

Sustainability and its economic implications for businesses

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Introduction

Population growth, economic expansion and an increasing use of natural resources all have given rise to questions about the sustainability of the development path that humanity has been and is pursuing (Dasgupta and Ehrlich 2013). The key problems underlying the pressures on sustainability are market failures that lead to a misallocation of resources. In this article we study where these failures come from and what can be done about them.

Markets tend to work well if the market participants have enough information to take the best choices for them, if nobody holds market power, if there are no distortions such as transaction costs, and if there are no external effects on others. In that case no government intervention is necessary, unless the purpose is redistribution. However, if one of these requirements is not fulfilled, then markets may lead to a misallocation of resources. The outcome will be an inefficient market which may lead to losses to society that could be avoided if these misallocations were to be corrected. In other words, there are obstacles that prevent free markets from working well, or efficiently, but there are also solutions available that require interventions into these markets.

Example: Great Pacific Garbage Patch (Day et al. 1988, Moore 2003). The Great Pacific Garbage Patch was hypothesized by several researchers already in 1988, and finally spotted by Captain Charles Moore in 1997. It is the biggest known marine trash vortex in the world, covering an area three times the size of France. The garbage in this trash vortex consists mostly of plastic, which is not biodegradable but instead breaks down into smaller pieces, called microplastics. Recent studies have shown that these microplastics

can now be found in our drinking water, and even remote mountain lakes (Free et al. 2014). We have little scientific knowledge as to how microplastics affect ecosystems or mankind, but preliminary results for marine life suggest strongly negative impacts (Gall and Thompson 2015).

One of the main requirements for markets to lead to an efficient outcome is the absence of external effects. In reality, however, almost every production decision, every consumption decision and thus every market transaction induces an external effect on others (Buchanan and Stubblebine 1962). An external effect arises if a person is impacted by someone else's choice or activity without receiving adequate compensation. These external effects can be costs or benefits to another person. In the following we shall deal with externalities that turn out to be mostly costs to society. For example, if a firm's production pollutes a river which then in turn kills the fish inside the river and the costs of this side-effect are not included in the price of the firm's product, then we speak of an external effect, or simply an externality.

In the remainder of this chapter we shall discuss more deeply why externalities are the key to understand our problems to achieve sustainability, how the market actors are involved in the creation of this externality and what can be done about these.

Externalities

Traditionally free-market economists relied on Adam Smith (1791) and argued that markets are self-correcting. They called this the invisible hand. The argument was that there exists an invisible hand that brings buyers and sellers together and coordinates prices and quantities in the markets. Even though everyone acts in their own self-interests when buying or selling a product, this was also supposed to bring about the highest benefit for society. This world view is still the predominant view in the free market economies across the world, e.g. the United States.

However, it very quickly becomes apparent that this invisible hand neglects the indirect impacts on others that are not part of these market transactions. Thus, if an upstream firm pollutes the river during the production process, does not compensate those affected by this pollution, and then sells the product to its customers, then the price of the product

clearly does not include the costs of this pollution. This is called an external effect, or in short an *externality* (Buchanan and Stubblebine 1962).

This externality has two consequences. Firstly, it leads to a lower than optimal price and thus a higher quantity of the product will be sold on the market than is good for society as a whole. Economists call this an inefficient outcome. It is inefficient because it leads to overconsumption due to the low price and thus more resources will be devoted to a product that only benefits a subset of the population and harms another. These resources may be put to better use for another product. Furthermore, it leads to overproduction of the harmful product and thus to a too high level of harm (compared to what would be ideal for society) imposed upon the third party.

Secondly, it hurts an individual that is not part of this market exchange. If property rights were well-defined and enforceable and there was no cost to bargaining, then the individual could charge the polluter the costs of this externality. Economists call this *internalizing the externality*. For example, if the river that a firm is polluting were to belong to an individual, then the fact that the individual has a property right over the river would allow this individual to charge the firm the costs of this pollution. The problem, obviously, is that property rights are not everywhere well-defined. Who has a property right over the air that we breath? Who has a property right over the oceans or the water in the rivers? This is the reason for which many externalities continue to persist even though they are harmful to third parties.

