

EXTREME WEALTH IS NOT MERITED



DIDIER JACOBS

Senior Economist, Oxfam America

Oxfam Discussion Papers

Oxfam Discussion Papers are written to contribute to public debate and to invite feedback on development and humanitarian policy issues. They are 'work in progress' documents, and do not necessarily constitute final publications or reflect Oxfam policy positions. The views and recommendations expressed are those of the author and not necessarily those of Oxfam.

For more information, or to comment on this paper, email djacobs@oxfamamerica.org.

CONTENTS

Summary	3
1 Introduction.....	3
2 Crime	8
3 Cronyism	9
4 Inheritance	14
5 Monopoly	17
Asymmetries of information	20
Network externalities	23
Intellectual property	24
Vendor lock-in	25
6 Globalization	26
7 Technology	28
Conclusion.....	32
Appendix: Intellectual property.....	39
Notes	43

SUMMARY

Extreme wealth evokes images of both deserving entrepreneurs and fat cats. This paper parses them out both theoretically and empirically and makes the ethical case against extreme wealth from the perspective of meritocracy. It reviews several sources of extreme wealth through an analytical framework dubbed ‘the ladder of demerit.’ The six rungs of the ladder—from higher to lower—consist of crime, cronyism, inheritance, monopoly, globalization, and technology. The higher rungs are clearly not meritocratic. The lower ones reward talented people multiple times what can be justified based on merit. Empirical evidence, drawn largely from *Forbes’* list of billionaires, provides a tentative indication of the relative importance of each rung. Fifty percent of the world’s billionaire wealth is found to be non-meritocratic owing to either inheritance or a high presumption of cronyism. Another 15 percent is not meritocratic owing to presumption of monopoly. All of it is non-meritocratic owing to globalization. By contrast, crime and technology are found to be negligible sources of extreme wealth.

1 INTRODUCTION

At the occasion of the annual World Economic Forum meeting in Davos, Switzerland, in January 2014, Oxfam released the report *Working for the Few* with a factoid that went viral: The world’s 85 richest individuals have a combined wealth equal to that of the poorest half of humanity (about 3.5 billion people).¹ A year on, that figure had become 80.²

But what’s wrong with extreme wealth anyway? Not everyone has the gut feeling that it can’t be right for 80 people to have the same net ‘worth’ as 3.5 billion people.³ Rich people create wealth and jobs for others, they argue. Redistributing that wealth would destroy it and harm the poor.

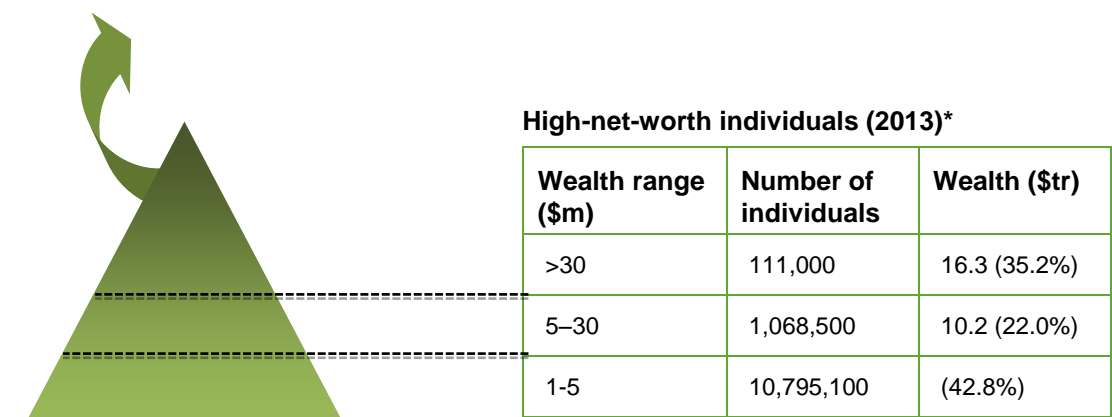
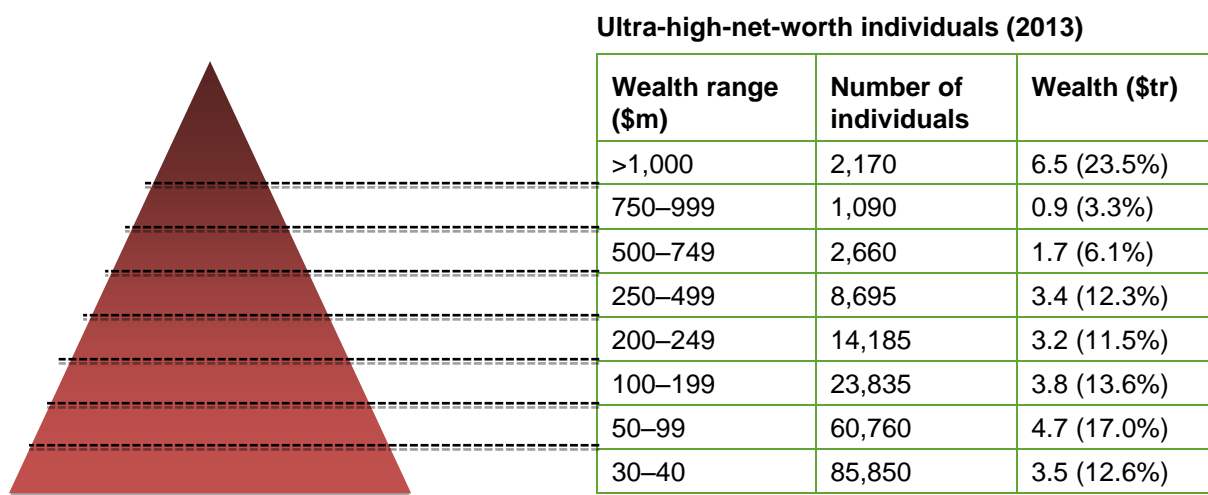
To the contrary, many economists, such as Nobel laureate Joseph Stiglitz (an Oxfam honorary adviser), have argued that extreme wealth is largely driven by ‘rent-seeking’ and is therefore both unfair and unproductive.⁴ If they are right, extreme wealth could be one cause of poverty, to the extent that rent-seeking activities transfer wealth from poor to rich. Taxing extreme wealth could also be one solution to poverty: inequality is so extreme that Oxfam has estimated that a tax of 1.5 percent on the wealth of the world’s billionaires could fill the annual gaps in funding needed to get every child into primary school and deliver basic health services for all in the 49 poorest countries.⁵

Disagreeing with Stiglitz are economists such as Harvard University Professor Gregory Mankiw who ‘defend the 1 percent’. These economists recognize that rent-seeking can yield unfair inequalities yet claim that only anecdotal evidence supports the view that rent-seeking is a major driver of inequality, at least in the US context.⁶ To the extent that rent-seeking does occur, in the financial industry for instance, Mankiw writes that the proper response is to address the activity at the source—through better governance and market regulation—rather than by tackling the symptom of inequality through taxation, which he says could discourage effort and risk-taking.

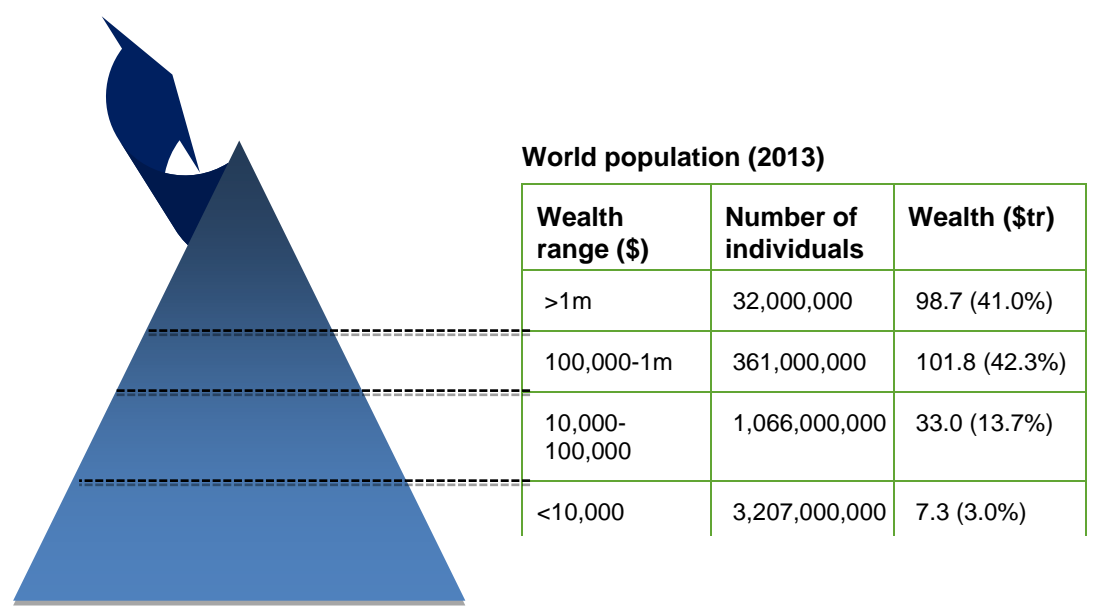
To sharpen this debate, the rights and wrongs of extreme wealth can be assessed in two steps.

