

Real economics for the 21st Century

Economics is not just about money, and yet so much of what we hear about economics focuses on money and the complex inter-relationships between things that are closely related to money, such as interest rates.

This can get confusing because money changes its value over time and between currencies, and the money price of goods often does not reflect very well the resources that went into them.

In this article I discuss economics from the perspective of real resources first, such as labour, land, energy, water, minerals, and other living things. From this I deduce some strategies for governments and individuals.

Along the way I will try to keep to facts and deductions that are self-evident and uncontroversial, but occasionally will introduce hypotheses, which are not quite so solid (even though I believe them to be true).

Work and play

By 'work' I mean all that has to be done to support our lifestyles, including providing shelter, food, water, clothing, warmth, opportunities for social contact, healthcare, entertainment, and learning.

Some of this work is done by people working in organizations and being paid money to do it, but a lot of work is

unpaid. For example, you probably brush your own teeth and nobody pays you to do that. Still, it's work and even a bit boring.

'Play' refers to things that we enjoy doing. Just occasionally work is also play.

Getting enough physical activity to stay healthy is an important part of the work every person should do. Some people find half an hour on a treadmill in a gym enjoyable, but many of us do not. Work can be play for some people but not for others.

In general, most of us would like to do less work (in this sense) and have more play. Paid employment is a different matter, but even here most of us would be more than happy to do less of that work, if only we could get paid just as much. So, in general, our society having to do more work overall is bad, other things being equal.

Demographics and work

Throughout the 20th century and beyond, countries around the world have gone through a similar demographic pattern: economic development combined with aging (<https://www.gapminder.org/>). A period of rapid population growth has usually been followed by slowing population growth as people begin to feel more secure and have fewer children. In some countries the average number of

children per family is less than two, which means people are not even replacing themselves and populations are declining.

During the initial period of high population growth the ratio of people to working age people is quite favourable. All the usual economic indicators look good.

However, as the population stabilises and good healthcare leads to longer lives the ratio of people to working age people changes. The population as a whole needs to be supported by a dwindling number of workers, and the needs of the very old are considerable. They cannot do so much for themselves and need more care as their health declines.

Remember that by 'work' and 'worker' here I mean work in the broad sense discussed earlier. This does not refer just to people in paid employment or the work they do while in that employment. By 'support' I mean looking after those people, doing work for them, not providing money.

In Europe at present this pattern is being disrupted by mass immigration from north Africa, but this does not change the overall trend for European countries or for the world as a whole. Eventually, we will all face the situation that Japan is now facing.

This demographic trend means that human work (among other things) is becoming an increasingly scarce resource, and one we need to manage efficiently.

My hypothesis is that, overall, human work is one of the top few scarce resources, and likely to be the most important to manage efficiently. This is in part because all other actions to manage resources efficiently require human work be done to put them in place.

Consider this from your personal point of view. Do you feel you usually or always have more to do than you have time for? Are there things you planned to do and wanted to do but never had time for? When you stop to rest do you sometimes feel a bit guilty? When an extra task is given to you do you feel weighed down just a bit more?

As our diaries become more densely packed with appointments it becomes harder and harder to squeeze something more in. Each rearrangement is more hassle to accomplish. Furthermore, with so much time and energy taken up by one's efficient, high pressure schedule, it is harder to make time for one-off tasks needed to make changes. Being too busy with regular stuff also makes us too busy to change, and so unwilling to change.

Sustainability and work

Another factor driving up the demand for human labour is our realization that relying on fossil fuels is not sustainable. They won't last forever and they seem to be affecting the world's climate in a worrying way.

The problem of getting work done is one we have sought to solve by using machines that we supply with energy and that do work for us¹.

The amount of energy we consume in this way can be compared to the amount of energy we eat to get a sense of how important these machines are.

In 2015 the UK used 137,430 ktoe of energy (Department for Business, Energy & Industrial Strategy, 2016) and had a population of 65.1m people (ONS, 2016). That's just under 58,000 kcals per person

¹ Strictly speaking, we supply energy in one form and, in its conversion to another form, we extract some useful work. As a result, overall entropy increases and overall energy stays the same.

per day, so our machines consume about 30 times more energy than we eat. This gives a sense of just how much we rely on this approach for getting the work done.

We can and probably will push this even further in future, but we need to do it with sustainable energy sources.

For net importers of oil and other energy sources this is more pressing still because of the problem of energy security. A country that relies on supplies of energy from another country is at risk of being cut off, if the stakes are high enough. The risk here is surely higher if the energy supplying countries operate as a cartel and have fundamental ideological, religious differences from their customers, regarding them as culturally and morally inferior.

Capturing solar as directly as possible into work, warmth, electricity, and fuels, is probably the long term best option, but it will be a while before we have all the required technology worked out and in place. Solar panels, however, are now economic in many regions of the world, which is a great step forward.

In the meantime continued climate change is to be expected, along with increasingly extreme weather. For the UK this has meant flooding, snow in winter, and probably there is more of this to come.

Our homes are often 100 or more years old and many not built within the last 30 years are not suited to the future climate. They are poorly insulated, have weak foundations, get damp inside, and crack as the ground shifts. Most home owners in the UK will be only too aware of these issues.

The implications for human workload are enormous. While we may not want to increase our reliance on machines, a

huge effort is needed urgently to upgrade our homes and many other aspects of our material world (including energy infrastructure) to make it sustainable and able to withstand what is to come.

And all this while looking after your children and elderly parents.

The fact that some people are 'unemployed', and some of those are genuinely loafing, is not evidence against this theory. It just reflects the inefficient and incomplete sharing of work.

Technology and work

In theory, eventually, the human race may overcome all these challenges by technological innovation. One day, perhaps, nuclear fusion will be viable and we will be able to make virtually unlimited amounts of energy using very common elements.

This will address the problems of atmospheric pollution and energy security and allow us to rely even more on machines to do work our brains and muscles cannot do, or don't want to do.

Perhaps also we will find ways to create materials with all the properties we need without relying on oil and rare elements found only in a few places on earth.

Relieved of existential worries, people might become calmer, more reasonable, responsible, considerate of others, healthier, and less inclined to war and intolerance.

Sadly, this is all far into the future. Theoretical possibilities need to be turned into working technology and then the real work begins. That is, the massive effort to implement the wonderful new technology throughout the world.

In the meantime we need to look at changes that can be made more quickly,

preferably by many individuals and without huge effort or other investments.

Lifestyle choices and work

The choices we make, individually and together, about how to live also drive the amount of work that needs to be done by us as individuals and our society as a whole. This can be understood from small, everyday examples.

If you have an empty shelf in your home and put two picture frames and a china ornament on it then you have just increased the work needed to dust the shelf.

If you have to do the dusting yourself then, obviously, your workload has been increased. However, if you pay someone else to do the dusting then they still do the extra dusting and you need to do a bit more of some third person's work to pay your cleaner.

Whether you do the dusting or someone else does it for you, there is just a bit more dusting work to be done.

