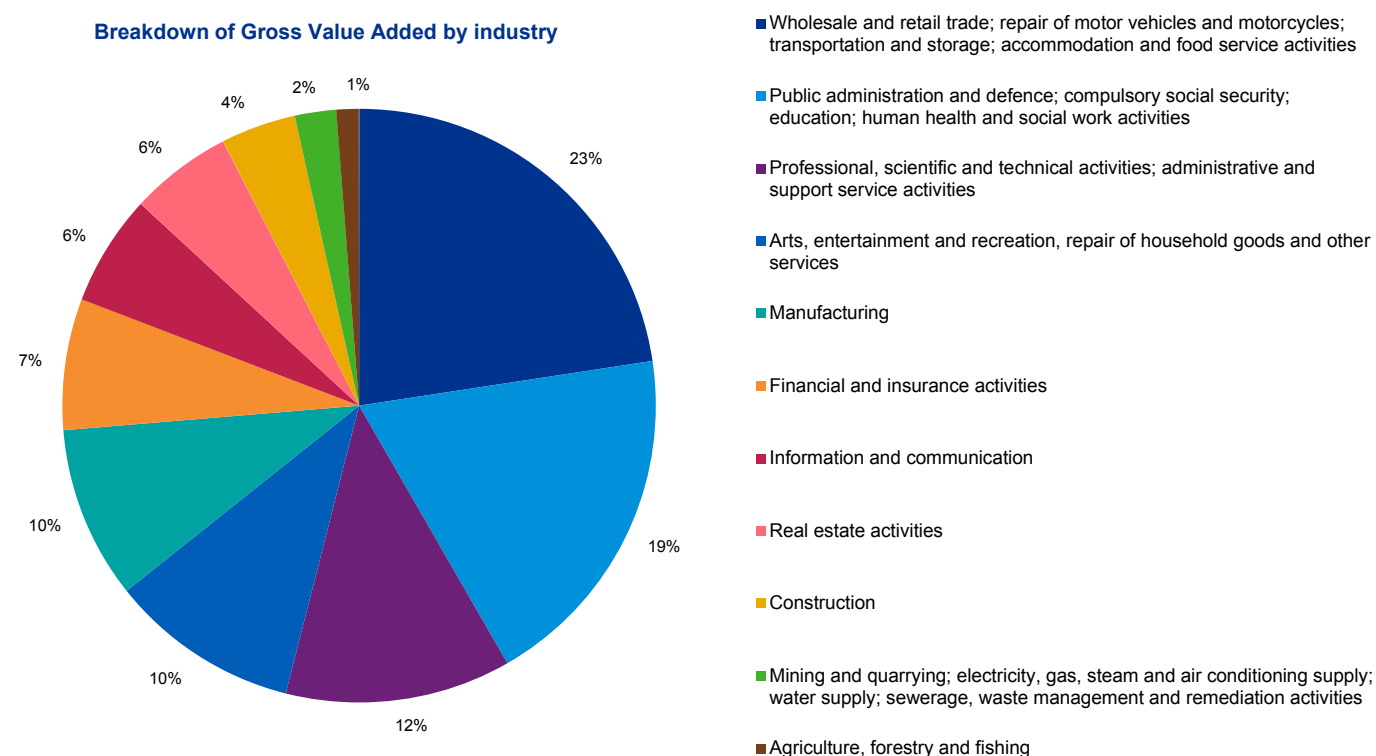
It is worth noting the recent controversy surrounding the numerous planned high-rise developments across the island. The projects will give a significant boost to the local construction industry and will serve to feed the demand seen by the real estate market. Recently introduced taxation on construction materials will also mean that these projects will generate additional revenues for government. The proposals have nevertheless been controversial primarily due to concerns over their visual impact and the suitability of existing sewage and road infrastructure.

From a structural aspect, the Maltese economy is also showing gradual signs of change. As at Q2 2016, the ICT, financial service and other

professional services industries comprised around 25.5% of total GVA, which is around 1% more than they did in Q2 2015.