The first step is to ask: What is a fair income or wealth distribution? This question is philosophical; it is a matter of core values and beliefs, and reasonable people can disagree about it.

Figure 1: The world's wealth pyramid



* Investible wealth only (excluding primary residence and in-kind wealth)



Sources: *Wealth-X* and *UBS*. 2013. 'Wealth-X and UBS World Ultra Wealth Report 2013.' <http://www.wealthx.com/wealthxubswealthreport/>. *Capgemini*. 2013. 'World Wealth Report 2013.' http://www.capgemini.com/resource-file-access/resource/pdf/wwr_2013_0.pdf. *Credit Suisse*. 2013. 'Global Wealth Report 2013.' <https://publications.credit-suisse.com/tasks/render/file/?fileID=BCDB1364-A105-0560-1332EC9100FF5C83>. Note that these three sources and tables use different methods.

Box 1: Definitions

In this paper, *extreme wealth* is defined as owning more than a billion dollars net of debt. It is an arbitrary cut-off, chosen solely because of data availability (Box 2). We are talking about the tip of the tip of the tip of the wealth pyramid (Figure 1). Following the convention of wealth management firms, *ultra-wealth* refers to individuals owning more than \$30 million net of debt—known as *ultra-high-net-worth individuals*, or *ultra-HNWI*.

A *rent* is windfall income that does not compensate productive activities; an example would be discovering oil under your land. In technical terms, economists define *rent* as the difference between what people are paid and what they would have to be paid for the inputs of production (labour, capital, land) to remain in their current use. For instance, the increase in the price of your land resulting from the oil discovery, reflecting the higher value that oil companies are ready to pay for it compared with what farmers currently working the land can pay, is a *rent*. *Rent-seeking* means capturing income and wealth that one did not produce, such as lobbying the government to obtain privileges like a license to extract mineral resources.

Over the past centuries, political philosophers have developed a number of social justice theories (also called ‘distributional justice theories’) to justify certain distributions of income or wealth.⁷ The main ones are the following:

- Marxism: Income or wealth should be distributed based on needs, in order to free workers from exploitation.
- Utilitarianism: The total welfare of society should be maximized, regardless of distribution. This theory could justify redistribution to the extent that the amount of well-being that an individual derives from an additional dollar declines as his or her wealth increases; for instance, people tend to derive less utility from their second car than from their first.
- Egalitarian liberalism: Economic inequality should exist only to the extent that it maximizes the well-being of the poorest, because that is the solution that free individuals would choose if they did not know where the lottery of birth would place them in society.
- Libertarianism: Any distribution of income or wealth is acceptable, as long as it is the result of consensual exchanges, because individuals are free.

Mankiw adheres instead to a common-sense theory of just deserts: ‘people should get what they deserve. A person who contributes more to society deserves a higher income that reflects those greater contributions.’ As Mankiw explains:

I am drawn to this approach in part by reflecting on some of the public anger that we see over some very high incomes. My sense is that people are rarely outraged when high incomes go to those who obviously earned them. When we see Steven Spielberg make blockbuster movies, Steve Jobs introduce the iPod, David Letterman crack funny jokes, and J.K. Rowling excite countless young readers with her Harry Potter books, we don’t object to the many millions of dollars they earn in the process. The high incomes that generate anger are those that come from manipulating the system. The CEO who pads the corporate board with his cronies and the banker whose firm survives only by virtue of a government bailout do not seem to deserve their multimillion dollar bonuses. The public perceives them (correctly or incorrectly) as getting more than they contributed to society.⁸

This conception of social justice—rewarding contributions to society—is also known as *meritocracy*. An alternative definition of *meritocracy* is rewarding people according to their effort, talent, and risk-taking. Although these alternative definitions often go together, they do not always. Both definitions are used in this paper; they will be distinguished as appropriate.

Almost every defence of extreme wealth is based on an argument of meritocracy. This paper focuses on the internal strength of this argument. It would be much easier to argue against extreme wealth on the basis of other philosophical approaches to moral value such as utilitarianism, egalitarian liberalism, or Marxism. Although Oxfam does not have an official position on which of these philosophical schools of thought it supports, Oxfam consistently advocates for a society that is constructed with the interests of the poorest and the most marginalized at its heart, which would suggest a preference for egalitarian liberalism. Certainly by exploring the internal strength of meritocracy as a defence of extreme wealth, this paper is in no way endorsing meritocracy as the primary source of moral value.

Meritocracy's scholarly tradition is rather less developed than its counterparts. Many philosophers dismiss meritocracy as 'popular opinion'.⁹ The late Robert Nozick and John Rawls, both professors at Harvard University and the gurus of libertarianism and egalitarian liberalism, respectively, both make the point that merit is a weak concept. The latter argues that talent is largely genetically or socially inherited. If inheriting wealth is not meritocratic, then why would inheritance of the talents that produce wealth be any different? Even effort is at least in part driven by forces outside one's control: it is easier for a gifted person living in a supportive environment with access to great opportunities to cultivate their talent through hard work than for others to do so. Rawls proposes two alternative conclusions from this observation: either one holds that effort is completely determined and thus there is no basis for meritocracy whatsoever, or one accepts that individuals are at least partially responsible for their effort, in which case merit makes sense in theory, but is of little use in practice as it is impossible to separate the genetically or socially inherited determinants of effort from effort driven by free will. A long-time defender of meritocracy, *The Economist* magazine acknowledges in a recent cover story that intellectual capital—the driver of the knowledge economy—is largely socially inherited in America.¹⁰

This paper makes a concession to the defenders of extreme wealth by leaving that debate aside and taking meritocracy at face value. This is because if a convincing case against extreme wealth could be made on the basis of meritocracy, libertarianism would become the last rational refuge for the defenders of extreme wealth. They would also lose a powerful public message, for Mankiw is right that meritocracy does have some popular appeal.

Another concession to the defenders of extreme wealth made by this paper is that it only discusses the rights and wrongs of the causes of extreme wealth. Even if the defenders of extreme wealth were right that its sources are deserved, one could still argue against extreme wealth from the perspective of the consequences that it has on society. Harnessing evidence from multiple sources, Oxfam has argued that extreme inequality impedes poverty alleviation, slows economic growth, compounds gender inequality, drives inequality in health and education outcomes, undermines economic mobility over generations, fuels crime, undermines social cohesion, and harms democracy.¹¹

Thus, having conceded purely for the sake of this paper that meritocracy is the sole yardstick to assess the rights and wrongs of extreme wealth, the second step of the analysis is: Is extreme wealth meritocratic? Considering that our societies are market economies, another way to put the question is: Do markets adequately compensate top talent, effort, and risk-taking? Or is extreme wealth the result of rent-seeking? That is a question for economics and political science, as Mankiw notes, which can be debated based on evidence, and that is the question addressed in this paper. A straw poll at Davos this year revealed that participants believed 8-to-1 that rich people are creators of wealth more than predators.¹² Are they right?

