

Ethics at the New Frontiers of Finance

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“Ethics change with technology.”

– Larry Niven, American science fiction writer

In 2011, the Court of Justice of the European Union (EU) ruled that European insurers must, after a short transitional period, no longer use a person's gender as a factor in calculating insurance premiums (Court of Justice of the European Union, 2011). The ruling was roundly criticised for being likely to raise the cost of insurance for female drivers and incentivise riskier driving behaviour (HM Treasury, 2011), and even for trivialising the very concept of human rights (Booth, 2011). Equality between men and women is a bedrock principle of the EU. Indeed, Articles 21 and 23 of the EU's *Charter of Fundamental Rights* require gender equality to be ensured in all areas. Why, then,

should insurers be exempted from the most basic precepts of anti-discrimination policy? And, as private firms collect more and more data about our driving histories, medical records, and personal lives, what other protections might be needed to ensure equitable access to insurance coverage?

Deep beneath the North Atlantic Ocean lies the Hibernia Express, a 4,600km transatlantic cable system that connects Europe with North America. Completed in 2015 at a cost of US\$300 million, the system lowers the latency of communication between traders in London and New York by 2.6 milliseconds (Buchanan, 2015). The Hibernia Express is just the latest addition to a global superstructure of privately-owned fibre-optic cables, microwave and millimetre-wave relays, and laser-

Les assureurs ont pendant longtemps pu utiliser le sexe comme clé pour calculer les primes d'assurance différenciées. La Cour de Justice de l'Union Européenne a maintenant déclaré que c'était illégal. Au niveau global, les opérateurs de marché dépensent des milliards de dollars en technologies pour gagner des avantages minuscules en vitesse sur leurs concurrents.

Quel est le bénéfice sociétal de cette « course aux armements » technologique, et est-ce que cela rend le marché injuste pour les autres investisseurs ? Ces deux exemples illustrent quelques-uns des nombreux dilemmes éthiques urgents auxquels seront confrontés les professionnels de la finance de demain.

based networks that connect the world's most important financial exchanges. Market participants worldwide spent some US\$1.5 billion in 2013 on technology to increase trading speeds (Patterson, 2014). But researchers remain deeply divided on the societal benefits of this technological arms race: while high-speed trading improves liquidity, the speed advantage enjoyed by professional traders may have irrevocably rigged the market against pension funds and 'mum-and-dad' investors.

These two examples illustrate some of the many pressing ethical dilemmas that will confront the finance professionals of tomorrow. Past submissions to the *Robin Cosgrove Prize* have explored how the finance industry could be rendered more ethical through avenues like better instruction in behavioural ethics and design thinking. While these ideas are meritorious, I argue that they have three principal weaknesses.

Building on the literature

The first is that past essays have been overwhelmingly concerned with the business of banking and securities trading. But finance is a diverse profession: millions of people work in asset management, insurance, broking, venture capital, financial technology ('fintech'), and other fields. Ethical impasses in these fields are often overlooked in the literature. This essay attempts to

partially fill the gap by investigating some of the emerging ethical issues in insurance and fintech.

The second weakness is that past essays (e.g. Murdoch, 2015) have tended to focus on high-profile instances of wrongdoing, like Bernard Madoff's infamous Ponzi scheme, that were clearly *illegal*. Insofar as a nation's laws broadly express the combined ethics of its citizens, it is not hard for a dispassionate external observer to clearly recognise these actions as being unethical. More interesting, from my point of view, are examples of financial practices or innovations that are legal but whose ethicality is presently *ambiguous*.

The third weakness is that past essays (e.g. Godbold, 2015) propose illusorily simple heuristics, like "putting the customer first". These may be suitable for decision-makers working in customer-facing retail financial services, but provide little guidance for professionals in other segments of the industry. In addition, as I write in this essay, putting the customer first does not always lead to desirable outcomes when viewed through the broader prism of distributive justice.