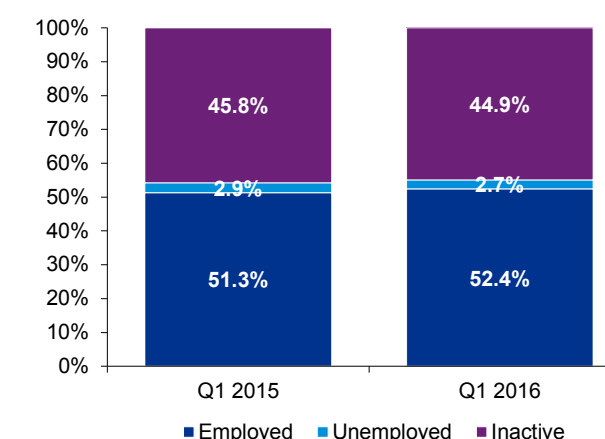
Employment statistics also confirm the economy's strong performance. Between Q2 2015 and Q2 2016 total employment rose from 51.3% to 52.4%, while unemployment fell from 2.9% to 2.7%. This data raises two important issues. On the one hand the Maltese economy is operating at close to full employment, an impressive achievement, especially considering the situation in Europe. The data also reveals the extent to which Malta suffers from an inactive population. In Q2 2015 the inactivity rate stood at around 45.8%, while by Q2 2016 this fell to 44.9%. It is concerning that close to half the individuals on the island who are capable of working or pursuing their education further are instead electing to remain idle. It is even more so concerning that this is taking place at a time when employers are turning to expatriate workers to fill gaps in the local workforce. It indicates that for some reason a very significant section of the population is either not interested or unable to enter the labour market.

Breakdown of Gross Value Added by industry



Source: NSO, KPMG analysis

Labour status



Source: NSO, KPMG analysis

Industry spotlight – Tourism

The tourism industry is one of the cornerstones of the Maltese economy, the basis of employment and livelihood of thousands of individuals. The aim of this industry spotlight is to identify key industry metrics and highlight recent trends.

Current industry trends show that the total number of tourists arriving in Malta is increasing at a significant rate, with the main market being visitors from other EU Member States. The EU market also appears to be the fastest growing market, with total visitors from non-EU nations having declined between 2014 and 2016.

Looking at the purpose behind these visits, it appears that growth is being experienced across several different tourist markets. The bulk of local tourism is from holidaymakers, a market which is seeing steady growth year-on-year. The business travel market has seen massive growth over the past two years and could prove to be a lucrative source of revenue for local operators. Significant growth has also been seen in other forms of tourism such as education and medical tourism, although a decline was observed when comparing the first half of 2016 with the same period in 2015.



Key statistics - Tourism			
	"Change between H1 2014 & H1 2015"	"Change between H1 2015 & H1 2016"	"Change between H1 2014 & H1 2016"
Change in number of visitors			
Total visitors	4%	10%	15%
EU visitors	9%	10%	20%
Non-EU visitors	-19%	10%	-12%
Change in purpose of visit			
Holiday visitors	5%	12%	17%
Business visitors	30%	10%	42%
Other visitors	28%	-6%	20%
Change in returning visitors			
First-time tourists	8%	10%	19%
Repeat tourists	-4%	9%	5%
Change in type of accommodation			
Private accommodation stays	9%	25%	36%
Collective accommodation stays	3%	5%	8%
Change in length of stay			
Average length of stay - All accommodation	-2%	-1%	-4%
Average length of stay - Private accommodation	-4%	-4%	-8%
Average length of stay - Collective accommodation	-2%	-2%	-4%
Change in expenditure			
Average expenditure - All visitors	1%	-4%	-3%
Average expenditure - EU visitors	3%	-5%	-2%
Average expenditure - Non-EU visitors	2%	2%	3%

Source: NSO, KPMG analysis

Most inbound tourists are first-time visitors, and the number of such visitors is growing at a fast pace. Fortunately, the number of repeat visitors is also growing, albeit at a slower rate than for first-time visitors. Repeat business is an important goal for local operators to strive

for, as word-of-mouth and positive reviews from regular visitors will help drive more first-time travellers to the island. Additionally, there is the old adage that it is much more expensive to attract a new customer than it is to retain an existing one.