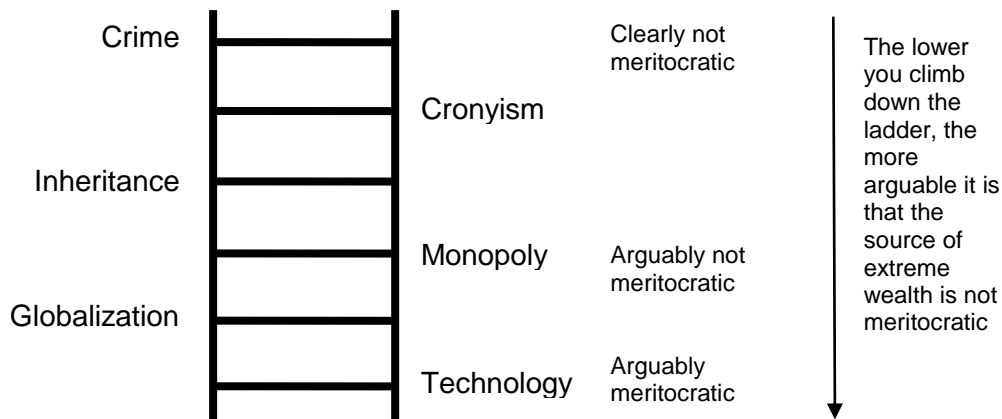
Market pay does generally reflect talent, effort, and risk-taking—but not at the extremes. For all the imperfections of our market economies and of the government policies that underpin them, middle-class people are roughly compensated on merit: an architect who is marginally better than another is likely to earn marginally more, and likewise for most professions and trades. However, that is not true for people living in poverty. Oxfam has an intimate experience of 'poverty traps,' i.e., the social, economic, and political forces that keep people in poverty despite

their hard work and natural talent, such as lack of access to basic education and health care, to credit, or to markets; discriminatory laws; poor enforcement of property rights; and so forth. This paper argues that the relationship between merit and market pay also fails to hold for extremely rich people: there are ‘wealth traps.’

In the *Billionaire’s Apprentice*, Charles Merlot recounts the achievements of 21 billionaires who lived in the 20th century. He concludes that they were or are ‘ordinary men and women who have achieved incredible success through hard work, determination, luck, and risk’.¹³

That assessment is correct, but incomplete. Beyond personalities, the accumulation of extreme wealth is enabled by a series of social, economic, and political phenomena. This paper argues that markets and the government policies that underpin them fail to properly compensate talent, effort, and risk-taking at the top extreme: they compensate them too much. The following sections present a systematic inventory of highly lucrative activities and shows that they all involve rents. Six categories of rents are identified, and collectively called the ‘ladder of demerit’ (Figure 2). The lower you go on the ladder, the more arguable it is that extreme wealth is indeed not meritocratic (in terms of contribution to society)—and that is a debate our society ought to have.

Figure 2: The ladder of demerit



Each of the following sections of this paper first describes what each source of extreme wealth is and discusses the extent to which it is not meritocratic. Then it makes a first, rough attempt at quantifying its importance relative to total extreme wealth, using *Forbes’* list of billionaires as a data source.

Box 2. Data and its limitations

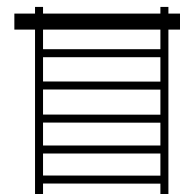
Since 1987, *Forbes* magazine has published a list of billionaires. The list is now updated continually. This paper uses figures from February 2014, counting 1,645 individuals with a total net worth of \$6.4 trillion, or about 2.7 percent of the estimated global wealth. The data set (available at <http://www.forbes.com/billionaires/list/>) includes estimated net worth, nationality, city of residence, source of wealth, self-made or inherited wealth, and a brief descriptor. The estimation of net worth is largely based on publicly available data. However, many (though not all) billionaires cooperate with *Forbes* to fill data gaps.¹⁴

The major strength of *Forbes*' data is that it covers the whole world, unlike wealth or estate tax data that does not exist in countries that do not raise such taxes or that do not publish the data.

Forbes' data has two limitations, however. First, it underestimates the number of billionaires and hence total billionaire wealth. Billionaires do not have to report their wealth to *Forbes* as they do to tax authorities. *Forbes* painstakingly researches individuals susceptible to be billionaires mainly by identifying owners of large companies. Inevitably, some individuals escape its scrutiny. An alternative census of billionaires carried out by wealth management firms Wealth-X and UBS reports 2,170 billionaires in 2013 and 2,325 in 2014, with total wealth of respectively \$6.5 trillion and \$7.3 trillion,¹⁵ which are higher figures than those of *Forbes*. However, billionaire wealth is volatile (though clearly trending upward), reflecting daily stock market valuations, so censuses published at different dates, even within the same year, may yield significant differences. Despite these factors, the distribution of billionaire wealth along various demographic variables reported by *Wealth-X* and *UBS* is quite consistent with *Forbes*' data, such that this paper's findings are robust. *Wealth-X* and *UBS* only report aggregate data, making it unsuitable for the billionaire-by-billionaire analysis carried out for this paper.

The second limitation of *Forbes* data is that it pertains only to billionaires, who account for a mere 0.00002 percent of the world's population. The public debate that this paper seeks to generate should hopefully induce wealth managers to report more disaggregated data for all strata of high-net-worth individuals, while respecting the privacy of their clients.

2 CRIME



There are many ways to make a lot of money through illegal means: from robbery to racketeering and trafficking of drugs, weapons, slaves, counterfeited goods, or stolen art, to white-collar financial crimes such as fraud, embezzlement, tax evasion, bribery, price-fixing, intellectual property theft, or insider trading.

It takes talent, effort, and certainly an appetite for risk to be a successful thief. Nevertheless, crime represents a negative contribution to humanity. Asserting that crime is the least deserved source of wealth is not controversial.

It is hard to assess empirically the importance of crime as a source of wealth because criminals obviously hide their wealth.

Drug trafficking is notoriously the most lucrative criminal activity. *Forbes* estimated the net worth of the Mexican Joaquin 'El Chapo' Guzman Loera, who recently broke out from jail, at \$1 billion from 2009 to 2012.¹⁶ A handful of other drug lords made it to *Forbes*' rich list in the late 1980s and early 1990s.¹⁷ The richest one was Pablo Escobar of the Medellin Cartel, valued at \$3

billion and shot in 1993. There are no other billionaires who made their fortune through violent crime on *Forbes*' list.

Forbes has written about billionaires convicted¹⁸ or who have spent jail time¹⁹ for financial crimes. There are a dozen of these billionaires alive today, with net worth ranging from \$1.6 billion to \$9 billion. However, all but one appear to have made their fortune through legitimate means before running afoul of the law for tax evasion, fraud, embezzlement, price-fixing, or insider trading. The exception is Allen Stanford, who is serving a 110-year jail sentence for a \$7 billion Ponzi scheme. Note that villains of other famous financial scandals, like Bernie Madoff, Enron's Ken Lay and Jeffrey Skilling, or WorldCom's Bernie Ebbers, were not billionaires. Table 1 lists billionaires who are still alive and who made their fortune primarily through a crime for which they were convicted.

Table 1. Hall of Shame: Criminal billionaires*

Criminal	Wealth source/Crime	Wealth	Year
R. Allen Stanford	Fraud (Ponzi scheme)	\$2 billion	2008
Jorge Luis, Juan David, and Fabio Ochoa-Vasquez	Drug trafficking	\$2 billion	1987
Joaquin Guzman-Loera	Drug trafficking	\$1 billion	2009–12

* Included are people who were once billionaires, are still alive, made their fortune mainly from criminal activity, and were convicted.

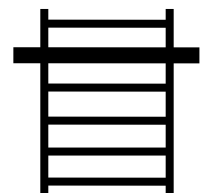
Source: Author's compilation based on data from *Forbes*.

While appalling, these figures are paltry relative to the combined \$6.4 trillion of wealth of the 1,645 billionaires on *Forbes*' list. Of course, they do not reflect crimes that have yet to surface. However, crimes worth more than a billion dollars do not easily go unnoticed, except perhaps if they benefit from state protection (see section 3: Cronyism). Drug lords tend to be notorious even if hard to catch; Ponzi schemes eventually collapse. An internet search produces only a couple of names of alleged billionaire criminals alive and at large. Even if some billionaires were found to have derived their wealth from crime, the record shows that it would represent only a negligible proportion of billionaires' wealth in any given year.

There must surely be significantly more criminals with ultra-high net worth, but the pool of legitimate ultra-high-net-worth individuals is also much bigger. So it is not clear whether crime is a significant source of ultra-wealth below the billion-dollar threshold.

In conclusion, crime is clearly not meritocratic; however, despite limited data, it does not appear to be a significant source of extreme wealth.

3 CRONYISM



Cronyism exists when elites use personal influence to leverage the power of the state for private gain. Government officials and businesspeople collude to rig the rules for their mutual benefit and at the expense of consumers, taxpayers, and businesses that lack the proper connections.