Example: Cuyahoga river on fire (Stradling and Stradling 2008). The Cuyahoga river in Cleveland, USA, was among the most polluted rivers of the United States, owing to one of Cleveland's largest accumulation of industries along its banks. The pollution was so severe that it was void of fishes in the highly polluted parts. Even worse, it was so polluted that it caught fire at least 13 times. This finally spurred the public's concern in 1969 and, as a result, major environmental laws and regulations were introduced in the USA. These laws and regulations, such as the resulting Clean Water Act or the Environmental Protection Agency, defined property rights over the river. As a result, the Cuyahoga river tends to have sufficient water quality to again carry fishes and even be classified as bathing water.

Assume now that someone would have to pay for the clean-up costs and these costs would be reflected in the market price. In this case the firm could no longer sell its product at the previously low cost but the new market price that now internalizes the externality would be higher. This new price would then be made up of the previous price (adjusted upwards for a potential decrease in demand) plus the costs of the externality. There are three issues associated with this. Firstly, what is the correct price? Secondly, who pays for the externality? Thirdly, who are the parties that are interested in internalizing the externalities and what are their means to achieve this?

The correct price?

When faced with a market that is subject to an externality, then there are essentially two prices, the market price at which the product is traded, but also the social price which includes the costs of the externality to society. While it is indeed the invisible hand that guides the market to a market price at which consumers and producers want to trade, the much harder question concerns the correct social price that internalizes the externality. Think of climate change. Our carbon emissions today will increase the stock of carbon with a delay of up to 70 years and thus our emissions today will have the strongest impact on the climate of the next two generations (Rogelj et al. 2011). Most of us will not be around any longer to feel the impact of the externality that we impose today upon the future. So who is going to represent the interests of the future generations? How do we even know that they will hold the same preferences as we do? What if they developed technologies that allowed them to fully adapt to the climatic changes? It is no surprise that the world has, as of now, been unable to settle upon a unique price to internalize this externality.

Example: UNFCCC meetings and their problems to settle upon a carbon price (Friman Hjerpe 2015). Since 1995, the United Nations holds an annual conference where the world leaders come together to discuss climate change and find means to achieve international collaboration on this problem. While it is clear that a price on carbon is the most efficient solution to tackle climate change, the main problem is that countries do not agree about their respective responsibilities. Poorer countries tend to feel that they should be allowed to increase their carbon emissions in order to achieve similar wealth levels as

developed countries, while developed countries, especially the USA, tend to argue that a price on emissions hurts the local economy too much.

One of the reasons for a lack of consensus is that there is no wide-spread agreement about the correct price for carbon. This correct price for carbon should reflect carbon's negative impact on society, and therefore is mostly referred to as the social cost of carbon. Economists such as Nobel Laureate William Nordhaus have spent significant efforts to try to calculate this social cost. Estimates average around 54\$ per ton of CO₂ with a significant uncertainty from -13\$ to 2387\$ per ton of CO₂ (Wang et al. 2019).

A reason for this large uncertainty surrounding the estimate of the social cost of carbon is that in order to calculate its value this requires us to know the impacts of climate change on ecosystems and humankind from adding a ton of CO₂ into the atmosphere. Not only that, we also must know how these impacts change over time and furthermore how these costs should be valued over time.

While the valuation of these impacts at a specific point in time is an entirely empirical question, the valuation of these changes is also an ethical question and subject to great controversy. The valuation of these costs over time is being accomplished by what is called the social discount rate. If future generations are expected to be richer than current generations then their welfare will receive a lower valuation (ie be discounted) compared to the welfare of the current generation. This is a positive parameter, in a sense that empirical evidence can aid us in finding its level. Another component of the social discount rate is the rate of pure time preference, which measures how much we discount future generations simply because their welfare is in the distant future. This is essentially a normative and subject to great controversy.

Another question concerns the price of nature. To value an externality, we need to know how valuable nature is for sustainability. There is large literature on ecosystem services that attempts to quantify, through various methods, the value of ecosystems (Daily 1997). In general, something becomes more valuable the lesser there is of it, and the more useful it turns out to be. While trees can re-grow, it is also clear that a species that has gone extinct cannot. How valuable are thus species and ecosystems? For example, the Bramble Cay melomys, a rodent that lived on an island at the Great Barrier Reef, is widely

believed to be the first mammal that was pushed to extinction due to human-induced climate change (Gynther et al., 2016). While it can be argued that the extinction of this particular mammal is not an issue for mankind, the same cannot be said about the Great Barrier Reef (van der Linden and Hanson, 2007). Our limited understanding of how ecosystems form and interact is also not very helpful to assess which animals or plants are necessary to sustain ecosystems. Hence, we face significant uncertainty about the correct price, if any, that we should attach to nature.