The motivation for this essay comes from my time as an analyst focusing on financial regulation at the Australian Treasury, and then as a researcher at a leading think-tank. I quickly came to see how decisions made by industry executives, regulators, and government ministers are rarely value-neutral. When the Australian state of

Les textes retenus par les éditions précédentes de ce prix, ont trois principales faiblesses. Premièrement, ils portent en grande majorité sur le secteur bancaire et le commerce de titres, laissant de côté d'autres segments d'une industrie financière diversifiée. Deuxièmement, ils ont tendance à se concentrer sur des actes qui sont illégaux. Il est plus intéressant d'examiner les pratiques financières ou les innovations qui sont légales, mais éthiquement ambiguës. Troisièmement, certains auteurs ont conclu que les entreprises pouvaient être éthiques « en mettant le client à la première place » – mais ceci est en conflit avec la réalité. De plus, le fait de mettre le client à la première place n'aboutit pas toujours à des résultats satisfaisants lorsque l'entreprise a de nombreuses parties prenantes en concurrence.

Queensland was hit by a series of massive flooding events over the summer of 2010-11, it was revealed that a great many households were unknowingly uninsured because of their opaque insurance contracts. 'Greedy' insurance companies were quickly portrayed as the villains (Lutton, 2011). Insurers fired back, arguing that poor government policy had rendered large areas of Queensland uninsurable. As a public policy analyst, I was required to reflect on the many competing claims to 'fairness' that this disaster provoked: whether it is reasonable to ask an insurer to pay a claim where it has no contractual obligation, at the expense of its shareholders; whether it is equitable for the government to provide aid to disaster-affected families, but not to those suffering from non-disaster related misfortunes; whether disclosure is a sound basis on which to build a framework of consumer financial protection.

This essay is about ethics in a world where the financial industry is being buffeted by the great winds of technological change. The next section of this paper looks at the insurance sector, and examines the ethics of discriminating between different consumers based on their observed or unobserved risk profiles. The following section investigates the costs and benefits of financial innovation, with a specific focus on the growing uptake of cryptocurrencies and algorithmic decision-making systems. The

penultimate section draws out some useful lessons for young finance professionals. The final section concludes the article.

Insurance and discrimination

Insurance is vital to the smooth functioning of modern economies. By mitigating the effects of exogenous events over which we have no control – illnesses, accidents, natural disasters – insurance allows people and businesses to recover from sudden misfortune. This risk mitigation is often a precondition for other productive activities, such as buying a home or starting a business (Geneva Association, 2012). In addition, the price of insurance often serves as an important signaling mechanism that can incentivise *ex ante* risk-management behaviour.

Insurance companies are in the business of discrimination. Insurers aim to charge different premiums to different groups of people based on observable variations in their risk profiles. There are limits, however, to the types of discrimination that society considers tolerable. In the United States (US), for example, federal legislation forbids health insurance companies from considering gender or 'pre-existing conditions' in the underwriting process. However, fewer than half of the American states ban the use of racial factors in life, health, and disability insurance. Only 15 states ban the use of sexual orientation in underwriting health insurance, and

L'industrie d'assurance a fait de la segmentation / discrimination son métier de base. Les assureurs visent à facturer des primes différentes selon le groupe de personnes en se basant sur des différences observables de leurs profils de risque. Il y a toutefois des limites aux types de discrimination que la société considère comme acceptables. Les différents pays, ont des niveaux de tolérance variables pour la discrimination basée sur le sexe, la race, l'orientation sexuelle, etc. Clairement, il n'existe aucun consensus sur quelles formes de discrimination sont justes.

Une majorité de gens pense que les fumeurs devraient payer plus pour l'assurance-maladie. Cependant les coûts et bénéfices d'un tel changement de politique sont incertains. Le fait de facturer aux fumeurs des tarifs plus élevés peut les pousser à renoncer complè-

only nine ban the use of gender in motor vehicle insurance (Avraham, Logue & Schwarcz, 2014).