Cronyism is clearly not meritocratic—indeed, it is often defined in opposition to meritocracy: rewarding allegiance instead of merit. Like crime, it represents a negative contribution to society.²⁰ Cronyism is lower in the ladder of demerit than crime because it is not always illegal, and its soft form—lobbying—not always harmful.

Undoubtedly, some cronyism is crime that remains unpunished for a variety of reasons:

- Law enforcement officials may themselves be criminals, for instance by taking bribes, embezzling public funds, or engaging in business activities with conflicted interests.
- Law enforcement officials may refrain from prosecuting crime out of fear for their lives or careers. For the same reason, they may also be overzealous in prosecuting cronies' competitors or cronies falling out of favor.
- Law enforcement officials may simply lack the capacity to prosecute crime, considering that fighting sophisticated financial crime requires significant resources. They may also lack capacity to defend the state's interests in its transactions with the private sector, considering that certain transactions require sophisticated analysis (e.g., setting the right price for privatized companies or telecommunication licenses).
- Laws might exist but have punishments insufficient to deter crime, in the interest of elites. For instance, price-fixing was regarded as little more than 'going five miles over the speed limit' in the United States until the 1990s.²¹ By contrast, the US attorney general has recently declared that 'no bank is too big to jail' when it comes to facilitating tax evasion.²² Both examples show that financial crime is taken more seriously than in earlier years in the United States, but it has not always been the case and is still not the case in many countries.

Rather than breaking the law, softer forms of cronyism involve tailoring them to private interests through lobbying, funding political campaigns, careers with revolving doors between the private sector and civil service, politicization of the civil service, politicization of the media, or private sector funding of research and media to influence the political agenda and policy options. Family or friendship ties among business and political elites also buy influence.²³

The corporate income tax is one example of a law that is riddled with loopholes allowing big businesses to avoid paying taxes in full thanks to aggressive tax planning. While some of these loopholes are intended to benefit big business in order to attract more investment in the country, others may initially be unintentional but are hard to close given pressure from big business.

There are many other ways in which public policy can be used to pursue private interests at the expense of the general public: special tax exemptions; public subsidies; government procurement; regulation limiting competition (e.g., stringent licensing requirements, import tariffs); regulation limiting consumer, labor, or environmental protection; and lax law enforcement (e.g., defunding regulatory agencies, low penalties).

Lobbying for the public interest is of course essential to democracy. Lobbying becomes cronyism when it pursues private interests. However, this distinction is often hard to make. Private sector lobbyists usually proclaim that their positions are in the public interest. Although their arguments are tainted by conflict of interests, they are not always wrong. Moreover, lobbying is increasingly regulated and transparent in democracies, and public interest groups can oppose private sector lobbyists.

Nevertheless, the fight is vastly unequal. Precisely because influencing public policy is hugely lucrative, the private sector deploys an overwhelming lobbying and public relations arsenal. Add weak democratic institutions like unlimited campaign finance or gerrymandering, and it is very hard for public interest groups to compete. Corporate Europe Observatory estimates that the financial industry deploys 1,600 staff and spends \$150 million a year to lobby European institutions, compared with less than 100 staff and \$3 million dedicated by NGOs, trade unions, and consumer groups to financial issues.²⁴ In the United States, too, consumer groups defending the financial reform passed after the 2008 crisis were outgunned by the financial industry by a ratio of 20-to-1.²⁵ A recent study finds that, in the United States, average citizens have no influence over public policy at all, but interest groups and affluent citizens do.²⁶ When a majority of citizens disagrees with economic elites or with organized interests, they generally lose. Moreover, because of the strong status quo bias built into the US political system, even when fairly large majorities of Americans favour policy change, they often do not get it.

How important is cronyism as a source of extreme wealth? It has been determinant in some developing countries. Some states are kleptocracies, where natural resources wealth is syphoned off by the elites controlling government. When the president of a poor country with poor governance becomes a billionaire during his mandate, cronyism is obvious. In a nod to meritocracy, *Forbes* does not include dictators in its list of billionaires, but it has published separate articles about some kleptocrats.²⁷

Although heads of states raiding treasuries is an extreme form of cronyism, it is not the only one. Oxfam's report *Working for the Few* provides a series of examples of cronyism in both developed and developing countries: financial deregulation in the United States, austerity in Europe, rent-seeking in India, tax avoidance in Pakistan, monopolies in Mexico, corruption in Africa.²⁸ Darrell West's 2014 book *Billionaires: Reflections on the Upper Crust* documents the political activism of selected billionaires, and the type of influence that such activism buys.²⁹ Cronyism is a vicious circle, where growing economic inequality allows elites to capture the politics of their country, which itself generates more inequality.

Allegations of cronyism abound, but how can the phenomenon be verified and quantified? On the one hand, only resource-intensive law enforcement or investigative journalism can expose cronyism involving specific companies or individuals.³⁰ On the other hand, two quantitative approaches can assess the *presumption* of cronyism.

First, the criminal sort of cronyism is expected to be more prevalent in countries with weak governance—indeed, cronyism and poor governance are almost synonymous. Twenty-four percent of the world's billionaire wealth was accumulated in countries where corruption is rife.³¹ Of course, this figure is a measure of presumption of cronyism, not of cronyism itself, as not all of these billionaires are corrupt, while there may be corrupt billionaires in countries less prone to corruption. Moreover, billionaires who fear most that their corruption be exposed are the most likely to hide their wealth and not appear on *Forbes'* list. Last but not least, illegal corruption is the most serious form of cronyism. Measuring presumption of cronyism on the basis of corruption ignores the practice of campaign financing by the private sector in the United States, for instance, which one could describe as institutionalized corruption.

A second approach to measure presumption of cronyism is the one adopted in the cronyism index of *The Economist*,³² which was based on work by researchers Gandhi and Walton.³³ Cronyism is expected to be more prevalent in industries that depend heavily on the state, whether because of privatizations (e.g., utilities, telecom), government procurement (e.g., defence, construction), issuance of licenses (e.g., oil, gas, and mining; telecom; real estate), bailouts (e.g., banking), monetary policy (e.g., banking), heavy regulation, subsidies, trade protection, or exceptional tax breaks. *The Economist* explains that these industries do tend to rate higher in perception of corruption surveys.³⁴

The cronyism index is a ranking of countries by the total wealth of their billionaires who made their fortunes in state-dependent industries as a percentage of gross domestic product (GDP). This index thus measures the presumption of cronyism, as not all billionaires who derive their fortunes from state-dependent industries are cronies, and conversely, some billionaires of industries less dependent on the state may be cronies. *The Economist* discusses limitations of this approach, including the facts that all industries are dependent on the state to some extent, that the degree of state dependency of an industry varies across countries, and that there is a measurement bias as crony billionaires are more likely to elude *Forbes'* research than others.³⁵

It turns out that 33 percent of billionaire wealth was acquired mainly from state-dependent industries.³⁶ There is a marked difference between developing and developed countries in this regard: 56 percent of developing countries' billionaire wealth was accumulated in state-dependent industries, compared with only 21 percent in advanced economies.

The fact that a larger share of developing countries' billionaire wealth derives from state-dependent industries may simply reflect that these industries represent a larger share of

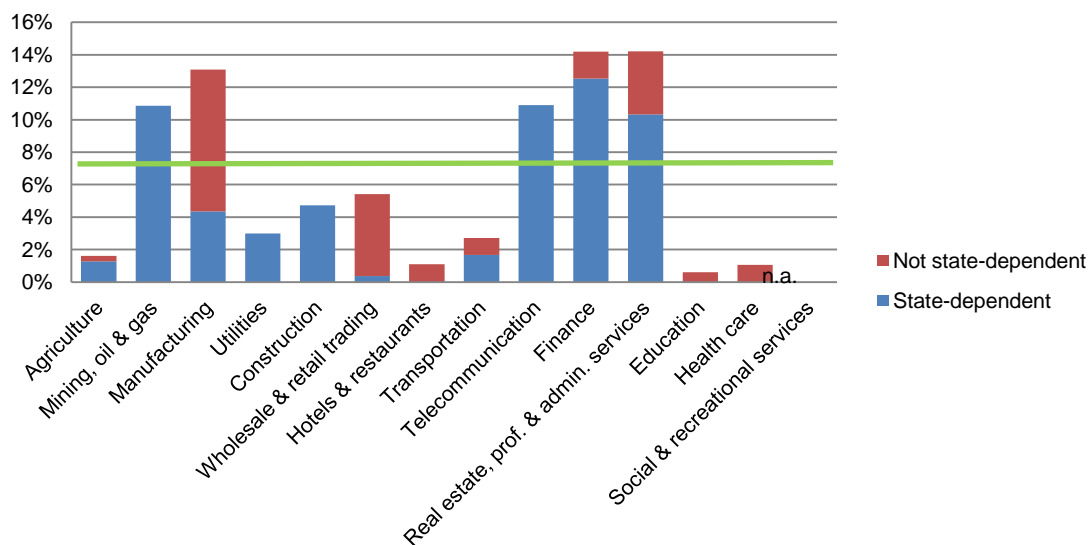
developing countries' GDP, which makes the argument somewhat tautological. The case that cronyism is a significant source of extreme wealth would be stronger if state-dependent industries produced more billionaire wealth relative to their size than other industries. Figure 3 shows that it is indeed the case in developing countries. (Industry size is measured by value added; the sum of value added across all industries equals GDP.)