There are thus some who argue that there is substitutability between nature and human-made capital (Pezzey 1992, Neumayer 2003, Withagen 2009). This is called *weak sustainability*. It is argued that most of nature is not essential for mankind and it is not an issue for us if we transform large parts of the rainforest into grazing areas or expand cities into nature resorts. The price of nature in this case would be very limited and mostly include the harvesting costs of the trees, the mining costs of the materials, or the cost of land for our urban expansions. In fact, much of the economic growth, starting with the industrial revolution, has been achieved on the back of nature, substituting nature into man-made capital.

Others argue that there is very limited, if any, substitutability between nature and human-made capital (Pezzey 1992, Neumayer 2003, Withagen 2009). This paradigm is called *strong sustainability* and is very closely aligned with the precautionary principle (Arrow and Fisher, 1974). The argument goes that, if we are not entirely sure as to what is important for us or/and if some changes are irreversible, then we ought to prefer to keep the option of not taking the wrong choice. In other words, we should err on the side of precaution. This becomes even more relevant for the case of *tipping points*. A tipping point occurs if a small impact induces a large structural change in an ecosystem and this ecosystem tips into a bad and potentially irreversible state. The problem obviously is that we are mostly unaware of tipping points until it is too late.

Example: Collapse of the Atlantic thermohaline circulation (Lenton 2008). The thermohaline circulation is an ocean circulation working like a conveyor belt transporting warmer water across the Atlantic. A sufficient sea level rise, caused by climate change, is expected to shut down this conveyor belt. In case of a collapse, a substantial long-

lasting cooling over the North Atlantic, Europe and North America would be the consequence (Rahmstorf and Ganopolski 1999), with potentially drastic consequences for agricultural production and living conditions.

In reality, the true degree of substitutability lies most likely somewhere between the weak and strong paradigm. When there is still a large degree of nature around us, then substituting some of this for man-made capital comes at a lost cost. This would correspond to the case of weak sustainability. Once very little of nature is left, or once pollution has reached a high level, then any potential further substitution could be disastrous. As a result, strong sustainability should be expected in case we are close to tipping points. We should thus see an increasing price of nature that corresponds to its increasing scarcity (Hotelling 1931), and when we are close to tipping points then this price will rise to such a level that further extraction is too costly (Schumacher 2011).

Who pays for the externality?

In addition to understanding as to what the correct price of an externality is, it is also not entirely clear as to who should pay for the externality. Imagine a company that develops a new product to produce for electricity. Imagine further that this product is more expensive than a dirty competitor. Imagine electricity produced from wind energy versus coal. The more wind turbines are being bought the lower will be the production costs in the future and the less CO₂ will be emitted in the atmosphere. There are two ways to deal with this positive externality from wind energy and the negative one from coal. On the one hand we have the market-driven approach that tends to rely on market dynamics and market participants such as consumers or financiers to auto-regulate the market. On the other hand we have the public intervention approach that would lead to the use of market interventions to deal with these externalities. In some cases, one approach might be more appropriate than the other. For example, if property rights are not well-defined, then it is very often the government that steps in and imposes fines or regulations upon the polluter. In other cases, the choice may be determined by ideological or political views as well as ethical underpinnings.

In this respect, a widely-accepted rule is the so-called *Polluter-pays principle*. It suggests that whoever creates an externality should also be charged for this externality. However, from an economist's perspective, to induce efficiency, it does not matter who pays for the externality, may it be the producer or the consumer. The only concern, in order to maximize society's pie, is to internalize the externality.

Nevertheless, when asked about who should pay for an externality like pollution, the public nearly exclusively pushes for the polluter-pays principle. This is reflected in the fact that the European Union and the United States have included this principle in their environmental laws, while the OECD has strongly suggested it in its environmental policy guidelines. The underlying reason is an ethical one, not an efficiency one. When asked why they push for the polluter-pays principle, then people argue it is a question of responsibility. Those responsible for a problem should also be the ones to deal with it. This has been called the Kindergarten rule of sustainability (Brock and Taylor 2005), named after the observation that children in the kindergarten are taught that whatever mess they make they also must clean it up.