In addition, if you bought those items to put on the shelf then you did the work of shopping and someone else did the work of making those items and transporting them to a retailer. Eventually, you will have the chore of disposing of the items, perhaps with the help of people whose job is waste disposal through recycling or landfill.

The impact of your shopping for those items on the way the economy of the world operates is indirect and not immediate. In the short term the items were already in stock so nobody did extra work to supply those particular items.

However, your purchase is a signal that (added to many others) encourages productive capacity to shift slightly towards more ornaments and picture

frames. The retailer will be just a bit more willing to order more from the manufacturers. The manufacturers will be willing to invest just a bit more in ornaments and picture frames.

Over an even longer time period those investments affect the career plans people make – the qualifications they try to gain, the jobs they apply for, and the pay they will accept. Keep up that demand for china ornaments and picture frames and you encourage, just a little, more people to dedicate their working lives to producing those instead of doing something else.

Going back to the more immediate effects of your simple purchase, indirectly, putting those ornaments on that shelf has occupied space in your home that you might have used for something else. If that is so then the cumulative impact of all your shelf filling choices might be the decision that you need to live somewhere bigger.

Moving house is a major life event and lots of work. Building larger houses increases the work done by people who build homes, and all the people who supply the materials to build those homes. Larger homes require more heating and more cleaning.

Only a tiny slice of this work can be attributed to your decision to put two picture frames and a china ornament on that empty shelf, but these tiny decisions have a cumulative impact. That cumulative impact affects you directly. If you feel like you don't have enough time to rest or play then perhaps that is, in part, because of choices you made whose combined implications you did not see at the time.

The cumulative impact also affects society as a whole, and perhaps our struggles to deal with a host of problems is a symptom of being overloaded with

work that, in part, was created by choices we made without realising what they would lead to.

Choices about where to live, where to work, where to be educated, and where to go for holidays affect the amount of travelling work we do, and the work done by people who provide the goods and services that support our travelling, such as car makers, road repair crews, and train ticket inspectors.

Local planning decisions have a key role. Separate houses usually create more work per person than blocks of apartments.

National decisions can be even more important.

Clearly, the work our choices create is not the only consideration. Our choices also have implications for other resources, and we also seek a good life from our choices. That china ornament perhaps makes us feel good, or helps to create the right impression for visitors, and those factors are set against the work and other consumption involved.

These considerations have implications for us as individuals and also for governments and the leaders of companies, charities, and other organizations.

Individual choices

This section considers choices we make for ourselves. Obviously, a lot of the work and other resource consumption in our lives is the result of decisions made by other people, but these are harder to influence.

In weighing up alternatives we may be influenced by purely selfish motives and by a desire to be good citizens.

Many of us have made some lifestyle choices without really understanding the

implications for the work we personally have to do as a result. Perhaps we thought about the decision with money cost in mind and forgot the other costs.

Now we find ourselves with cluttered homes and far too much to do. We are stressed and frequently feel out of control. Some of that is the result of decisions we made some time ago that we could, with some effort, revise now.

From a purely selfish point of view, considering the real economics of our choices is important and gives somewhat different answers to the money-focused approach.

Real economics is also a useful perspective if we would like to consider our contribution as citizens. From this point of view our lifestyle choices, including home, travel, holidays, occupation, eating, leisure activities, pets, and anti-social behaviours are all important.

Without taking a moral position on this issue, the fact is we compete for human work and other limited, scarce resources. If a person has a huge garden and hires a gardener to look after it once a week then that is labour that someone else cannot buy.

On some occasions, financially wealthy people buy labour for things they don't really need, leaving less labour to do simple essentials for financially less wealthy people.

A wealthy person might think that, by spending their money on anything at all, they are spreading their wealth and giving employment to others, which is good. It is true that they are spreading their wealth and giving employment, but they are also using up labour and other resources so that less is left for more essential things for others.

This is a clear insight from real economics on a point where thinking about money can lead to a different (and wrong) conclusion. However, we would expect to see prices reflect it to some extent.

In a market economy, the expenditure of the wealthy on luxuries should increase the price of essentials for everyone, which is much more of a problem for those who are financially less wealthy.

Since realising this, my choices have changed, but whether you make changes is up to you.

The fact that we can afford something financially does not mean that we should choose it.

What is needed and what is frivolous? For individual decisions it is for the individual to decide, but it is not entirely an arbitrary decision. What could you survive without if stranded on a desert island? Can you really need another expensive wristwatch if you already have an extensive collection? Of course there are cases where it is not clear if something is needed or not, but there are also many cases where the answer is obvious.

Potential counter-examples

Although it is obvious, in principle, that we compete for human work and other limited, scarce resources, in practice this may be difficult to see and some apparent counter-examples may occur. Also, the supply of many resources is not absolutely fixed, even in the short term.

As described above, the effect of our consumption on how labour is distributed may take time to occur – perhaps years to affect career choices, the creation of training schemes, professional organizations, and so on.

For example, pubs in the UK survived for many decades as places for people to go to drink alcohol and smoke tobacco. They

did very well from people with this double addiction.

However, as smoking and drinking have declined in popularity, and since smoking in pubs became illegal, many pubs have closed and others have become much more like restaurants. This shift from serving harmful, addictive drugs to serving food still continues even years after the smoking ban came in.

There may also be cases where spending on frivolous luxuries leads to the development of technology and skill that then proves useful in providing more necessary support to everyone.

For example, it is often thought that Formula 1 racing car technology transfers to ordinary road cars. In practice I suspect this is very rare and that, if there is any transfer at all, it is usually from the relatively much larger investment in ordinary vehicles to the relatively tiny racing teams. For example, teams have been using carbon fibre body parts for over 30 years but this technology was invented for aeroplanes and still has not become cheap enough for widespread use in ordinary cars.

The supply of some resources, such as oil, is artificially controlled and can be increased at fairly short notice. I suspect that sustainable resources will tend to be ones with a supply that cannot be adjusted so easily. For example, the amount of electricity from sun and wind depends on the weather in the short term and we would usually take as much as possible all the time.

Helping others over our lifetimes

Over our lives we typically contribute different amounts to the lives of others. As infants we depend on others, our parents usually, to look after us. Gradually we learn to do more for ourselves, and then learn to do things for

others as well. For some decades in the middle of our lives most of us are able to do enough to look after ourselves and help others, perhaps our own children and our elderly parents, and also the people we count as customers. In the final decades of life we become more dependent on others again.

Outside family groups there is a social expectation of reciprocity. If someone does something for you that you asked for or wanted then it is expected that you will do something for them in return, at some point, and with roughly the same value in some sense.

Money makes this reciprocity much more precise and makes it possible to have reciprocity with people you do not know.

There are four major types of transaction, three of which involve money:

- Barter: where two parties agree to exchange goods/services.
- Payment: where one party spends money, handing it to the other who, in return, provides goods/services.
- Transfer: where one party gives money to another in return for nothing at all. Transfers include paying taxes, compensation, theft, lottery prizes, and gifts.
- Loan: where one party lends money to another, who pays it back later, plus some extra money as interest.