The green line in Figure 3 represents the average *billionaire intensity* of developing countries (i.e., their aggregate billionaire wealth divided by their aggregate value added or GDP). Each column represents the billionaire intensity of an industry: the higher the column, the more that industry concentrates wealth. The blue section of the columns represents the proportion of billionaire wealth corresponding to state-dependent subindustries, and the red section the proportion of billionaire wealth corresponding to subindustries that are not state-dependent. For example, banking is a state-dependent subindustry of finance, while asset management is a subindustry of finance that is not state-dependent.

Ten industries appear to confirm the hypothesis that dependency of the state is a source of extreme wealth, while only three industries contradict it. There are four 'true positives,' that is, four industries that are dependent upon the state and therefore produce more billionaire wealth than average relative to their sizes (their columns are higher than the green line): mining, oil, and gas; telecommunication; banking; and real estate. There are also six 'true negatives,' i.e., industries that are not dependent upon the state and therefore produce less billionaire wealth than average relative to their sizes: agriculture; trading; hotels and restaurants; transportation; education; and health care. Moreover, the significant level of billionaire wealth produced by the agriculture and transportation industries overwhelmingly derives from their state-dependent subindustries (the blue parts of their columns), namely: palm oil, and timber for agriculture, and pipelines, ports, and airports for transportation. At the same time, there are also a couple of 'false negatives,' i.e., industries that fail to produce above-average billionaire wealth relative to size despite being state dependent: utilities and construction. Although below average, both of them do produce significant amounts of billionaire wealth. One reason utilities fail to produce more billionaire wealth might be that privatization of utilities may lag privatization of telecommunication in most developing countries. A possible explanation for the below-average score of construction is that it may be an industry that remains dominated by a mass of small businesses catering to households and other small businesses, while bigger businesses take the state-dependent large infrastructure and government contracts. Finally, there is only one 'false positive,' i.e., an industry that produces above-average billionaire wealth relative to its size despite not being state dependent: manufacturing. Manufacturing does have subindustries that are state dependent, namely chemicals, steel and other metals, but the rest of manufacturing produces above-average billionaire wealth on its own (the red part of the column is on its own higher than the green line). Overall, Figure 3 shows that, in developing countries, the only significant sources of non-state-dependent billionaire wealth relative to industry size are manufacturing, trading and other professional and administrative services. The former two are particularly prone to economies of scale, which are discussed section 6: Globalization. The latter consists mostly of the information technology industry, discussed in section 5: Monopoly.

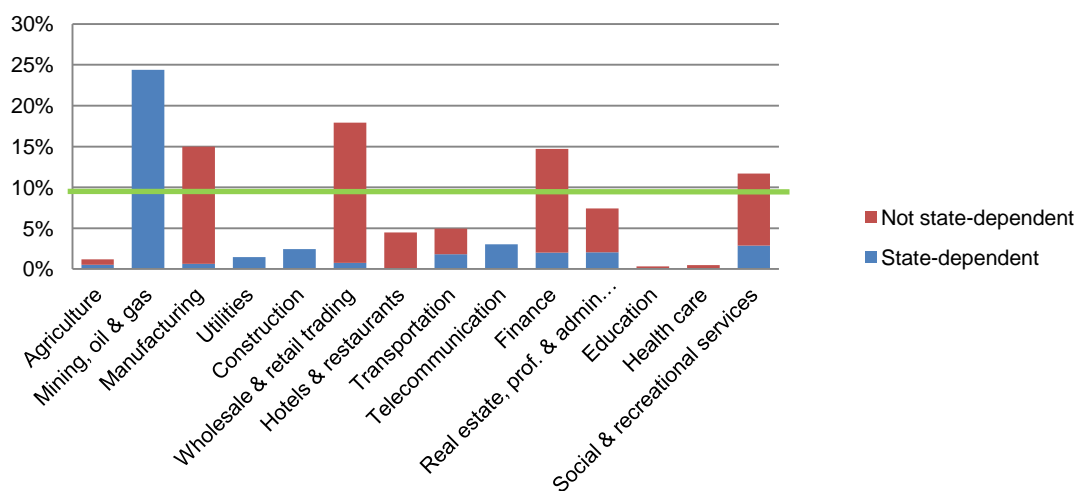
Figure 3 presents data for all developing countries and hides differences across countries. Some countries, like Indonesia and Malaysia, appear to create billionaire wealth almost exclusively in state-dependent industries. Some industries, like banking or utilities, appear to generate billionaire wealth in certain countries but not others, which may reflect different national public policies. However, the number of billionaires for most developing countries is too small to draw robust conclusions at a national level. Case study research could dig into specific industries and countries to reveal the extent to which cronyism reigns and how it works.

Figure 3: Wealth-concentrating industries in developing countries (billionaire wealth divided by value-added, 2014)



Sources: Author's calculations based on *Forbes* data for billionaire wealth, United Nations for share of value added in GDP (latest data available), and International Monetary Fund for GDP. Figure 3 covers all 39 developing countries that have billionaires.³⁷

Figure 4: Wealth-concentrating industries in advanced countries (billionaire wealth divided by value-added, 2014)



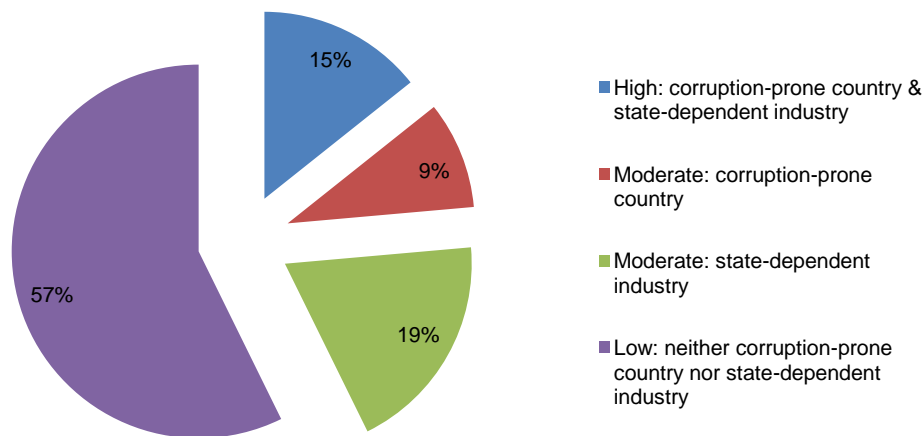
Source: Author's calculations based on *Forbes* data for billionaire wealth, United Nations for share of value added in GDP (latest data available), and International Monetary Fund for GDP. Figure 4 covers all 26 advanced countries that have billionaires.³⁸

The situation is different in advanced countries (Figure 4). Mining, oil and gas is the only state-dependent industry that produces more billionaire wealth than average relative to its size, and it produces by far the most. Manufacturing and trading produce above-average billionaire wealth relative to their sizes and are not state dependent. As mentioned earlier, explanations for this result will be discussed section 4: Globalization. Finance also produces above-average billionaire wealth relative to its size. While in developing countries, it is the state-dependent banking subindustry that is responsible for the bulk of billionaire wealth, in advanced economies it is the asset management subindustry, which is not state dependent, that is responsible. Finally, 'social and recreational services' also produce above-average billionaire wealth. That wealth is generated by gambling (state-dependent) and broadcasting (not state-dependent),

and to a lesser extent by motion picture production and sports teams (both not state-dependent). (Many countries fail to report their value added for social and recreational services to the United Nations, which is why the corresponding result for developing countries is not reported in Figure 3.) No clear pattern emerges from industries that produce below-average billionaire wealth relative to their size in advanced economies.