There are, however, quite a few circumstances under which the polluter-pays principle is difficult to be implemented. For example, who is to be held accountable if there are non-point source emissions and it is difficult to assess who pollutes and is responsible for what amount? Think of pesticide and herbicide use or sewage water in a river. How can one assess as to how much pesticides in the water are due to which farmer? As another more concrete example, think of the Great Pacific Garbage Patch. Who is responsible for this? Who can be made accountable? How can one impose the polluter pays principle in this case and especially retrospectively?

Also, think of the nuclear industry. A large-scale meltdown in one nuclear plant will affect several countries and significant numbers of ecosystems and individuals. No nuclear company has the kind of money necessary to cover these costs, and no insurance industry would be able to adequately insure a disaster of that size. In this case and the cases above, it is clear that it is very difficult to implement the polluter-pays principle.

The economic actors

Each transaction in the market involves several actors. The businesses, which are the suppliers of products; those who demand the products, namely the consumers; and the governments that undertake regulatory interventions. A somewhat neglected but important additional actor is civil society. The way in which these actors participate in market transactions differs widely and any changes induced by one actor subsequently lead to reactions by the other actors. In order to understand the role that each actor plays we shall now look at these separately.

The businesses

The businesses themselves and the way they interact in the market are crucial for sustainability. A business can be run solely with shareholders profits in mind, or it can be organized in a more socially responsible way. The key to understand that the socially responsible way is (generally) not yielding the highest profits for a company is to see that a socially responsible company takes more into account in its production decisions than its own interests. A company that provides a fair wage or makes its packaging more environmentally friendly will incur higher costs. If it cannot fully transfer these higher costs onto the consumers, then naturally it will incur smaller profits.

Which business model is chosen then depends on the owners of the businesses, the managers' visions, the type of business and the market structure itself (Osterwalder and Pigneur, 2010). It is fair to say that the predominant business model is based on a profit-maximizing maxim. After all, most shareholders tend to invest their money in the company that yields them the highest returns. Relying on shareholders to raise capital thus significantly constrains companies in their choices of their business models.

In the case where the managers are also the owners, then the managers obviously have much more freedom to choose the business model. Prominent examples here are Patagonia, Lego or IKEA. These companies are still predominantly privately owned and thus have more liberty to (potentially) forgo some profit in preference of a more socially responsible approach. In contrast to these, other companies shift their production sites to regions with fewer regulations to exploit relatively lower production costs. For example,

many companies from developed countries outsourced a large proportion of their businesses to the third world to exploit the lack of labor unions, or to produce under weaker environmental regulations.

Example: Patagonia (Lindgren et al, 2009). This outdoor company is still predominantly owned by its founders, Yvon and Malinda Chouinard, and only one of a few outdoor clothing companies that take sustainability seriously by including environmental targets, codes of conducts and labor rights (Simon 2013). Patagonia donates annually 1% of its sales to grassroots environmental groups. In contrast to companies such as Nike that produced in the Rana Plaza factory which collapsed and killed over 1000 workers, Patagonia also produces partly in Bangladesh but it subjects its production sites to even higher standards than the agreement on fire and building safety that was drawn up in the aftermath of the factory collapse.

However, it is not only the ownership that matters but also the type of business that the companies are in. For example, Monsanto, a global producer of herbicides and pesticides, is widely viewed as one of the least socially responsible companies. Similar things can be said about those in the business of non-renewable resources such as oil producing companies. Yet, it can be argued that these companies simply supply that what is demanded. Thus, who is the polluter – the one who produces a product that induces potentially significant externalities, or the consumer, the one that uses it? With whom lies the responsibility?

The market structure is one of the critical stumbling blocks to introduce a corporate sustainable approach to one's business (Varian 2014). At the one end is the *monopoly market*. In this case the monopolist is the main, if not sole, producer of a product and owns a market share of more than 40%. Hence, it can set the price and quantities on the market, while the other very small firms have little influence on the actual outcomes. In this case, as the monopolist is virtually free to decide over the product and the market, the ownership is crucial for whether or not the monopolist wants to minimize the externalities that (s)he imposes upon society.