One way to live is to provide goods/services (e.g. our labour) to others in exchange for money, and then spend that money later to buy goods/services from them or others. In this pattern, we provide and then later receive.

Loans make it possible to reverse this sequence. Having received the loan it is possible to spend the money to get goods/services, then provide goods/services to others in return for

money that can then be used to pay off the interest and loan.

When we take out a loan and spend it we are committed to doing work or handing over other goods to repay the loan and interest. Lenders take the risk that we will fail to do this, even though it means suffering considerable consequences.

Government choices

Thinking about real resources, especially labour, can also guide government decisions.

Measures of economic progress

First, what should governments measure and monitor?

It would surely help to get reliable, detailed information about the following:

- How much support our lifestyles require, measured in a way that is independent of the resources used to provide that support, so that shifts to easier lifestyles can be monitored.
- How much work and other resource is consumed to sustain the lifestyles of our population, overall and per person, so that improvements in resource efficiency can be monitored.
- How efficiently work is shared around, indicating where there are people who have too much to do and people with not enough to do.

The most often mentioned economic indicators today do not deliver any of this information. They tend to be money totals and fail to make distinctions between activities that are, in real economic terms, radically different.

Gross Domestic Product (GDP) is the total money value of goods and services produced in the country in a year. Higher GDP is usually thought to be better.

It reflects work done, not why work was done, so increases in GDP can indicate that we are shifting to a more demanding lifestyle. This is the opposite of improvement.

Productivity (in macroeconomics) is the money value of output per person (or working hour), so again it reflects just the money we are willing and able to pay for work done. It does not discriminate between work we really need and work on non-essentials and remediation that should not have been necessary. It also does not discriminate between gains through efficient use of resources and gains from charging more for goods by monopoly power, cartels, and other anti-competitive practices. Increasing productivity can be achieved by persuading or forcing consumers to buy a more expensive version of a good – probably involving greater consumption of resources too. Increasing productivity this way may increase waste in our economy.

Unemployment reflects the number of people in formal jobs, not the actual labour contribution of people. If you care for your own children then you are working and contributing labour, but this is not captured in today's employment statistics.

Of course statistics on resource consumption do exist (see Appendix A) but I have not been able to find many that directly meet the requirements listed above.

For example, for the UK there are extensive statistics on energy use but these do not include the energy 'embedded' in goods and services imported or exported. The UK's energy consumption seems to have reduced, but this is partly due to the decline of energy intensive industries (some of which were exporting their products abroad,

effectively exaggerating UK consumption in the past).

The Eurostat productivity statistics on resource productivity go to considerable lengths to remove the effect of inflation on its reported trends but the productivity reported is per kilogram of resource. Not only is a kilogram of uranium equated with a kilogram of water, but human labour is completely ignored.

The idea of splitting out the effect of our resource-demanding lifestyles from the efficiency with which those demands are met has yet to be implemented properly in official statistics.

Current crises

Second, real economics can guide our response to the current crises of aging and climate change. We have a work crisis and so need policies that reduce unnecessary work creation and focus labour on what is really needed – including refurbishing and rebuilding our built environment.

Boom and bust

Third, real economics can guide our approach to economic boom and bust.

Demographics, sustainability, and our high-consumption lifestyles indicate that we have a massive amount of work to do over the coming decades, so why are there still people unemployed?

My hypothesis is that this is inefficient use of human labour.

Simultaneously we have: (a) people whose lifestyle is so busy they need a nanny, a cleaner, and someone to come in and look after the garden every few weeks, and (b) people who cannot find paying work. Work is not distributed efficiently.

To understand why this happens and to understand more about how we need to

behave instead we need to consider how our society has typically responded to economic boom and bust.

My hypothesis is that boom and bust happens because we get excited and optimistic about the future and then realise we were too optimistic. We realise that our plan of retiring in luxury, supported by the flow of dividends and interest from our investments in someone else's work, is a fantasy.

When the 2008 crash happened it was a signal that we needed to do more work but consume less. In response, companies laid off workers. At precisely the time when we needed to be getting down to some solid, necessary work, companies reduced the number of people employed to work.

This was also a time when we needed to be cutting frivolous consumption, but the government of the UK responded initially by cutting sales tax from 17.5% to 15%, a tax that does not apply to essentials such as most foods and children's clothes.

Governments chose between austerity and stimulus. The stimulus theory is that government spending can 'kick start' an economy by giving people money that they spend in shops, that stimulates suppliers to produce, and that gets the merry-go-round spinning again.

However, with huge debts and interest payments, many governments preferred instead to cut their expenditure. People complain about this but the reality is that populations have been enjoying public services funded by loans that, eventually, they or their children will have to pay back primarily by doing work.

My hypothesis is that the key elements of a better response to boom and bust are (a) to consume less but do more, (b) to cut frivolous consumption, (c) to focus on

useful work, and (d) to distribute work more evenly.

The main economic indicator for governments and journalists remains the Gross Domestic Product (GDP), even though this is just a measure of the monetary value of goods and services produced, regardless of what they were. GDP can be 'improved' by a severe winter, going to war, or knocking down hospitals and rebuilding them for no good reason. Production isn't always useful but it does consume resources.

This is typical money-focused economics, within which consumption and production are just money amounts and it does not matter *what* is being consumed or produced.

A better way to respond to boom and bust is to recognize that it's not just *how much* work we do, but *what* work we do that matters. We should focus more on work that is required to support our needs, and less on work that is required to support relatively frivolous wants.

For example, we need to do more on healthcare and flood protection.

A short while after the 2008 crash a UK news programme asked if small businesses could get Britain back to prosperity. To illustrate they interviewed the founders of a new business with an exciting new product, which was tiny cans of pre-mixed alcoholic cocktails.

How is this helping? The product is not necessary, its packaging is resource intensive, and the product itself is unhealthy in several ways.

If we are to enjoy the future then we need efficient lifestyles. That is, lifestyles that deliver the long, happy lives we desire – but sustainably.

We also need to spread work around more evenly.

Sharing work

Fourth, some interesting and unexpected strategies might help to distribute work more evenly.

At present in most western economies people without jobs receive money from the government to live. If they get a paid job then the government stops paying them and the employer takes over the whole job. So, if a business wishes to employ them then it must pay enough to fund their whole lifestyle, not just the extra resources consumed when they go to work. That's quite a hurdle to clear.

An alternative that better reflects resource consumption would be to pay all citizens the same social security money and then tax income from jobs or luxury consumption more to balance the books. This way a business could employ someone to work just a bit, or to do something that does not bring in much money, and pay the new employee only a small amount. Everyone would win provided the employee was not doing more useful, but unpaid, work before.

Another unexpected idea is to focus on technology for constructing homes that does not require special skills. In today's homes many repair jobs and extension projects need highly trained people, such as plasterers, electricians, bricklayers, and plumbers.

But suppose more building components were available that were a bit like a giant construction toy (e.g. Lego). If most able-bodied people could build their own home, including services, this would greatly increase the pool of people able to work on construction projects.