Clearly, there is no consensus on which forms of discrimination should be permissible. At first glance, the correct moral position might be to suggest that discrimination on the basis of immutable factors outside of one's control – gender, race, sexual orientation, and so on – ought to be outlawed. But this in itself raises at least two new ethical questions. First, is it then fair to charge people higher premiums for factors that are *within* their control? Second, is it fair to charge an individual a higher premium simply because the particular demographic group to which they belong presents a greater risk *on average*?

When is price discrimination fair and equitable?

I argue that the first question has no clear answer. Take smoking, for example. A majority (59%) of Americans say that insurers would be justified in setting higher health insurance rates for smokers (Gallup, 2017). After all, smoking-related illnesses cost the economy hundreds of billions of dollars a year in healthcare expenditure and lost productivity. The theory goes that charging smokers more would encourage them to quit, improving their health and lightening the burden on the public healthcare system. Counterintuitively, however, some studies show that because

regular smokers are more likely to die at a younger age, lifetime health expenditure is actually *greater* for healthy people than it is for smokers (van Baal et al., 2008). In addition, charging smokers higher premiums might cause them to forego health insurance altogether, thereby preventing them from accessing insurer-funded smoking-cessation programs (Resnik, 2013). The costs and benefits of penalising unhealthy behaviour are more complex than they seem.

When responding to the second question, it is tempting to conclude that the only equitable approach is to set premiums commensurate with a policyholder's *individual* risk characteristics, rather than proxy factors like their age, ethnicity, or other demographic grouping. But here, too, society faces troubling quandaries. 'Telematics' – the fitting of devices to motor vehicles in order to track real-time driving behaviour – is revolutionising the auto insurance industry. Usage-based insurance might allow safe drivers who would otherwise be considered high-risk based on their demographic profile (e.g. men under the age of 25) to prove to insurers that they should not be punished for the sins of others. Similarly, the 'Internet of Things' may one day provide property insurers with information about our homes and offices, and wearable sensors could transmit real-time biometric data to health insurers, so that insurers rely less on self-reported medical information. However, such

tement à l'assurance-maladie. De nouvelles avancées dans la « télématique » et l'idée des primes basées sur le comportement effectif, pourraient permettre aux assureurs de différencier plus facilement les individus sur la base de leurs caractéristiques de risques réels, plutôt que d'après leurs seuls profils démographiques. Il reste encore à savoir, cependant, si de telles technologies valent le prix de l'intrusion dans la vie privée.

Les données peuvent être une épée à double tranchant.

Les tests génétiques peuvent aider les individus à comprendre leurs risques médicaux, mais les assureurs peuvent utiliser les résultats pour identifier les gens avec des gènes à risque. Certains pays ont choisi de promulguer des lois pour empêcher la discrimination génétique.

De même, la tarification du risque d'inondation a été peu sophistiquée, mais pro-

devices are necessarily intrusive and raise a host of issues around data privacy and security (Schumer, 2014).

Insurance data and public policy

How much data is too much? This question has been given renewed impetus by technological advances in areas like genetic testing. There have already been cases of individuals being denied life, disability, or travel insurance due to their genetic test results. Anxiety about potential discrimination by insurers deters people at high risk of cancer from taking up genetic testing, with potentially damaging consequences for their health (Keogh et al., 2009). The industry's response has varied from country to country. In the United Kingdom (UK), insurers have voluntarily committed to allow customers *not* to disclose adverse genetic test results. The US, Sweden, Germany, France, and Canada have all enacted laws prohibiting genetic discrimination.

In a similar way, advances in flood modelling and satellite technology are a double-edged sword. They threaten to simultaneously make property insurance markets 'fairer' and to render large swathes of flood-prone areas uninsurable (or prohibitively expensive to insure). In the past, knowledge of flood risk was relatively unsophisticated, and the consequence was that insurers applied a degree of collectivisation – where those at low risk informally cross-subsidised

those at high risk. In the UK, this cross-subsidy, valued at £180 million per year, is now unwinding (Cullen, 2015). Greater granularity of data is resulting in a greater dispersion of premiums, creating winners and losers. The key issue, of course, is whether it is equitable for those who live in flood-prone areas to be subsidised by other policyholders (or by the taxpayer where government insurance schemes exist)¹. While some householders might be able to mitigate risks by erecting flood defenses or relocating, others simply may not have the financial means, or may have purchased a property without full knowledge of its flood risk. The trade-off between economic efficiency and social justice is a vexing one.