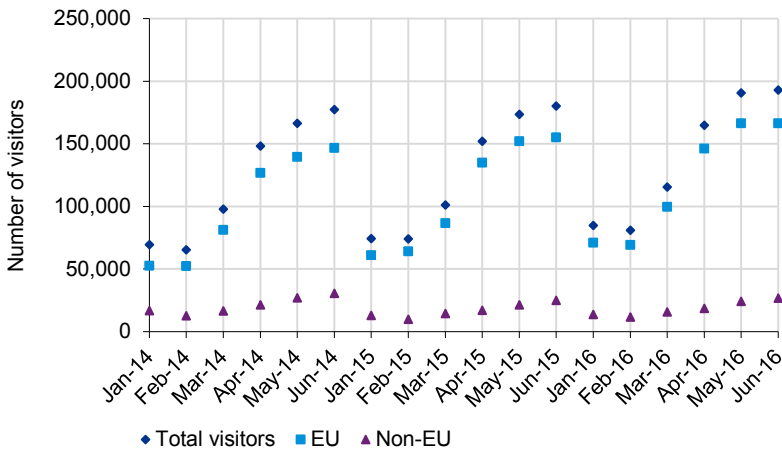




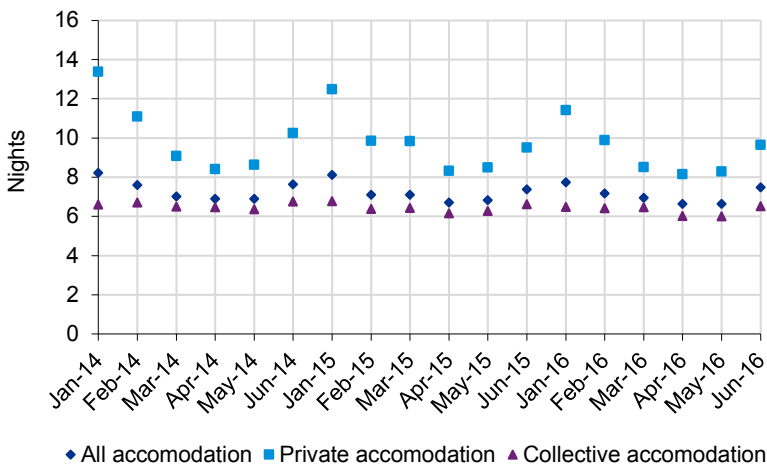
Looking at the type of accommodation which tourists are opting for, one can note a significant increase in the popularity of private accommodation, an expected development given the phenomenal success of services such as AirBnB across the globe. This being said, the number of tourists opting for more traditional collective accommodation is also increasing at a respectable rate.

There are two trends which may warrant possible concern. The first is that across all types of accommodation, the average length of a tourist's stay appears to be declining. Elements of this can probably be linked to the rise in business travel and a possible increase in short stays prompted by good deals offered by low-cost airlines. Nevertheless, this is still an issue that operators may wish to look into. Enhancing the quality and variety of activities and facilities on offer may drive tourists to opt for longer visits to Malta. It is also likely that poor economic performance in key markets has reduced the income tourists have available to spend on prolonged holidays abroad.