Figure 5 merges the two approaches discussed so far to measure presumption of cronyism. Fourteen percent of billionaire wealth is subject to a high presumption of cronyism because it was accumulated in state-dependent industries and corruption-prone countries. A further 28 percent is subject to a moderate presumption of cronyism, as this wealth derives either from a state-dependent industry or a corruption-prone country. The balance of billionaire wealth, 57 percent, is characterized by a low presumption of cronyism, as it was accumulated in countries where corruption is low and in industries that do not depend heavily on the state.

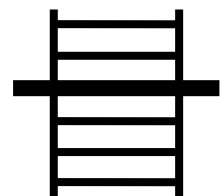
**Figure 5: Presumption of cronyism
(% billionaire wealth)**



Source: Author's calculations based on *Forbes* data.

In conclusion, cronyism is not meritocratic, and quantitative evidence supports the presumption that it is a significant source of extreme wealth—and a major, if not dominant, source in developing countries.

4 INHERITANCE



Inheritance fits in the middle of the ladder of demerit. On the one hand, it harms no one, unlike crime and cronyism. On the other hand, it does not reward a contribution to society and does not require effort, talent, or risk-taking. Inheritance is the quintessential rent and is clearly not meritocratic.

How important is inheritance as a source of extreme wealth? In a nod to meritocracy, *Forbes* does not include hereditary monarchs in its list, but it has written separately about them,³⁹ as have other sources. It turns out that there are fewer than a dozen billionaire monarchs (Table 2)—the queen of England and some other European royals do not make the cut.

Table 2: Hall of Fate: Royal billionaires

Monarch	Country	Wealth (2010)
King Bhumibol Adulyadej	Thailand	\$30 billion
Sultan Haji Hassanal Bolkiah	Brunei	\$20 billion
King Abdullah bin Abdul Aziz	Saudi Arabia	\$18 billion
Sheikh Khalifa bin Zayed al-Nahyan	Abu Dhabi	\$15 billion
Sheikh Mohammed bin Rashid al-Maktoum	Dubai	\$4 billion
Prince Hans-Adam II von und zu Liechtenstein	Liechtenstein	\$4 billion
King Mohammed VI	Morocco	\$2.5 billion
Sheikh Hamad bin Khalifa al-Thani	Qatar	\$2.4 billion
Prince Albert II	Monaco	\$1 billion

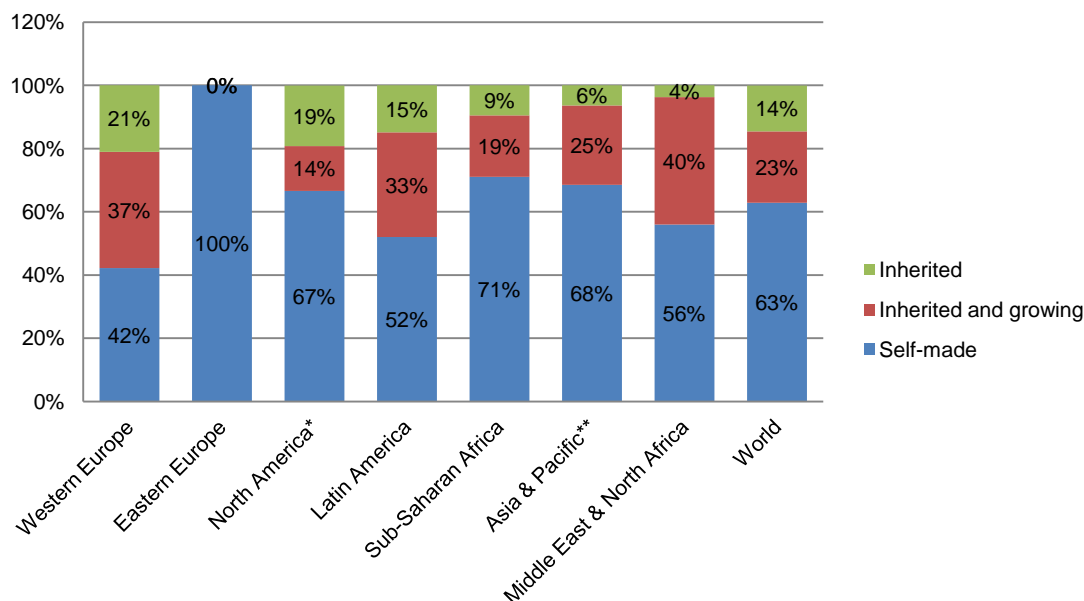
Sources: TheRichest.com. December 20, 2011. 'The World's Richest Royals.' <http://www.therichest.com/rich-list/world/richest-kings/>. *Forbes*. 2011. Op. cit.

However, there are many more heirs of industrial empires. In another nod to meritocracy, *Forbes'* database indicates whether billionaires are 'self-made' or whether they inherited their wealth. Self-made includes people who were born poor and people who were born upper-middle-class in high-income countries, meaning they were already relatively privileged. *Forbes* also proposes a third category: 'inherited and growing.' Although growing inherited wealth is of course more meritocratic than inheriting wealth and failing to grow it, there is no doubt that people inheriting millions and sometimes tens or hundreds of millions of dollars start with a huge advantage in the quest to become billionaires. Given that billionaires represent an extremely small share of the world population, the likelihood that any of the 'inherited and growing' billionaires on *Forbes'* list would have become billionaires without their inheritance is extremely small. Later sections of this paper therefore disregard the distinction between 'inherited' and 'inherited and growing' wealth.

It turns out that 66 percent of *Forbes'* billionaires are self-made, 13 percent inherited their wealth, and 21 percent inherited and grew their wealth. Figure 6 offers similar figures in terms of billionaire wealth by region.

Piketty argues that billionaire censuses carried out by *Forbes* and others underestimate the proportion of billionaires who are heirs.⁴⁰ Such censuses typically rely upon investigations of the owners of large companies. However, heirs are more likely to hold their fortunes in the form of diversified portfolios of minority stakes in many large and small companies as well as mutual funds, which can more easily escape the scrutiny of investigative journalists. Wealth management firm *Wealth-X* and *UBS* indeed provide higher estimates both of total billionaire wealth and of the proportion of inherited wealth (20 percent, 24 percent, and 56 percent, respectively, for inherited, inherited and growing, and self-made wealth).⁴¹ Nevertheless, no evidence supports Piketty's assertion that inheritance may be the source of 60 to 70 percent of extreme wealth worldwide, although *Forbes* data confirm that figure for Western Europe, and France in particular, where only 30 percent of billionaire wealth is self-made. (By contrast, no Eastern European billionaires have inherited their wealth, a legacy of communism.) While a greater proportion of inherited wealth might be found at lower levels of wealth, there is no reason to believe that to be the case. *Capgemini* reports that about 16 percent of the world's high-net-worth individuals (over a million dollars in investible assets) have inherited their wealth, which is roughly consistent with both *Forbes* and *Wealth-X* and *UBS* data for billionaires.⁴²

**Figure 6: From rags to riches vs. industrial dynasties
(% billionaire wealth)**



* Excluding Mexico, which is included in Latin America. **Excluding the Middle East.

Source: Author's calculations based on *Forbes* data.

Inheritance transmits wealth from one generation to the next, but decreases its concentration as estates are typically divided up among several heirs. The more children a billionaire has, the more his or her wealth is divided into smaller estates. Today's billionaires have three children on average, according to *Forbes* (although *Forbes* lacks data for 21 percent of billionaires regarding this variable). Piketty argues that compounded interests over a lifetime can nevertheless preserve wealth over generations,⁴³ especially given that the rich tend to earn higher returns because they have access to asset management professionals.⁴⁴

Challenging Piketty, researchers Arnott, Bernstein and Wu make a detailed analysis of the intergenerational transmission of extreme wealth using lists of the top 30 American family fortunes in the twentieth century as well as *Forbes* data.⁴⁵ They conclude that 'dynastic wealth' tends to disappear from top 30 lists in three generations. Because of taxes, spending, philanthropy, lawyers' and investment managers' fees, as well as multiplicity of descendants, they find that the average wealth erosion (relative to per capita GDP) for the ten wealthiest American families of 1930, 1957 and 1968 was 6.6 percent, 5.3 percent, and 8.7 percent a year respectively, implying a half-life of wealth – the length of time it takes for a family fortune to halve relative to average income growth – of 10 years, 13 years, and 8 years respectively.