Long term policy objectives

Fifth, real economics can guide long term government policies. We want to be a population with enjoyable but

undemanding lifestyles, efficiently supported, and with work shared out evenly and fairly. Achieving this might increase or decrease GDP – I don't know and it doesn't really matter. What matters is being able to live happily without being burdened by endless work, or threatened by environmental disaster.

Policy levers

Government can pull the usual levers:

- Taxation: e.g. sales taxes on luxuries to discourage their consumption (by companies as well as end consumers), higher corporate taxes for businesses that do nothing useful (e.g. casinos), higher tax for gains from just investing money compared to investing work.
- Social security: e.g. encouraging sharing work, recognizing the value of useful work that is not paid work.
- Loans and grants: e.g. to support helpful research and new business ventures doing useful things, cutting grants to less necessary activities such as arts not in sufficient demand to pay their way, grants for education in useful abilities (e.g. engineering, medicine) but not in less useful ones (e.g. English literature, media studies).
- Regulation: e.g. making manufacturers responsible for the disposal of their products at end of life, limiting businesses that do nothing useful (e.g. market speculators), restrictions and bans on alcohol and tobacco, bans on sale of inefficient technology (e.g. incandescent light bulbs), increasing requirements of building regulations to focus attention on necessary choices over just making buildings bigger.
- Labelling and rating schemes: e.g. for energy efficiency of home appliances.

- Education: e.g. including ideas about lifestyle choices, demand, and resource efficiency in school lessons, and teaching people how to be efficient citizens who understand how to follow medical advice, how to complete tax and social security forms, know basic laws, understand how to plan financially for retirement, and so on.
- Increasing public control: i.e. higher taxes combined with nationalisation of industries to reduce the proportion of the economy that can be wasted on luxuries.
- Incentives for efficiency: i.e. using market mechanisms to promote competition that drives efficiency and transferring public sector activities to the private sector in such a way that competition can have that effect more widely.
- Promoting good behaviour: e.g. through education, publicity campaigns, supporting schemes by charities.

The full impact of government actions for real economics can be hard to predict, though this is largely because those actions are usually achieved through money.

For example, suppose a government raises some money through taxes on one set of its citizens and gives the money to another set as social security payments. This will tend to shift the way real resources are applied to the interests of those citizens. Those receiving the transfer will get more goods/services while those giving up the taxes will get less. However, it is likely that the tax payers would have saved some of the money taken as tax rather than spending it soon on goods/services. However the receivers of the transfer will be less likely to save it (since poor people generally do not save as much). Also, the wealthy tax

payers would have been more likely to spend their money on goods/services where the resource consumption per unit of money is less. Consequently, the amount of extra goods/services taken by the receivers of the transfer will be more than the reduction in consumption by the tax payers. The difference will be made up by everyone else (non-tax-paying and non-welfare-receiving), who will get a bit less.

If a government borrows money to pay for a public building scheme then this means that, initially, resources swing from the lenders to the users of the infrastructure built. Later, when taxation is used to raise money to pay interest and repay the loan, it is tax payers who will get less resource while the lenders get more. However, perhaps non-tax-paying, non-lenders will also get more because the tax payers take less and the lenders are wealthy enough not to need to spend much more.

It might be possible, one day, to build models of all these effects and predict the consequences of government actions. In the meantime, the best course of action is to measure resource consumption, resource efficiency, and lifestyles, and pay attention to the details. General prescriptions about increasing or decreasing government expenditure indiscriminately have little chance of achieving good results.

Left or right?

In the UK at present no political party seems to understand these issues or have a sensible set of policies. The major areas of policy and disagreement between the left and right are:

Austerity or increased public spending?: But 'austerity' only refers to public spending so this does not address the lifestyles of most people and is really

more of a tussle over how much the next generation of workers will have to work to pay the tax needed to repay debts and cover interest.

Public or private ownership?: But this is not directed at what those businesses do or how they do it. Public ownership might, if properly done, prevent some businesses from pursuing lucrative but frivolous markets. However, public monopolies have in the past tended to be slow to improve efficiency because of low incentives to do so. Without a focus on real economics neither strategy is likely to work well.

Immigration control or non-control?: An influx of younger people could help to relieve the UK's labour shortage. However, this is not a permanent solution and in the very short term some immigrant workers make a positive contribution immediately while other immigrants do not. For example, a highly skilled, single young adult with good English and no children has a very different impact to a single parent with three children, no skills that are useful in the UK, and no English skills. All require housing, transport, schools, health care, and so on – starting immediately. The scale of this challenge is enormous for the UK at present.

Some immigrants have been brought up with social norms that lead to problems in the UK. For example, the UK is famous for forming orderly queues in most situations, but this is rare in some other countries. Immigrants have to learn the UK's norms quickly or they can disrupt aspects of the UK lifestyle that are already efficient and desirable. Not speaking English is another obvious example.

Living beyond our means

The UK population has been insulated to some extent from the reality of its work challenge by unsustainable means.

The UK is a good example of a country that has sold natural resources in an unsustainable way. North Sea oil and gas have been extracted and sold overseas. In return the UK population has enjoyed products and services provided by other countries and so has not had to do as much work as otherwise would have been the case. In short, North Sea oil and gas have given us a cushy life for long enough to get used to it. Now that those revenues are reducing rapidly an adjustment is needed.

Many other countries have experienced the same, with some countries having wealth that is predominantly from their oil.

The UK has also relied heavily on debt. In other words, getting products and services now in return for, in effect, promising to do something in return later. Private debt is mostly driven by mortgages on homes, but even setting this aside for a moment, debt has risen. The UK government's debts have climbed too as it has paid more for public services (and interest payments) than it has raised from taxes for many years now.

A proportion of that debt is the UK being helped by people abroad in return for our promise to do the same for them at some point in the future.

Debt is so often to be repaid by the next generation or, in the case of governments, the next government, or the one after that.

The London financial markets are another way that the UK has insulated itself from the work consequences of its consumption. By providing markets for people around the world to use to buy

and sell securities speculatively, the UK gains the revenues that come from fees and taxes. This money can be used to buy useful goods and services from overseas.

These layers of insulation have been in place for so long now that it is hard to remember what it was like before. Some of our wasteful patterns of behaviour have become traditions.

Leadership choices

What businesses to be in

Focusing on businesses that provide necessities rather than luxuries is a sound business principle. With this approach, demand for your product or service is likely to be more dependable through economic cycles and into the far future. Focus on luxuries and you may find that governments and public sentiment turn against you in time.

Businesses that provide necessary goods and services, and do so efficiently in terms of real resources, also make a superior contribution to society.

How to be efficient

To become more efficient, businesses should consider real resources – especially labour – not just money. Money can be deceptive.

As an example, imagine that a business currently has 5 offices spread around north London and the Midlands. In an effort to save money it considers moving all employees to one office in Milton Keynes – a roughly central location for them.

On paper this looks like it would save money on rent and on some support staff. The one worry is that some valuable staff might decide to leave rather than put up with a longer journey

to work, but it's hard to put that into money terms. Fortunately, the extra cost of longer average journeys to work would not affect the company because it would be borne by the employees.