Source market

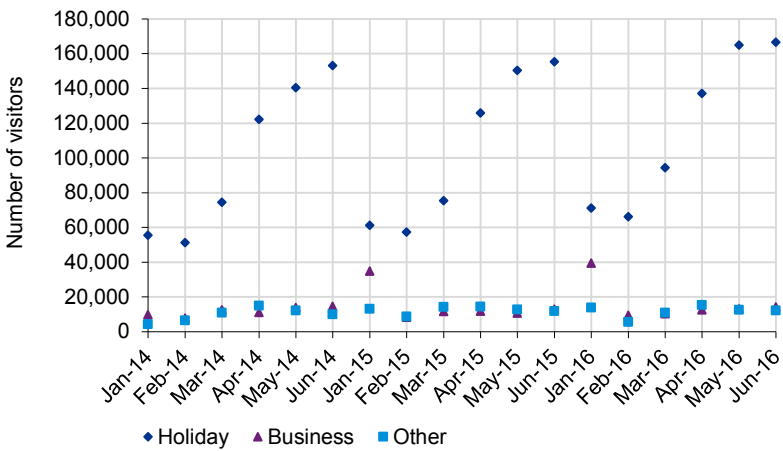


Average length of stay

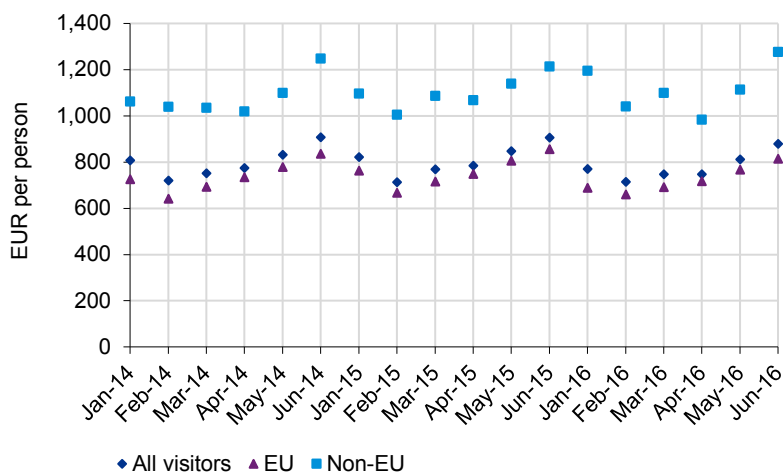


Source: NSO, KPMG analysis

Purpose of visit



Average expenditure



Source: NSO, KPMG analysis

The other issue which may warrant some concern is that the average expenditure per visitor is falling. This is mainly being driven by a recent decline in spending from tourists originating from the EU market, as expenditure from non-EU market tourists is on the rise. Again this may be due to the economic performance in other nations, which would affect the spending power of tourists. Nevertheless, statistics show that tourists from non-EU nations spend on average around 1.5 as much as tourists from EU nations. Hence, it would be highly beneficial for operators to look into attracting a higher quality visitor who is willing to spend more money while on holiday.



Economic recovery in the United States has for several years progressed at a superior pace to Europe. Recent growth has been moderate, yet stable and consistent, and is expected to remain above 2% in the coming years. Inflation has also remained low in recent times, but is expected

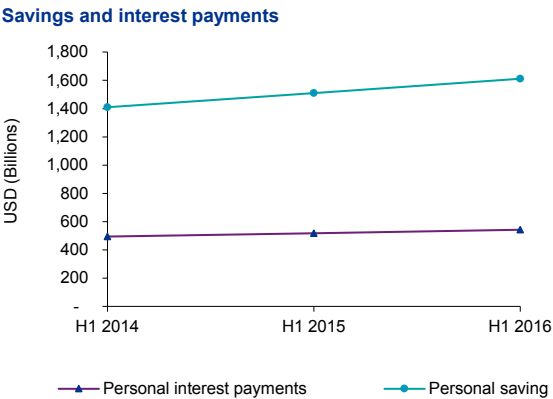
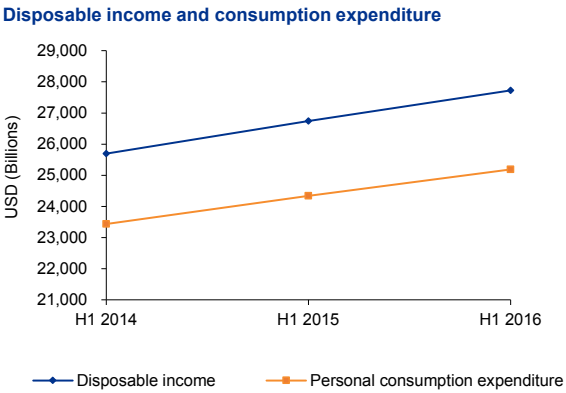
to rise above 1% during 2017. The growth of the economy has resulted in the creation of new jobs and unemployment has fallen marginally faster than expected. It is predicted that over the next few years unemployment in the US could fall below 5%.