Developed nations have instituted a wide variety of models for the regulation of insurance. These range from completely deregulated systems to those exhibiting partial or full solidarity (i.e. the prohibition of using certain types of information in underwriting) or mutuality (Liddell, 2002). Until recently, the flood insurance regime in the UK was largely market-based, while in France the principle of solidarity for natural disasters is written into the French constitution itself (O'Neill & O'Neill, 2012). When it comes to health insurance, some countries

¹ In the US, the benefits of the National Flood Insurance Program (NFIP) appear to accrue largely to wealthy households concentrated in a few highly-exposed states (Holladay & Schwartz, 2010).

gresse avec la modélisation des inondations et la technologie satellite aide maintenant les assureurs à mieux évaluer le coût du risque. Ces données plus détaillées aboutissent inévitablement à une dispersion plus grande des primes, et crée des gagnants et des perdants. Certains pays autorisent le marché à évaluer le risque d'inondation. D'autres préfèrent un modèle de solidarité ou de mutualité pour les désastres naturels.

Beaucoup d'innovations financières se développent si rapidement qu'il y a eu peu de débat public sur leurs effets sociétaux. Par exemple, les crypto-monnaies résolvent un important problème en facilitant un transfert sûr de valeur ou de propriété entre les parties sans avoir besoin d'intermédiaires. Elles pourraient baisser les coûts pour de petites entreprises et les transferts de fonds. Cependant, comme les utilisateurs ne sont pas soumis à une vérifi-

arbitrarily treat genetic information as different to more observable forms of medical information, such as a person's cholesterol level, so that underwriters can consider one type of data but not the other. Even within countries, there are often significant variations in laws between regions. The World Economic Forum (2015) has noted that the greatest impact of technological disruption in finance is likely to be felt in the insurance sector. The ethics of insurance are unlikely to be settled soon.

The frontiers of financial technology

Financial innovation has been integral to the development of modern life. During the Song Dynasty in China, the invention of paper money provided a way to efficiently transport value across great distances. The growth of finance in Europe in the late 1600s was essential for the Industrial Revolution. Government bond markets have helped to finance wars from medieval Europe, to the American Revolution and beyond (Goetzmann & Rouwenhorst, 2007).

Today, financial services remain surprisingly expensive – in fact, the unit cost of financial intermediation in the US has not fallen for the past 130 years. This helps to explain the emergence of new entrants (Philippon, 2016). Large and unwieldy financial institutions are primed for modernisation. Mobile-money systems like M-Pesa have brought financial inclusion to the 'bottom of the pyramid' in Kenya,

Tanzania, Afghanistan, and India. In developed nations, peer-to-peer (P2P) lenders and insurers are disintermediating traditional markets. Cryptocurrencies – new forms of digital currency based on 'distributed ledger' (blockchain) technology – promise to do away with high-cost incumbents altogether. But many of these innovations are taking hold so rapidly that there has been little public scrutiny of their effects on society.

Take cryptocurrencies, for example. By facilitating the safe transfer of value or ownership between parties without the need for middlemen or trusted intermediaries (i.e. banks, credit card companies, payment companies etc.), they solve an important societal problem (Blundell-Wignall, 2014). Distributed ledgers are resistant to tampering and inherently difficult to hack. There is typically no central authority charged with creating units of cryptocurrency or verifying transactions. Because cryptocurrency transactions are cheaper and quicker than traditional payment methods, they could help to lower costs for small businesses and alleviate poverty by facilitating instantaneous, inexpensive remittances or micropayments (Brito & Castillo, 2013). Researchers are now investigating the use of the underlying blockchain technology for managing healthcare records, land title registries, supply chains, aid delivery, and even electronic voting.