Or would it? The key point is that most employees will be travelling many more miles each day to work. That travel is itself work that wasn't necessary before.

Over time, those employees will push just a bit harder for pay rises. New employees will either be Milton Keynes residents already or will want just a bit more money to join.

Eventually, the money costs of the extra travel *will* come back to the company but looking at it in simple accounting terms this is not obvious.

What behaviours to encourage in consumers

To a small but significant extent, people buy what businesses offer them, even stuff they don't really need. For example, it's hard to believe that British weddings would be as complicated and expensive as they are without a wedding industry constantly suggesting more ways to show your love and impress your guests.

Business can create frivolous demand but should it? As citizens, the ethical approach is to encourage sensible spending only, not unreasonable luxury spending.

There is also, often, a commercial opportunity to offer a no-frills², low-cost product or service.

What behaviours to encourage in employees

Employees in an organization make lifestyle choices at work too. For example, some sales people focus on

² In the case of weddings this might have to be a small-frills service rather than literally no-frills.

lavish hospitality – attempting to booze their customers into purchasing. Others just work to help them with the purchase decision, avoiding the expense and physical damage of boozing. Some workers see travel and face-to-face contact as an essential tool. Others work by video calls, saving time and other resources while keeping in more frequent contact. Some like to impress by arriving in a top of the range BMW. Others think a Toyota Prius makes a better statement.

Organizations can influence these decisions, in some cases quite easily, for the better.

It is also possible to influence the business ideas that employees suggest. They can be thinking about the real economics of products and services.

For organizations that give advice to clients there is also the possibility of using real economic considerations to shape that advice.

Encouraging philanthropy

Charities in particular have a role in explaining why giving is more socially ethical than spending. A rich person who gives £5,000 to charity usually does more for the economy than one who spends £10,000 on a wrist watch. That's because the £10,000 diverts labour and other resources to a frivolous purpose that could otherwise have been available to do necessary things. Consequently, it puts up the price of necessities for everyone, including the financially poor. In contrast, the charity can spend that £5,000 on essentials.

Lifestyle choice areas

The implications of our lifestyle choices are so important the next several sub-sections explore them in much more detail.

The objectives of this analysis are to:

- illustrate the effect of the choices we make, and could make in future; and
- demonstrate the type of analysis that can often be used to assess, quickly, our options.

Gardens

When I was first a house owner I wanted a garden. As a father, a garden was also good for the children to play in. Now, with my sons too old for that, the garden is a millstone. Just keeping a simple garden under control is a huge and tedious task unless gardening is an activity you love for some reason (which only makes the huge task less tedious).

Many UK homes have a garden and collectively the work involved in maintaining them is enormous. How much of that do we need?

We can analyse the elements of gardens and criteria for evaluating them. We want gardens that are attractive/impressive, enjoyable, functional, and yet easy to look after.

This suggests we might focus on:

- garden plants that are either very easy to look after (e.g. box trees, slow growing hebes, small herbs, flowering perennials);
- or edible (e.g. solar gardening with cloches);
- with plenty of masonry that needs no maintenance at all; and
- simple lawn shapes with easy-to-mow edges.

Choosing a hedge or fence for a garden is another example of a choice that drives work. If you go for a hedge made with the notoriously fast growing leylandii tree then major pruning is needed most years. Choose box trees instead and a light trim is all that's needed. A fence may need no maintenance at all, but may need

replacing after perhaps 10 to 25 years, depending on its construction. A brick wall might last even longer but is much more work to construct and more energy intensive.

Indoor plants in pots need to be looked after carefully or they die. Each needs the right amount of water at the right times, and the right temperatures and light levels. Indoor plants can help to clean the air we breathe indoors, but there is a price to pay: they have to be cared for like babies.

Major social events

Some of the choices we make that create work and consume other resources are driven in part by advertising.

In the UK the cost and rigmarole involved in major social events seems to have grown over the years. Christmas, New Year, Valentine's Day, Mothers' Day, Fathers' Day, Halloween, Guy Fawkes Night – all of these are opportunities for retailers to promote products specifically for those days. Christmas and Halloween seem to have been the biggest growth markets. There are retailers that sell nothing but Christmas decorations.

But these are nothing compared to the costly behemoth of a modern wedding. Weddings are an industry, and that industry manufactures 'traditions' that have become more and more elaborate (and expensive).

Every time we plan one of these major social events we have choices about how we do it. Do we buy whatever retailers offer? Do we go all out to display our wealth?

Or do we focus on our own personal traditions and favourite rituals, reusing the same objects instead of buying more?

Where I live there is a day that symbolises this choice. Just after

Christmas people put their used Christmas trees out by the road so that the local council can collect them for composting.

Almost every house puts the carcass of a dying tree out into the road. Those trees grew for years before being cut down.

My wife finds this unacceptable so we have two small trees planted in large pots that we keep alive all year round.

Vehicles

Another area of life where we have a choice between using what is practical and having a lot more is with our vehicles. Some of my neighbours have the modest vehicles they need for their ordinary use. Some have vehicles somewhat larger and more complex than they really need. Some have additional vehicles that are just for fun. One neighbour has two luxury sports cars.

Again, these are choices we make. They create work we have to do, to pay for and maintain the vehicles, and they consume other resources, especially very large and powerful vehicles.

The trend in recent decades towards larger SUVs has somewhat offset the increase in fuel efficiency over the same period. These fatter vehicles also leave less room on the roads for other vehicles, which is especially noticeable when passing them on a narrow urban road. They are a problem in many car parks too. If SUVs park on either side of your normal-sized car there is less room for you to get in and out of yours. Being higher than ordinary cars, their headlights are particularly glaring for the car ahead in busy traffic at night. In a crash the occupants of a smaller vehicle are more likely to be killed or injured. The SUV's weight and special wheels mean they do more damage to roads.

The emerging issue with larger vehicles, especially SUVs, is that they are part of a slow arms race, whereby the best way to be safer on roads is to get a bigger car. From that develops all the extra work and other resource consumption involved with the larger, more damaging vehicles.

Entertainment

Even what we do when we sprawl on the sofa can make a difference to the total work needed to keep our world going.

Tune in to watch some Formula 1 motor racing on television and you are providing a tiny bit of support for a circus that consumes astonishing amounts of work as well as other resources. No wonder television channels also fill up on cheap-to-make game shows and low-budget documentaries.

If you enjoy 'The Antiques Roadshow' just as much or more than Formula 1 racing then you and your viewing choices can make a tiny but worthwhile difference to how much work needs to be done in our society.

Holidays

Is the best holiday the holiday that's the longest possible and in the nicest possible location? Not necessarily. People seem to have very different ideas on this but consider these two alternative plans for a family in the UK with two weeks off work they can put to a holiday.

Plan A involves loading up the car on Friday night after the last day of work, driving to Dover, taking the ferry to France, and then driving down to the south of France in one long effort taking several hours. Accommodation is a small hotel near the sea. It's really hot for most of the time.