In contrast, at the opposite end of the spectrum, we have markets which are *perfectly competitive*. A perfectly competitive market is characterized by a large set of small companies that produce essentially identical products that are indistinguishable from each other. No company alone has an impact on the product's price. The price will, due to competition, drop to a level where no company makes any profit. Since, as we argued above, a socially responsible business model does not come for free, a company in a perfectly competitive market that wants to produce more socially responsible than before would also face higher costs. If it wants to cover those costs by setting the price of its product higher than that of the competitors, then no consumer will buy that product as the products are indistinguishable. A perfectly competitive market makes it thus extremely difficult to implement a socially responsible business model.

The consumers

Consumers are nowhere alike. They have different attitudes, cultures and demands. They prefer different products, have different living standards and various needs and desires. Furthermore, they change their demand over time. While, for example, years ago the car was a major status symbol, inhabitants of larger cities are moving away from this social conformity and are starting to rely more on public transports. Until the mid 50s households in the western world were predominantly characterized by several generations living together and they had a larger number of children, today's households tend to consist of singles or couples with one or two children. This, naturally, has an impact on the demands, businesses and market structures.

However, the biggest change that we have recently seen is the move towards a socially-responsible consumer. Awareness created by fast-spreading news via the internet and social media, as well as a much larger freedom of choice, have given consumers the option to take more into account in their consumption choices than simply the product itself. The previously dominating approach Not In My BackYard is starting to be replaced by an approach that not only includes one's own backyard but also those of others. There is evidence that consumers prefer those products that have been produced with a socially responsible business model, and this also shows in company profits to some extent (Margolis et al. 2013, Saeidi et al. 2015).

One of the reasons for which consumers become more socially responsible actors in the marketplace is the emergence, or manifestation, of social norms that target sustainable behavior (Schumacher 2015). We observe a cultural change where status quo products are no longer those that show a consumer's wealth, but those that reveal how socially responsible the consumer is. This new culture is driven by social norms that are spreading and evolving through society, fostered by tacit government interventions that nudge individuals to take a more socially responsible choice (Thaler and Sunstein 2009).

Social media and the quick spreading of good and bad news had also an effect on the *codes of conduct* that many companies follow when outsourcing their labor. After the Rana Plaza incident happened, most companies that had outsourced their labor to Bangladesh started to adopt the more stringent buildings and safety requirements. Companies that didn't, like Walmart, are in the lower third of the Harris Poll reputation ranking, while those that did, such as Nike, can be found in the upper third. Adopting voluntary codes of conduct seems to have a positive influence on a company's reputation (Wright and Rwabizambuga 2006), showing that consumers are willing to support corporate socially responsible efforts.

One of the big market failures that hinder efficient market outcomes is informational asymmetry. If consumers are unaware about the actual quality of the products, for example in order to differ between organic and non-organic production, then they also cannot choose according to their best interests. In this respect, certification in the form of e.g. ecolabels, fair trade labels or other labels related to various indicators of corporate social responsibility have allowed consumers to also trust what businesses advertise and thus reduce the information gap between consumers and producers. Additionally, labels allowed businesses to distinguish themselves from their close competitors, gain reputation and increase customer loyalty. Survey results (Flash Eurobarometer 258) have shown that ecolabels nowadays play an important role for 50% of the European consumers. In addition to labels, another important means to reduce asymmetric information are disclosures. For example, there exist voluntary company disclosures, which are introduced by managers who feel that this important for their companies; or they are driven by civil society organizations (such as the Global Reporting Initiative or

the Integrated Reporting); or they are driven by regulations (such as the European Directive 2014/95/EU on disclosure of non-financial sustainability-related information, or the Management Discussion and Analysis in the SEC filing in the United States). To further the development of these disclosures there are also initiatives such as the Task force on climate-related financial disclosure whose aim is to develop recommendations for voluntary financial disclosures that are relevant for climate issues.

Example: Ecolabel the Flower. The EU Ecolabel 'The Flower' was introduced in 1992 by the European Commission. It is a voluntary label that companies can apply for if their product is more environmentally-friendly than those of their competitors, and if their product fulfills certain criteria. In the first 10 years after its establishment this label awarded 237 licenses overall. Now it awards on average 2000 licenses per year. Hence, companies are understanding that there is a high demand for environmentally-friendly products and are, thus, in the process of reforming their productions in order to reach the standards necessary for this label.