A crucial feature of cryptocurrencies like Bitcoin is their

cation d'identité, les crypto-monnaies ont été associées au crime et au terrorisme. Les crypto-monnaies de nouvelle génération permettent de faire des « contrats intelligents » directement exécutables. Ceux-ci peuvent faciliter une gamme plus large de crimes comme le kidnapping ou l'assassinat.

Tout indique que le commerce algorithmique améliore la liquidité du marché et la recherche du prix efficient.

Cependant, les ordinateurs peuvent traiter des quantités énormes d'informations à grande vitesse, désavantageant ainsi potentiellement les investisseurs ordinaires. De plus, les sociétés de trading à haute fréquence sont connues pour payer des infrastructures chères ou un accès prioritaire aux données afin d'élargir leur avantage informationnel sur d'autres investisseurs.

provision of *pseudonymity*: while transactions are visible, the 'public keys' associated with transactions are not tied to real-world identities. No personal information is required to create an account on the Bitcoin platform. Bitcoins have consequently been used to purchase illicit goods online, most notoriously through the 'Silk Road' electronic black market. Supporters of Islamic State of Iraq and Syria (ISIS) and other terrorist organisations are actively promoting the use of Bitcoin to mitigate the risks associated with traditional funds transfer methods (Irwin & Milad, 2016). Next-generation cryptocurrencies like Ethereum offer even richer functionality. They support 'smart contracts', self-enforcing computerised contracts² that could enable a wider range of new crimes, like kidnapping or assassination. A person with malicious intent could theoretically set up a smart contract to pay for a criminal act to be committed and walk away, allowing the contract to self-execute once it determines that the crime has been carried out (Juels, Kosba & Shi, 2016).

2 The critical distinction between smart contracts and other forms of electronic agreement is enforcement. The computers in the blockchain network ensure performance of the contract, rather than any government authority. Sometimes a smart contract may need to refer to facts in the world – such as when a contract pays out if a stock exceeds a certain price on a certain date. In this case, the ability to read an external data feed and verify contractual performance must be coded into the smart contract from the outset. See: Werbach & Cornell, 2017.

The blockchain's distributed trust structure is what facilitates smart contracts between unknown and untrusted counterparties.

Algorithms in finance

More broadly, consider the employment of algorithms in finance. There is good evidence that algorithmic trading – the use of computers to automate certain trading decisions – improves market liquidity and efficient price discovery (Hendershott, Jones & Menkveld, 2011). Recent years have seen the emergence of a new form of algorithmic trading: high-frequency trading. The US Securities and Exchange Commission (2010) notes that the speed of financial markets trading has increased to the point that the fastest traders now measure their latencies in microseconds. Computers are able to process vast amounts of information at superhuman speed, potentially putting ordinary investors at a disadvantage. In addition, high-frequency trading firms go to great lengths to be faster than their competitors – by co-locating their computer servers with those of exchanges, buying access to expensive telecommunications infrastructure (like the subsea cables mentioned in this paper's introduction), and even paying for early receipt of market-moving data (Mullins et al., 2013) – seemingly doing away with any pretense of a level playing field. The social welfare benefits of this high-priced technological arms race are dubious.

Can algorithms make human decision-making fairer?

Les algorithmes de notation en matière de crédit sont déjà utilisés par les prêteurs pour déterminer quels clients devraient recevoir une carte de crédit ou une hypothèque. Souvent, le fait de déléguer ces décisions à un ordinateur peut permettre de corriger les biais dans la prise de décision humaine. Toutefois, les algorithmes d'apprentissage-machine contiennent des biais humains préexistants. Comme ces algorithmes sont des secrets commerciaux, il existe peu de moyens pour remédier aux biais. Nous devons commencer à penser comment ces technologies sont appliquées pour s'assurer qu'elles ne renforcent pas les préjugés existants ou ne facilitent pas la violation des lois.

When an algorithm gets things wrong, who is responsible? Credit-scoring algorithms are already used by lenders to determine which customers should receive a credit card or mortgage. In many cases, these systems can help to correct inevitable biases in human decision-making. Most of today's automated credit decisions rely on 'traditional' data inputs, such as disclosure of a prospective borrower's income and assets. Yet the use of such data means that certain minority groups – like the recently widowed or divorced, or new immigrants – are often invisible to the mainstream credit system. They may be forced to resort to high-cost products that do not help them to build a credit history (Bureau of Consumer Financial Protection, 2017).