The journey home is similar, arriving home on Sunday evening with work to go to the next morning.

Plan B involves taking it easy at home for the first weekend, then driving for an hour to the countryside, having a walk, then driving on further for another half hour to a small hotel. It's hot for two weeks, but nothing like the south of France, and two days are affected by rain.

The drive home is an hour and a half on the Friday, leaving a weekend to get unpacked and enjoy being at home for a while.

Which plan do you prefer?

If you like Plan A then presumably the extra work involved in travelling is compensated for by your pleasure at being in the south of France and being away for a bit longer. Personally, I want holidays that let me rest and I don't like France or very hot weather so it's no contest.

Or how about Plan C, which is two weeks in Florida at the Disney resort, featuring a very long and expensive journey, punishing heat, and long queues? The work content is even higher with this plan.

One of the most resource-consuming elements of many holidays is the travelling. Air flights in particular involve huge consumption.

Food

'Fine dining' is the name given to eating in a restaurant where the food is very expensive, largely because the recipes are complicated and time consuming.

This reaches its pinnacle with tasting menus, which are collections of many tiny portions of different dishes served as one meal.

The irony of fine dining is that the food looks so perfect, so neat, and so regular, that it almost looks like food made efficiently by a machine in a factory to be

sold in a supermarket. Indeed, if you really like food that is perfectly formed like this then mass-produced, machine-made food is a good option.

When cooking at home we also have choices, such as with how literally to follow a recipe. Following recipes literally often means shopping specially for the exact type of dried herb or niche Italian oil specified. Using the same recipe merely as a guide involves just using what you have, or buying some reasonable substitute for special ingredients.

Pets

'Hey kids, all mummy's friends are getting puppies and she wants one too. What do you think?'

On average the cost of owning a dog in money terms is around £16,900 over its lifetime (This is Money, 2011), but to that must be added the work of looking after it, including feeding, hygiene, exercise, vet visits, taking to kennels, home redecoration, and so on. Want to sell your old sofa on ebay? It will be harder because your home is not pet free.

Cats are slightly more expensive in money terms, but less work for the owner because you don't have to take them walking every day.

Even a small fish in a tank indoors needs to be looked after.

Pets, like indoor plants, are a bit like babies. They need care and generate work. Even fish need to be cleaned and fed. If you go away for a week then something needs to be done to ensure they are looked after while you are away. If you have a dog and a visitor does not like dogs then you have to monitor, control, and probably lock it away somewhere. If your dog bites someone (and it happens thousands of times a

year in the UK alone) the stress and work involved are immense for you and the victim.

Olympic sports

Are all sports equally good for society? Should we encourage increased participation and promote professional participation and television coverage of all sports, with no discrimination?

Analysing this question illustrates how we can analyse familiar activities with resources, especially work, in mind.

Let's consider Olympic sports and sports that might one day become Olympic sports. Some sports have some definite disadvantages:

Generating a lot of extra work without giving much health benefit:

- **Requires a lot of expensive equipment:** e.g. BMX, indoor cycling, sailing, equestrian, swimming, slalom kayak and canoe.
- **Leads to lots of injuries:** e.g. BMX, show jumping, pole vault, boxing, road cycling, weight lifting, hockey.
- **Provides few fitness benefits:** e.g. sailing, shot put, hammer, javelin, equestrian, shooting.
- **Requires physical development too extreme to be healthy:** e.g. marathon, 10k swimming, triathlon, weight lifting.

A bit frustrating to play and watch:

- **Is frequently interrupted by officials** (usually because there is physical contact between competitors that can only be regulated by an umpire because natural behaviour would be to fight): e.g. taekwondo, boxing, fencing, hockey, football, handball, rugby.
- **Gives the better player only a slightly better chance of winning:** e.g. BMX, football.

- **Relies on subjective scoring:** e.g. the artistic component of gymnastics and synchro swimming, boxing, taekwondo, diving, wrestling, judo.

Not encouraging socially desirable behaviour:

- **Uses weapons:** e.g. archery, shooting, fencing.
- **Is a form of fighting:** e.g. boxing, taekwondo, judo.

Restricted participation:

- **Heavily favours players with a particular body size:** e.g. volleyball, basketball, gymnastics.

With these factors in mind, some existing Olympic sports that do very well include:

- middle-distance running
- badminton, table tennis, and tennis

Some sports that are nearly as good are:

- high jump, long jump, triple jump
- running sprints
- indoor swimming
- mountain biking
- rowing, canoeing, kayaking (on flat water)

Some good sports that are not in the Olympics include:

- roller-blade racing
- netball
- squash

In contrast, some sports that are even worse than most Olympic sports, even though they are very popular, include:

- F1 racing and vehicle racing generally (cars, motorbikes, planes, boats)
- pub games like snooker, pool, and darts
- horse racing
- kite flying
- land sailing

To some extent the popularity of sports is related to how easily people can

participate (e.g. running, football), but there are also sports that are very hard to get into but provide a spectacle (F1 racing).

We could invent and promote new sports that are designed to provide strong health benefits and a good test of who is best, but with low resource use:

- High jump where you just jump up from a standing start to touch a plate (potentially with a mathematical formula that allows for body height and weight).
- Standing jump using hand weights (an old trick that produces some spectacular leaps) to clear a pressure sensitive plate or sand pit.
- Long strides where you count the number of strides needed to cover 50m, with multiple rounds used to establish a winner.
- Throw and catch time trial, where pairs of contestants, each standing in a box marked on the ground, throw a ball backwards and forwards between themselves 20 times against the clock, with the rule being that they can only throw when within their box.
- Gym test competitions somewhat like the old Superstars format with around 10 tests.
- Cycling on a machine.
- Rowing on a machine.
- Capstan turning on a machine.
- A new form of badminton with two racquets, one in each hand.
- Electronically scored speed hopscotch.
- Smooth movement competition where a computer uses g-force readings from a belt-mounted gadget and sums them over time as the competitor moves around an obstacle course within a limited amount of time.

If governments directed their money towards the sports with the best net benefits, and if we citizens chose to

attend to and participate in those sports too, then over time we would benefit.

We would benefit from less boxing, more badminton, and from less show jumping, and more competitive jumping.

Anti-social work creation

There are many anti-social acts that create work that is useless and should be unnecessary. For example:

- vandalism (damage, graffiti);
- littering;
- not putting your supermarket trolley back, your basket, or your tray in a canteen with self-clearing in place;
- aggressive/criminal behaviour requiring policing, security procedures, security equipment, and inconvenient restrictions on everyone, such as:
 - football match fighting
 - pub brawls
 - mugging
- poor health requiring care caused by substance abuse, such as with:
 - smoking
 - alcohol
 - sugar
 - illegal drugs
- lazy failure to abide by public administration procedures, drawing in resources to sort things out, for example with:
 - tax forms
 - social security claims
 - vehicle registrations.

Choice of occupation

We also make a difference by our choice of occupation. For example, a drug dealer makes work necessary that should not be while doing nothing useful. In contrast, most doctors do work that is really needed.