Forbes' 2014 data confirm that three-fourths of the inherited billionaire wealth and nine-tenths of the 'inherited and growing' billionaire wealth appear to belong to first or second-generation heirs, i.e., the spouses or children of the founder of the company that created the extreme wealth (as opposed to grandchildren, great-grandchildren, or even more distant descendants).⁴⁶ Overall, there seems to be little truly old wealth in *Forbes* data. Arnott, Bernstein and Wu's argument is further corroborated by the fact that only 12 percent of family businesses survive to the third generation, and only 3 percent survive to the fourth.⁴⁷

Even though extreme wealth erodes over generations, however, it remains true that inheritance (for first and second-generation heirs) accounts for a substantial share of extreme wealth at any given time. Over the past decade, the world's inherited billionaire wealth has grown steadily in absolute terms (except in 2009 owing to the financial crisis), but it has declined then stabilized as a proportion of total billionaire wealth from 53 percent in 2002 to around 35 to 37 percent since 2008. It is not clear whether the share of inherited extreme wealth will remain stable at that level, grow, or decline.

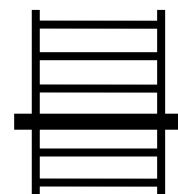
Forbes data is based on individuals as opposed to families, and in that way it underestimates the economic and political influence of industrial dynasties. In France and Switzerland, for instance, the top 10 richest families are estimated to control 29 percent of the stock market.⁴⁸

As an aside, only 42 percent of billionaires are over 65 years old, which means that a majority of them have many years to further grow their wealth before bequeathing it.

It is also interesting to note how gender inequality is reflected in billionaire wealth. Ninety percent of billionaires are men; only 15 percent of female billionaires are self-made.

In conclusion, inheritance is not meritocratic and it is a major source of extreme wealth, accounting for roughly one-third of it worldwide, and significantly more in Western Europe and Latin America.

5 MONOPOLY



We reach the rung of the ladder of demerit where the non-meritocratic character of extreme wealth becomes controversial. This paper makes the ethical case against extreme wealth, but it must be emphasized and underscored that at this rung and the lower ones, *extremely rich people do nothing wrong; indeed, they do a whole lot of good for society!* At this rung and the lower ones, effort, talent, and risk-taking are necessary to become extremely rich.

Nevertheless, *extreme* wealth is not merited because talented, hard-working, and risk-taking people make more money than what could be justified by their extra talent, effort, and risk-taking compared with other talented, hard-working, and risk-taking people—often multiple times more and in some cases thousands of times more. The personal contribution to society of extremely wealthy people is not as important as meets the eye, in the sense that, if they did not exist, other talented, hard-working, and risk-taking people would fill their shoes. This report argues that, at this and lower rungs of the ladder of demerit, meritocracy calls for talented people to be rich, but not extremely so.

Monopoly is a first way in which rich people are overcompensated. *Monopoly* refers to a situation in which a single supplier dominates a market and can thereby overcharge consumers. The discussion on monopoly in this section actually covers a broader range of phenomena that economists call ‘market failures’ and that lead to unusually high degrees of market power even when that power falls short of pure monopoly. High market concentration can in turn produce extreme wealth. Box 3 defines key technical terms used by economists.

Market failures cause social harm because they stand in the way of an efficient allocation of resources. Someone loses out, be it consumers, suppliers, competitors, workers, or shareholders. Governments seek to correct market failures through regulations—such as antitrust laws—to minimize such harm. However, it is not possible to produce complete economic efficiency. The real world is much more complex than the neat world of theoretical economics where everyone knows everything and there are no transaction costs. In a theoretical state of perfect competition, it is impossible to make extravagant profit, because as soon as one producer makes much profit, competitors immediately enter the market and drive prices down. By contrast, in the real world, the process of entering and exiting markets takes time, and generous profit can be made in the transition. Indeed, every good business strategy seeks to exploit a market failure. Good businesspeople spot markets that are out of competitive equilibrium and exploit them, for example, when they possess a piece of little-known information. In doing so, they reap profits while bringing the market back into equilibrium, for example, as the piece of information becomes widely known. Businesspeople thereby increase

economic efficiency; their contribution to society is to shift resources to where consumer demand is highest.

Box 3: Definitions

For economists, *efficiency* means making the best use of limited resources. An income or wealth distribution is efficient if no one can be made better off without making one person worse off. While few if any public policies can improve the lot of most people without making at least one person worse off, policies can nevertheless be efficiency-improving if they benefit some people so much that they would theoretically be willing to compensate those who lose out. For instance, antitrust laws benefit consumers and harm monopolists, but the former benefit by more such that they would theoretically be willing to pay monopolists in exchange for the latter to charge competitive prices. (In practice, governments break up monopolies without compensation, making them worse off, and consumers capture the entire efficiency gain.) Note that efficiency is morally neutral, as it is compatible with both very unequal and very equal income or wealth distributions.

Competitive markets, that is, consensual exchanges among many suppliers and customers with perfect information and no transaction costs, produce efficient outcomes. However, *market failures* are market structures, such as monopolies, that fall short of these requirements of competitiveness and produce inefficient allocation of resources. Government intervention is necessary to correct market failures and increase efficiency. *Crime* and *cronyism* are forms of market failures. Some other forms are discussed in this section.

However, some business practices are uncompetitive in that they entrench market failures with the intent of maintaining monopoly and excess profit for as long as possible. Here is where governments intervene. Harnessing a very high market share is not in itself illegal, as it may reflect a business strategy that improves economic efficiency. For instance, if you are the first provider of a new product, by definition you are temporarily in a monopoly situation, but your product presumably increases efficiency to the extent that consumers are willing to pay for the product instead of spending their money on something else. You start running afoul of antitrust law only when you use your dominant market power to keep potential competitors from entering the market and driving prices down. There are many ways to do that, and this paper does not aim to inventory them all. Only a few types of market failures and related business practices and laws are discussed in this paper, as they explain a significant portion of the extreme wealth that we observe.

This section's argument is twofold: existing laws do not always reflect economic efficiency, and even when they do, being economically efficient does not make them meritocratic.

First, existing laws attempt to strike the trade-off that maximizes economic efficiency: allowing businesspeople the benefit of monopoly power as an incentive to fulfil unmet needs while preventing them from entrenching that power, which kills future innovation. As a result of this trade-off, some monopolies are legal and do produce extreme wealth. Four kinds that are particularly relevant to the accumulation of extreme wealth are *intellectual property* (which constitutes a legally mandated monopoly intended to spur innovation); *network externalities* (which are essentially not regulated because they create benign monopolies that do no harm to consumers); *vendor lock-in* (the jurisprudence on vendor lock-in is evolving to balance consumer harm and innovation); and *asymmetries of information* (for executive pay, the government lets shareholders and CEOs resolve the asymmetry of information market failure by themselves). Each of these instances of legal, profitable monopolies will be discussed in detail later in this section.

Governments may not always get the trade-off right and may allow too many monopolies to prosper for too long, thereby exacerbating extreme wealth at the expense of consumers and

competitors. Stiglitz argues that this situation is frequently the case: the very existence of extreme wealth is an indicator that a government has failed to maximize economic efficiency and that the pendulum has swung too far on the side of cozying up to established monopolies (which may have been innovative in the past), at the expense of new entrants, which are likely to be more innovative today.⁴⁹ To the extent that this assessment is correct, monopoly should be higher in the ladder of demerit: more monopolies should be made illegal (crime) as they would represent a negative contribution to society. It may not happen because of the private sector's capture of regulating agencies (cronyism). The following subsections mention where that may well be true, and public interest groups should redouble efforts to counter private sector interests regarding antitrust law. However, that is not the main point of this section.

Second and more importantly, even if existing laws did strike the right balance to maximize economic efficiency, it would not make the resulting wealth distribution meritocratic. Economic regulation is driven by the goal of economic efficiency—not by meritocracy or any other conception of social justice (Table 3). This distinction is important and often overlooked. Even when market failures are corrected and economic efficiency is improved, it is an abuse of terms to say that people 'deserve' or 'merit' what they get from market transactions, or that markets 'reward' effort, talent, and risk-taking. *Deserving, meriting, and rewarding* are judgmental terms, but markets are morally neutral. The more accurate phrasing is that markets *incentivize* effort, talent-nurturing, and risk-taking. That is an empirical statement that can be tested. Friedrich Hayek, the guru of free markets, made this crucial point:

[T]he importance for the functioning of the market order of particular prices or wages, and therefore of the incomes of the different groups and individuals, is ... due ... to the effects of the prices on those for whom they act as signals to change the direction of their efforts. Their function is not so much to reward people for what they *have* done as to tell them what in their own as well as in general interest they *ought* to do. ... [T]o hold out a sufficient incentive for those movements which are required to maintain a market order, it will often be necessary that **the return of people's efforts do not correspond to recognizable merit.**⁵⁰

Let us now turn to a discussion of four kinds of market failures that are particularly relevant to the accumulation of extreme wealth: asymmetries of information, network externalities, intellectual property, and vendor lock-in. For each of them, existing laws will first be presented from an economic efficiency perspective, then from a meritocratic perspective.