Here, innovative companies offer a promising path to financial inclusion. Fintech lenders have emerged that assess credit by mining all sorts of alternative consumer data, from mobile phone usage and social media footprints to Web search and e-commerce histories. But machine-learning algorithms could unwittingly internalise pre-existing biases – as is the case in advertising, where it has been discovered that a search on Google for the term 'CEO' returns images almost exclusively of white men, and delivers far fewer advertisements for high-paying

executive jobs to women than to men (Walport, 2017). Similarly, underwriting algorithms that factor in where a potential borrower attended college may tend to exacerbate socioeconomic stratification, and those that use measures of residential stability to predict creditworthiness may unfairly discriminate against members of the military (Crosman, 2017).

In insurance underwriting, some types of data may correlate with or act as a partial proxy for race (e.g. where a consumer lives, or what type of food he/she purchases). Using such data for underwriting may be statistically valid but run contrary to anti-discrimination laws (Actuaries Institute, 2016). But because most algorithms are jealously-guarded commercial secrets, the lack of transparency – as well as the lack of avenues for review and redress – makes counteracting bias difficult.

Advocates of novel inventions sometimes argue that while a technology itself may be morally neutral, policies must still be designed to limit the harm they can do (Extance, 2015). In a democratic society, it is chilling to think that algorithms that purport to offer objectivity might simply be holding a harsh mirror to the flaws that we, as humans, like to overlook. We need to start thinking about how these technologies are applied if we are to ensure that they do not reinforce existing prejudices or enable the breaking of laws.

Les futurs dirigeants doivent être préparés à partager les préoccupations légitimes du public sur la vie privée, la responsabilité, l'inégalité. En même temps, ce n'est pas à la régulation d'empêcher des manquements éthiques.

Le secteur privé devrait être prêt à prendre l'initiative en développant des protocoles qui minimisent le risque de conséquences imprévues, et en fournissant aux communautés les moyens d'accéder et de rectifier les données. Les prochains grands fournisseurs de services financiers pourraient bien être des entreprises de technologies comme Facebook, Google, et Apple. Les sociétés feront face à un nouvel ensemble de questions éthiques, par exemple comment utiliser les données présentes sur les réseaux sociaux de façon à promouvoir l'accès à la finance, sans violer la vie privée.

Engage with legitimate public concerns

So what lessons can be surmised for tomorrow's leaders of the financial industry? I offer a handful here.

Future leaders must be prepared to engage with legitimate public worries over privacy, accountability, and inequality. The financial industry has often used its money and political power to hijack the regulatory reform debate, and financiers and regulators have lived and worked in the same echo chamber (Foroohar, 2017). The success of financial innovations is often measured by short-term *efficiency* criteria such as lower transaction costs and expansion of corporate profits. These criteria may be used to retrospectively legitimate an innovation, while negative externalities are glossed over (O'Brien, 2017). As Rodrik (2017) argues, the mistake of many economists and policy technocrats has been their unwillingness to confront serious normative fairness considerations that do not fit neatly with theories of efficiency. Just as the public has grown increasingly concerned about the impact of technology-driven disruption on jobs, so too will public debate be necessary as new financial technologies come to the fore.

At the same time, it cannot fall to regulation to contain ethical failures. The bureaucratic process is, by its nature, cumbersome and regulators will inevitably struggle to keep up

with a changing industry. Instead, companies must develop protocols to extensively test new products and services to minimise the risk of unintended consequences. Human executives must ultimately be held accountable for decisions made with the aid of computerised systems. As a recent White House report noted, companies should consider providing individuals and communities with the means to access and correct data, and promulgate industry best practices for the fair and ethical use of 'big data' techniques (Executive Office of the President, 2016).