Stuff

The work involved in getting, storing, maintaining, and then disposing of stuff, things, and general clutter is considerable.

Insurance schedules confirm that in the UK over the past few decades the amount and value of stuff in our homes has increased dramatically. This is especially true for some categories, such as electronic gadgets, but is also true for just about everything else. This includes clothes and furniture, for example.

Having too much stuff is now normal.

One consequence of having more and more stuff is that the work of storing it gets disproportionately greater. The problem is that finding space for the last few things gets harder and harder. Then the thing you need to retrieve is not easy to find or get out because it's behind three other things on a high shelf, in the loft, or in the garage.

As with a congested diary, a congested home makes change harder.

Most of us would benefit from getting rid of stuff faster than we acquire it.

Further observations

Generation differences

My mother's generation, now in their 80s, is the youngest surviving group in the UK to have experienced a period where real economic ideas were widely understood and practiced.

During the Second World War and the period of rationing that followed, British people were highly aware that food and other resources were limited. Rationing ensured that nobody (legally) consumed more than they needed, helping to feed everyone adequately. Encouraged by the slogan 'Dig for Victory', people grew

vegetables in their gardens. The moat of the Tower of London was converted into a vegetable plot.

Waste was deplored and public information campaigns helped to drive home messages about making do and mending – not throwing things away that could be used in some way. Stately homes were put to good use as training centres, hospitals, schools, barracks, monitoring centres, and so on.

This was an extreme situation that nobody would voluntarily return to, but the severe challenge of war helped concentrate minds on the reality of economics.

During the 1950s technological progress created rapidly improving lifestyles and by the 1980s it seemed that the value of real resources and their scarcity had faded into the background, eclipsed by money. Everyone wanted a big house, big cars, lavish holidays in exotic locations, more clothes, more jewellery – more everything.

We have changed from being a nation that took care of its economy by living efficiently to one that expects the economy to be managed by the chancellor and the Bank of England.

Social displays

Going through those lifestyle areas you might have noticed that one powerful motive for spending more than is really necessary is social display. For example, you might want to show how successful and rich you are, or that you belong to some group, or show you are a good person.

Supercars, rhino horn shavings, a huge swimming pool at home, monster Christmas lights – these are all examples of consumption that makes no other sense.

Today it looks as though the desire to make displays of this kind is an inevitable, unchangeable aspect of human nature. But is it?

Could it be that, in future, social customs change to such an extent that the most prominent social displays are extravagant gifts to charity, aching eco-friendly cars and houses, and low impact holidays?

Most of us already view ultra-extravagant spending by celebrities as disgusting, so this would really just be the extension of something that is already widespread.

What can you do with riches?

If you have a huge amount of money but social pressure, the law, or your own sense of morality leads you to avoid frivolous consumption and continue doing useful work for others even though you don't need to, what is the advantage of wealth? One might think that if you can't spend the money there is no point labouring to get it in the first place.

This is not correct. There are several important reasons why being wealthy is still a great advantage, even if you avoid frivolous consumption and very early retirement.

Security: A reserve of money means that, should you need more money later in life due to illness, disability, or just living a very long time, you have it.

Quality: Where goods or services are available with roughly equal resource consumptions but different quality, then being able to pay to get the best is an advantage. For example, a modest home but in a perfect location, a haircut by the best stylist, perfectly shaped vegetables, and simple clothes by the best designer.

Priority: Money lets you get things sooner, such as healthcare.

Exclusivity: Where something is in such short supply that there is not enough for

everyone, money lets you pay to get what others cannot afford.

Possession: Owning antiques, historically significant relics, and important art requires cash but does not necessarily trigger resource consumption. In many cases the items were made a long time ago and no new consumption is required or likely to result.

Power: Having money lets you control people and events. Money lets you solve some of the world's problems instead of having to fret over the abysmal performance of politicians and others that the poor have to rely on. You can get things to happen by giving money to charity, by paying people to do tasks you think should be done, or by starting an organization to do that work.

Celebrity: The ability to be in the most desirable locations, possess the most desirable objects, get priority, and make things happen helps acquire status and fame, if that's what you want.

Virtue: Using power to do good works gives a sense of virtue. You can also provide security to your family and even friends and unrelated people you consider deserving.

Inequality

People differ on how much wealth they have, on their income, on their spending, and on their resource consumption. Which inequality matters most?

Wealth inequalities are the largest but not the most important. Wealth inequalities are the largest because they are produced by saving. Imagine that it costs £30 a day to live in a country and a person is earning £30 a day, paid in cash that day. Their wealth simply cycles between £0 and £30 daily. Now imagine someone who earns £31 a day. They save £1 a day, so after a year they have

£365 more than the person earning £30 a day. The second person is at least 12 times as wealthy as the first person, despite the tiny difference in daily income.

In real examples the person earning more probably spends a bit more too, and probably pays a higher rate of tax, but still is likely to save more. Eventually, wealth differences will emerge that dwarf income differences.

Since high earners usually save money their expenditure is less than their earnings, so the inequality in expenditure is less than the inequality in earnings. Also, since spending twice as much on most types of item does not create as much as twice the resource consumption (you are buying quality not quantity), inequalities in resource consumption are still less.

That is not to say that resource consumption inequality is negligible. Obviously, some people consume far more than others.

Since it is resources that we compete for, resource consumption inequality is the most important, though it is enabled by wealth inequality.

What could a wealthy person do to help others? Money alone is of limited value. Imagine a person who lives modestly alone in a small house in an ordinary town and drives a small car, but rarely. He works in a local public library and does some charity work. His big secret is that he has £10bn of inherited money stashed in bank accounts across Europe. How could that wealth benefit others in his country?

Spending the money does not create new resources; it just redirects resources from one activity to another. If the money was spent buying resources from other countries that would help his own country

but deprive people in other countries of those resources.

What matters is *what* the money is spent on. Although a wealthy person can direct more expenditure than other people, we can all make choices about what we consume and what we do as work.

How much difference could this make?

Appendix B combines various statistics from the UK's Office of National Statistics to show roughly how much we each spend in money terms, on average, on our current lifestyles.

The suggested savings from cutting frivolous luxury consumption and the savings from better behaviour are very approximate indeed but still give a sense of scale.

Remember that expenditure is not the same as resource consumption and, typically, doubling expenditure does not double consumption. Therefore, the savings shown below expressed in terms of money are probably an over-estimate of the savings in resource terms.

For private expenditure the reduced frivolous consumption savings are simply the difference between the national average and the national average for people in the second poorest quintile of gross household disposable income. (That is, not the poorest fifth of the population, but the fifth above that.) Maybe we could do better than this. Even the people in the bottom quintile waste some resources on frivolous consumption.

The savings from better behaviour come from a variety of improvements. For example, all the remaining expenditure on booze and fags is counted as a saving from better behaviour. There are also savings on health from healthier lifestyles

and from making more effort to follow medical instructions for taking medicine and other aspects of health management. Further savings are made from less need for policing, courts, and prisons. Education becomes easier if all students are imagined as quiet, attentive, and hard working.