Macroeconomic indicators			
	2015	2016	2017
Real GDP Growth	2.4%	2.2%	2.5%
Inflation	0.1%	0.8%	1.5%
Unemployment	5.3%	4.9%	4.8%

Source: IMF World Economic Outlook April 2016
 Source: IMF World Economic Outlook Update July 2016

The creation of new jobs in the US is an important indicator of the nation's return to prosperity; it is ultimately the income in people's pockets which drives the economy, and the creation of employment is the main mechanism through which household income grows. An analysis of income and expenditure in the US reveals a positive trend. When comparing results for the first half of 2016 with the equivalent time periods in 2015 and 2014, one finds that total disposable income earned by households in the US between 2014 and 2016 has grown by almost 8%. In that same time, total consumption expenditure has also grown by around 7.5%. This increase in consumption expenditure is a signal that consumer confidence is on the rise.

It is also important to consider the financing behind this expenditure. Data shows that personal interest payments during the first half of 2016 were almost 10% greater than during the first half of 2014 - an indication of higher debt levels amongst the public. It also emerges that total personal savings periods grew by over 14% when comparing the same periods in 2016 and 2014. The fact that savings appear to be growing at a significantly faster rate than personal interest payments is an indication that consumers in general are not rushing back into old bad habits and taking on more debt than they can actually afford to maintain.

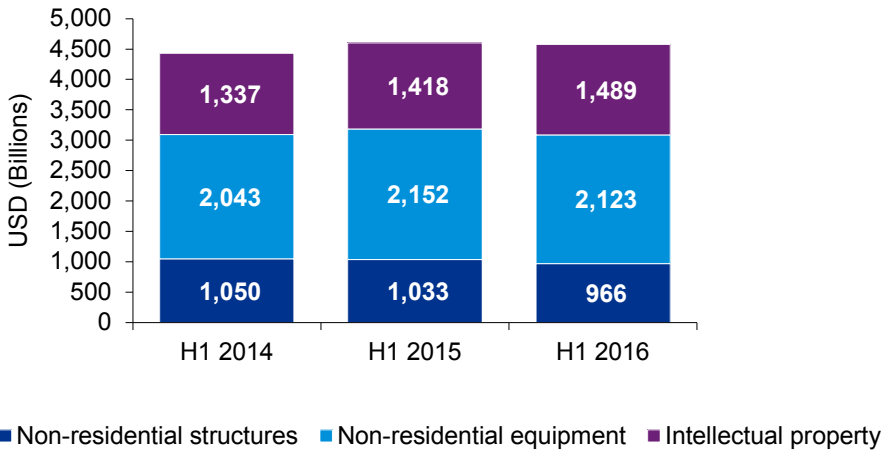


Source: Bureau of Economic Analysis

Looking at investment, it also becomes apparent that confidence is not limited only to consumers. Investment in fixed assets is increasing year-on-year, an indication that businesses are optimistic about future prospects. Private fixed investment grew by around 3.3% when comparing the first half of 2016 against the first half of 2014. When looking at the types of assets attracting investment, clear trends emerge. Investment in non-residential structures declined by around 8% between 2014 and 2016, while investment in intellectual property increased by over 11%. Investment in non-residential equipment, the largest category by far, grew by 3.9% over the same time period. Proportionately, it transpires that investment in non-residential structures accounted for 2.6%

less of total investment during 2016 than it did during 2014, and investment in intellectual property accounted for 2.3% more in 2016 than in 2014. This shows a shift in preferences by investors, moving more towards intangible, knowledge-based assets rather than physical assets. When one considers that investment in non-residential equipment has remained relatively stable as a proportion of total investment, this indicates a structural shift in the US economy - away from heavy industry, which makes intensive use of physical assets, and towards knowledge-based activities and research and development, which outputs intellectual assets.

Private fixed investment



Source: Bureau of Economic Analysis

Given that 2016 is an election year in the US, future economic performance is likely to vary depending upon the market response to the eventual winner of the current presidential campaign. Global reaction to the election result will also undoubtedly have an effect on the value of the US Dollar on the international market, which will in turn

influence investment trends. The policy decisions and actions to be taken by the new president will impact the global economy for better or worse. As can be expected, this November the eyes of the world will be upon Washington.



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