The governments

Often enough property rights are not sufficiently well-defined and sometimes businesses use these opportunities to reduce their costs by avoiding to deal with the externalities that they produce. The only actor that then has the power to act upon this is the government. Governments try to internalize these externalities via appropriate tools. While the government has a multitude of possible approaches to intervene in the markets (such as the provision of information, mandates, direct funding, public production and nudging), the two main methods that tend to be used are regulation and taxation, positive and negative incentives. There are obvious advantages and disadvantages to these.

Regulations tend to be used when there are known hazardous thresholds to pollution levels. For example, the European Union has set environmental quality standards for most pollutants through the Industrial Emissions Directive, their Water Framework Directive and their Surface Water Directive. Japan has heavily relied on the Best Available Technology regulation, which requires other products in the same market to apply the same environmental technology as the product with the best environmental technology.

The European Union has, for example, introduced this Best Available Technology regulation for the case of products containing mercury.

However, from an economic perspective, regulation is often considered inefficient and inferior to subsidies or taxes. When a government puts a regulation in place, then the cost of adhering to the regulation for low pollution levels is zero, while it is infinity above this threshold. Consider, for example, an ambient threshold on air pollution, say on PM2.5, a pollutant that arises through combustion. Throughout some summers, when PM2.5 levels were elevated, several European cities did not allow cars to enter their cities any longer during several days. While it is clear that this is the fairest way to deal with the problem, a more efficient way would be to charge fees that are relation to the level of pollution. This would yield what economists call a *double dividend*. The first advantage is it that it will not be a zero-one, reactive policy, implying that decisions are taken only when thresholds are already crossed. Instead, the increasing cost of entering the city when pollution levels are rising will give the opportunity to enter to those that have a high benefit from entering the city, while it will deter those that only rely on the car as it is the easiest means of transport. The second advantage is that the money received through the fees can be used to clean the air, improve public transport, or be used for other governmental expenses.

The main problem that most governments face when evaluation the costs and benefits of an environmental policy is the impact on international competition. If one imposes tighter environmental regulations on the home companies, then their costs of production will be higher than those of their international competitors who produce in countries with less stringent environmental regulations. Similarly, a country that imposes strict labor regulations with respect to e.g. working time and working conditions, will have higher labor costs compared to a country that does not protect their labor force to the same extent. If a company from a country with tight regulations now has to compete with a company from a country with lax regulations, then it is clear that the company facing lax regulations can bring its product more cheaply on the market and hence will reap most of the market share. This problem led to so called pollution havens, where companies started to relocate to countries with laxer environmental regulations. As an example, a significant share of old US batteries is now recycled in Mexico after the USA introduced stricter

regulations that made the recycling of batteries more demanding and thus more expensive.

The other issue that governments need to be aware of when intervening in markets is whether these interventions also have the support of the wider public. While a government may feel that an intervention is of necessity, a less-informed public may believe otherwise. For example, the yellow vest movement in France in 2019 blocked the introduction of a carbon tax. Also, local norms may prevent the introduction of interventions. While the United Kingdom is reducing again the speed limit on highways in order to decrease carbon emissions, this kind of policy would be unthinkable in the car-dominant German society. A recent means to influence market participants without restricting their actions is what has been called nudging (Thaler and Sunstein 2009). This form of government intervention leaves individuals the choice to act however they want, but provides incentives or information so that they may take the more socially responsible choice.

One should also not neglect the wide-spread view that government intervention can be badly implemented and leads to unanticipated additional distortions. A prominent example is that companies that are run by governments tend to make fewer profits and be less efficient than those run in a free market system. Other examples relate to the printing of money or increase of government debt, which may help to resolve a current problem while introducing future costs. Clearly, any large-scale intervention into the economy, such as a carbon tax that is high enough to actually induce changes in the public's behavior, will also lead to further distortions and changes that not only impact a single market itself but have potential repercussions for the whole economy.

Other actors

One aspect that tends to be neglected when it comes to the public is its role in what is known as civil society. Fridays for Future, NGOs such as the Climate Accountability Institute, as well as the new social media platforms help to spread information through society at a hitherto unimaginable speed. They make markets more transparent and thereby inform consumers about the products that fit their preferences. In various cases

has this induces changes in social norms that lead to more sustainable outcomes. For example, a significant share of the more expensive but organic products not only get bought as they contain fewer pesticides than their non-organic counterparts, but also because they strain local ecosystems much less and are healthier for the agricultural workers (Schumacher 2010).