No consideration has been given here to what people will actually do or how long change might take. This is about what is possible, in principle, if citizens behave as better citizens.

Also, a number of potentially important effects are not considered:

- Many possible savings in the private sector from better behaviour are not included. These might include private spending on security, insurance against crime, private health care, and so on.
- The possible effects on total labour supply from better behaviour have not been estimated. These might range from days lost due to hangovers to time spent in prison.
- No attempt has been made to estimate the extra human resources that would be available if more people worked hard on their education and were willing to do hard, unpleasant work for a living.

Despite these huge effects being left out of this analysis, the theoretical scope for improvement is still enormous.

The overall picture is that there is enough frivolous spending in our private sector to pay for the National Health Service twice more – in addition to current spending.

There is also enough to be saved from better behaviour to fund the National Health Service once again – and that health expenditure would be less if we looked after ourselves better.

People often ask 'What is the government doing about funding for the National Health Service?' The harsh reality is that it is fighting for resources in a society where many regard having a big new car, more tattoos, another pint, and holidays abroad as more important. A government that understood the issues better could make a big difference, but would still be limited by what voters will agree to. The huge opportunities for improvement lie in our sense of what we should spend our money on, what we should make an effort to do, and what temptations we should resist. Our individual choices, as citizens of a large society, control the consumption of resources.

Conclusion

Economics is better understood by thinking about real resources, such as work, land, food, energy, and so on. With these in mind it is clear that we currently face a crisis of over-work due to the combination of aging populations and climate change.

Individuals, governments, and leaders of organizations can make choices that will help us tackle this situation.

These include reviewing a myriad of choices we make about our lifestyles, many of which have huge implications for us that we have not really understood before.

We can each consider:

- how we live;
- what we do for a living; and
- how our choices affect us and others

In particular, when we are tempted by advertising, goods on display, or the choices of our friends and neighbours, we can think for a moment about the work implications of the choice, and probably choose a simpler, easier life.

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Appendix A

Some sources of statistics on resource consumption.

Food:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/608426/foodpocketbook-2016report-rev-12apr17.pdf

Dwellings: Stock <https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants> and house building
<https://www.gov.uk/government/collections/house-building-statistics>

Building materials: <https://www.gov.uk/government/collections/building-materials-and-components-monthly-statistics-2012>

Travel: <http://visual.ons.gov.uk/uk-perspectives-2016-how-we-travel/> also includes accident stats, numbers of journeys.

Cars: See especially section 2.4 on new car registrations.

<http://researchbriefings.files.parliament.uk/documents/SN00611/SN00611.pdf>

Refuse: (<https://www.gov.uk/government/collections/waste-and-recycling-statistics>

Crimes:

<https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/bulletins/crimeinenglandandwales/yearendingdec2016>

Employment:

A rather high level analysis of which industries people work in:

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13>

Labour (number of people in employment

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/mgrz/lms> and employment rate

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/lf24/lms>)

Appendix B

Statistics on resource consumption, including use of labour, are patchy. However, the Office of National Statistics does have figures from a survey on what the average UK citizen spends in Sterling per year and on what the governments spends on each citizen's behalf.

Monetary spending is not an accurate indicator of resource use, but it is probably quite strongly related, so this is a rough guide to where resources go as a result of our current lifestyles. It gives us a sense of scale.

Expenses based on ONS data for 2015

	Expense	Less frivolity	Better behaviour
Private expenditure			
Housing	2066.11	117.82	-
Energy	734.85	83.81	73.48
Food and non-alcoholic beverages	1670.83	290.47	167.08
Alcoholic beverages, tobacco and narcotics	349.03	74.03	275.00
Clothing and footwear	674.54	256.52	-
Furnishing and household maintenance	1007.50	348.59	-
Health	201.03	0.00	40.21
Transport	2126.96	933.80	212.70
Communication	439.51	86.60	-
Recreation and culture	1956.38	805.97	-
Education	277.73	0.00	69.43
Restaurants and hotels	1207.05	539.56	-
Miscellaneous goods and services	1136.25	434.21	-
Public expenditure			
Central admin	304	0	-
Defence/civil defence	563.91	0.00	-
Police, law courts, prisons	466.96	0.00	323.61
Road and rail	313.02	12.93	-
Support for industry	291.19	0.00	-
Waste management	128.43	42.38	6.42
Other environmental work	128.44	0.00	1.71
Housing and amenities	174.28	0.00	-
Health	2003.98	0.00	486.32
Recreation, culture, religion	178.99	70.94	-
Education	1396.63	0.00	462.92
Personal social services	882.54	0.00	-
Private total	13,847.76	3,971.37	837.90
Public total	6,831.93	126.25	1,280.98
Overall total	20,679.69	4,097.62	2,118.88

The estimated savings from less frivolity and better behaviour are very rough estimates. The savings from less frivolity on private expenditure are based on comparing the average expenditure per head across all levels of income with that of the second poorest quintile. Other savings are based on educated guesses about how much might be saved from less frivolous consumption and from better behaviour (e.g. not committing crime, working harder at school, taking your medicine as instructed).

Estimates from other sources

	Total UK £	£ per head
Size of alcohol industry	39,900,000,000	617.68
E-cigarettes	459,000,000	7.11
Nicotine patches	137,000,000	2.12
Pets	7,160,000,000	110.84
Chocolate and confectionery	5,000,000,000	77.40
Weddings	10,000,000,000	154.81
Jewellery and watches	5,000,000,000	77.40
Fashion	66,000,000,000	1,021.72
Total		<u>2,069.08</u>

Sources for Appendix B:

Analysis of household expenditure by income quintile:

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/adhocs/005250annualexpenditureofhouseholdbyincomequintile>

The original survey is here:

<https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/methodologies/livingcostsandfoodssurvey>

For a good breakdown of public expenditure (central and local) see page 74 of the print version of this:

<https://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2016>

2014 version:

<https://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2014>

UK alcoholic drinks market sales: £39.9 bn

<http://www.wsta.co.uk/publications-useful-documents/117-wsta-market-overview-2016/file>

e-cigarettes: £459m

Nicotine patches: £137m

<http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/11692435/Vaping-takes-off-as-e-cigarette-sales-break-through-6bn.html>

Pets: £7.16bn

<http://www.petbusinessworld.co.uk/news/feed/how-much-are-brits-spending-on-pets->

Chocolate and confectionery: £4-6bn in UK per year.

Weddings: £10bn.

<http://hitched-wife.org/wedding-facts-economics/summary-stats/each-year-uk-weddings-are-worth-10-billion-pounds/>

Watches and jewellery: £5bn

<http://www.professionaljeweller.com/uk-jewellery-and-watch-industries-worth-gbp5bn/>

'Fashion': £66bn

<https://fashionunited.uk/uk-fashion-industry-statistics>

<https://fabacus.com/overture-scm-plm/uk-fashion-industry-stats/>

That's £1,000 per person per year. We could easily manage on £300 each, costing around £20bn and saving £46bn a year. 550,000 people work in fashion retailing alone.