Finance industry leaders will need to become well-versed in mobile and computer technology. As Bill Gates, the then-Chairman of Microsoft, quipped in 1994, banking is necessary but banks are not. The next big providers of financial services may well be technology firms like Facebook, Google, and Apple. Financial leaders at these firms will face a new set of ethical issues, not the least of which is the question of how vast troves of social data might be 'mined' to expand access to finance without violating society's standards of privacy. In addition, technology may widen the informational gap between providers and customers. For instance, health insurers might soon know more about a consumer's health than that consumer. Even where the law is successful in creating what appears to be a level playing field, markets in reality tend to be defined by asymmetric information. Ethics

Il est possible pour des personnes soucieuses d'éthique de parvenir à des conclusions très différentes sur le même problème. Par exemple, certains investisseurs ont choisi de faire face au changement climatique en se désengageant des actifs liés aux combustibles fossiles; d'autres ont choisi l'activisme actionnarial pour exiger un changement de l'intérieur des entreprises. Il faut reconnaître que les analyses conventionnelles coûts-bénéfices sont inadéquates si elles oublient d'importantes parties prenantes ou négligent des effets distributionnels plus larges. La technologie ne devrait pas être invoquée pour fournir des solutions soi-disant objectives à des problèmes qui concernent vraiment des valeurs sociétales. En conclusion, la finance demeure essentielle, et de nouvelles technologies peuvent aider à en démocratiser l'accès.

should reject the old *caveat emptor* as a regulatory fallback and ethical providers must devise new ways of helping consumers to understand their rights and obligations.

Concluding remarks

It should be remembered that it is possible for ethical people to come to wildly varying conclusions on the same issue. For instance, in 2015, Norway's parliament voted to require its government pension fund – the largest sovereign wealth fund in the world – to divest from companies involved in the coal industry, following the lead of other prominent institutional investors including AXA and the Church of England (Schwartz, 2015). Proponents of fossil fuel divestment often frame their position in stark moral terms: a “moral obligation”, as Valerie Rockefeller Wayne, the chair of Rockefeller Brothers Fund, puts it (Goldenberg, 2015). But opponents of divestment activism, like climate researcher David Oxtoby, view divestment actions as little more than symbolic “feel-good measures that have no effect on actual greenhouse-gas production” (Oxtoby, 2014). In 2017, three of the world's largest investment managers – BlackRock, Vanguard, and State Street Global Advisers – took an entirely different approach. They supported a shareholder resolution demanding that ExxonMobil, the world's largest publicly-traded oil and gas company, report on the impact of global measures designed

to limit climate change to two degrees Celsius. Here, two groups of influential investors reached diametrically different conclusions on how to tackle the same moral challenge: climate change.

Finally, it must be recognised that conventional cost-benefit analyses of new products and services may no longer be adequate insofar as they miss important stakeholders and neglect broader distributional effects. For instance, a utilitarian analysis of incorporating more granular data into insurance underwriting processes might suggest that more data is always better. But concerns about equity cannot be pushed to the background. The implicit system of cross-subsidies in many insurance markets is not simply a pricing inefficiency – it is also a contributor to social cohesion. Important social policy questions can rarely be reduced to a set of numbers. Technology should not be invoked to provide supposedly objective solutions to problems that are really about societal values. This may be an uncomfortable proposition for an industry built on ever-greater quantification.

At its core, the financial sector is a place where people with ideas can meet people with money, where buyers can meet sellers, where individuals can borrow against their future income to meet present needs, and where people bearing risks can meet others willing to take on some or all of those risks (Peirce, 2014). Finance remains essential. But our

Il est important que les jeunes professionnels aient la créativité et la latitude de réfléchir sérieusement aux problèmes éthiques quand ils apparaissent.

sclerotic industry is in desperate need of an overhaul, with new business models to loosen the grip of incumbents and restore trust in the eyes of consumers. New technologies may help to democratise access to financial services and improve the functioning of modern economies.

Like most things in life, ethics aren't static. What is most important is that young finance professionals have the creativity and latitude to think deeply about ethical issues as they emerge. It falls to our generation to make this happen.

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