We should also mention that both higher education levels across the world and a significant shift of countries to the service society have allowed more individuals to become researchers and scientists, which through the expansion of the digital networks allows the latest research results to be transmitted throughout the planet.

A final point concerns investors and shareholders. Up to a few years ago their investments were mostly motivated through financial profits. This has changed, and especially long-term investors such as pension funds or insurance companies are starting to take a more holistic approach to investing (see also the chapters in the Sustainable Finance Section). This change in mentality, coupled with the increasing market of green bonds, is providing credit to companies that are in the progress to transform their products into more sustainable ones.

Nowadays, shareholders and investors understand that value added or shareholder value and corporate socially responsible production are not orthogonal (Smith and Colgate 2007), but that a more sustainable production can increase a company's profits, too (Crane et al 2019). As noted above, not every company in every sector can easily transform itself into a corporate socially responsible company, and therefore shareholders and investors need to be careful when and how they push a company to transform itself.

Conclusion

In this chapter it is argued that companies, consumers and governments are starting to take production and market externalities much more seriously and there are efforts from every market participant to internalize these externalities in one way or another. While consumers can push producers to adopt a more socially responsible business model, it is also true that not every market structure easily accommodates this.

Thus, the role of governments is to understand when a certain market structure, for example perfect competition or international competition, hinders the introduction of a corporate socially responsible business models. In this case the tools to internalize the externalities may need to vary, and a thorough Cost-Benefit Analysis is indispensable (Tietenberg and Lewis 2016).

It goes without saying that internalizing the externalities comes, at least quite often, at a significant price. Even more problematic is that regulators often do not have a good understanding as to what the correct price actually is. There is thus an immediate need for businesses, consumers and governments to carefully work together with the incentive to internalize the externalities. Corporate social responsibility is the right way, but it needs to be supplemented with more consumers that buy less price-oriented, and it needs to be induced by governments that understand that maximizing the pie also requires to deal with these externalities.

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Author forward looking points

We are clearly living through a period where both science and social media are changing our understanding of how our production, consumption and investment decisions affect us and others. This greater awareness adds a layer of conscience to our market decisions that previously were mostly driven by motives related to personal profit. This layer of conscience speaks to our moral self and the increasing amount of information about the products that we sell, buy or invest in, does not allow us anymore to ignore that voice.

Consumers more and more buy only products that are labeled organic, as they know that these products contain fewer pesticides that harm them and those that produce these products. They buy products that are labeled fair, in order to help poor workers in developing countries to get a fairer share. Furthermore, as more and more individuals are moving into apartments in cities, they are starting to be more conscious about what they need and buy fewer products have a lower use value.

Producers and investors understand that corporate social responsibility is not simply a buzzword that attracts consumers but that it does provide a value added for the company. Employees are more motivated to work if they feel that they are needed and welcomed, and supply chains work more efficiently if every company down the chain gets a fair share. Products produced by motivated employees and manufactured with high quality materials tend to last longer and are more appealing to consumers, which leads to a greater customer loyalty and this by itself creates a value added for the company. On the converse, companies that do not take part in this movement towards a more responsible production may quickly get name-shamed and potentially must face a civil society that, in one way or another, punishes them for this.

Governments are understanding that they need to be careful in the way they introduce new policies, and they are starting to introduce these in a more subtle way. A whole field of nudging developed, where nearly every government has its own nudge unit that tries to find ways in which market participants can be influenced to take the `right' choices without coercing them through regulation or other hard constraints.

In short, we are currently in a transition period where fast-spreading information changes our habits in the marketplace and no market participant can afford to ignore this any longer.

Testing questions

1. What prevents businesses from implementing corporate socially responsible product?
2. Explain how a government can intervene in markets.
3. What are the reasons for which consumers are changing their consumer behavior?
4. What benefits does a company have when it changes to a corporate socially responsible production process?
5. When would a government prefer to use regulation to intervene in the marketplace?

6. What are externalities? Give an example and explain the problem associated with externalities.
7. How can governments deal with externalities?
8. What is the difference between efficiency and equity?
9. Why are not all companies becoming socially responsible?
10. Should governments necessarily internalize externalities?