Table 3: Economics vs. philosophy

Domain	Economics	Political philosophy
<i>Purpose</i>	Set prices for goods, services, labor, capital, knowledge, and other resources	Set distribution of income and wealth among people (as well as their rights and duties)
<i>Goal</i>	Make the best use of limited resources	Achieve social justice
<i>Key concept</i>	Incentives	Values
<i>Schools</i>	Neoclassical economics Behavioral economics	Marxism Utilitarianism Egalitarian liberalism Libertarianism Meritocracy
<i>Statements</i>	Empirical (for example: 'Information technology monopolies create more value for consumers when left whole than when broken up')	Judgmental (for example: 'Information technology entrepreneurs deserve extreme wealth')

ASYMMETRIES OF INFORMATION

The *principal-agent problem* is a form of market failure in which an agent who is supposed to further the interests of a principal does not have the incentive to do so, and the principal is not able to control the agent owing to *asymmetries of information*: the agent knows more than the principal.

Executive pay is a classic example. The CEO is the agent, and the shareholders are the principals. Shareholders expect CEOs to maximize the company's profit. However, if left to their own devices, executives may rather maximize revenues and costs and the power that goes with them in the form of more staff, better pay for all, plush offices, and so on. With limited information, it is hard for shareholders to second-guess management's decisions.

While market failures usually require government intervention, in this case the victims of the market failure (i.e., the shareholders) have found a solution by themselves: stock options. Giving, say, 0.1 percent of the stock to the CEO costs shareholders 0.1 percent of their wealth, but it is well worth it if it incentivizes the CEO to boost profit growth by several percentage points each year. For the CEO, even a very small proportion of a large company's stock is a huge bounty. It does not make markets fully efficient (shareholders still lose 0.1 percent of their stock), but it may improve efficiency—it is what economists call a 'second-best' solution.

Whether stock options actually do improve economic efficiency is lively debated.⁵¹ Stock options may drive companies into short-termism, or be abused by CEOs owing to poor corporate governance. An analyst calls shareholder value maximization the 'world's dumbest idea' because it actually fails to increase returns to shareholders yet harms society through lower investment, rising inequality, and falling share of labour income in GDP.⁵²

Regardless of pros and cons from an economic efficiency standpoint, stock options for executives are definitely not meritocratic. They represent a situational rent, a windfall income received on the basis of where the person sits (the executive office) instead of how talented, hard-working, or risk-taking the person is. Certainly, CEOs are hired competitively and therefore merit their position. However, the position itself is endowed with an asymmetry of information that makes it unusually lucrative in a manner that is not proportionate to talent, effort, and risk-taking.

The actual income that CEOs get from their stock options does depend on profit growth. Some argue that they therefore do reward performance.⁵³ However, profits vary in part owing to macroeconomic reasons that are out of CEOs' control. Profits also depend on the hard work of all the company's employees. Empirical analyses have thus far failed to nail down CEOs' own contributions to company performance. Although CEOs undoubtedly do create (and sometimes destroy) value in their own right, a unique function of their position is to redistribute value. In the end, a company's contribution to society is its value added, not its profit. (The *value added* is the difference between the value of what a company sells and what it buys; it is distributed in the form of employees' compensation, interests paid on debt, and profits.) The unique role of CEOs is to distribute a company's value added among its shareholders and workers. Stock options are an incentive that shareholders use to ensure that CEOs slash costs and leave as little value as possible to workers. Redistributing value created by others, and taking a cut from it in the process, is not meritocratic.

While income inequality has risen in most advanced countries in recent decades, the United States stands out for the concentration of income growth at the very top of the distribution: virtually all US income growth in these years has benefited the top 1 percent of the population.⁵⁴ The United States also stands out for its heavy reliance on stock options to compensate CEOs. This reliance reflects different corporate governance laws and cultures, especially the fact that large US companies tend to be owned by institutional investors who are only interested in quarterly profits and who appoint independent boards of directors.⁵⁵ Boards controlled by

families, in comparison, tend to adopt a longer-term perspective, exercise more control over their CEOs and pay them less, and treat their employees better in return for loyalty.⁵⁶ A tax break for performance pay is another factor making stock options popular in the United States, a case of cronyism.

How important is executive compensation as a source of extreme wealth? It turns out to be very small. Out of the 1,645 billionaires on *Forbes'* list, only one or two dozen appear to be hired executives (here meaning executives who neither created nor inherited the company they manage).⁵⁷

However, executive compensation is a major source of ultra-wealth, at least in the United States. Using US income tax data, researchers have found that hired CEOs accounted for 15 percent of the top 0.1 percent richest Americans by income in 2004 (Table 4). Reports of executive compensation confirm that top-paid CEOs make tens of million dollars a year,⁵⁸ such that few of them become billionaires but many of them do accumulate fortunes in the hundreds of millions of dollars.

In the **financial industry**, the investor or saver is the principal, and the fund manager or banker is the agent who is supposed to maximize returns on investment and minimize risks. The way to incentivize these finance professionals is to let them take a cut of the returns they obtain. Hence, hedge funds typically charge 1.5 to 2.5 percent of funds under management plus 15 percent to 25 percent of profits. However, it is hard even for professionals to monitor the performance and safety of banks and funds.⁵⁹

As a 2013 symposium of the *Journal of Economic Perspectives* made clear, economists are puzzled about investors' continued appetite to pay high fees to fund managers who do not produce better returns than the market's average. One hypothesis is that funds outperforming the market typically do so thanks to a strategy that does not scale up, e.g., they have found one golden stock but can only buy so much of it due to the stock's limited market capitalization and need for diversification.⁶⁰ Not knowing that, investors pour their money into the outperforming fund, and the fund managers invest all that extra cash into stocks of average performance. That drives the fund's overall performance toward the market's average, as the golden stock is diluted into a bulk of average stocks. The result is that fund managers capture all the excess return produced by the golden stock through their fees, and investors just get average returns. Stock markets have grown substantially over the past three decades, and fund managers, paid in proportion to the funds they manage, have consequently reaped fortunes with little apparent social benefit.⁶¹ After the stock market crashed in 2008, fund managers (who are not charged negative fees for delivering negative returns) benefited from the macroeconomic policy of quantitative easing (i.e., money creation by the central bank through purchase of assets) that reflat asset prices.

Asymmetries of information and the principal–agent problem are so severe in the **health care industry** that most countries have either nationalized the industry entirely or held markets on a very short leash through heavy regulation, which explains the low level of billionaire wealth in that industry. Doctors have a propensity to prescribe expensive treatments with marginal benefits, both because their professional ethics drive them to put the patient's health first regardless of cost, and because they have an economic incentive to do so. It is not wise for patients to second-guess doctors, and the former typically buy any treatment prescribed by the latter. If left unregulated, the result is overconsumption of health care, from which doctors profit at the expense of patients. This market failure explains why health care costs about twice as much in the United States (where markets play an important role in the industry) as in Europe (where they don't), without yielding better health outcomes.

In the **legal industry**, the lawyer is the agent and the client is the principal. As in the health care industry, it is hard and even dangerous for the client to second-guess the lawyer about his costs, and the lawyer's professional ethics and economic interest push him or her to dot all the i's and cross all the t's—and overcharge. The winner-takes-all nature of trials compounds that

effect: either you win the case and the whole contested amount, or you lose it. Just as shareholders are ready to give away a portion of their stock to CEOs in order to incentivize them to extract as much profit as possible from their workers, clients are induced to give a portion of their expected judgment award to the lawyer in order to incentivize him or her to perform. When the litigation is about huge sums, that means hefty fees for lawyers. Given that they either win all or lose all, clients are also induced in an arms race with the other party, each one trying to hire the best lawyer in town, who as a consequence can hike his or her fees.

Adding up executives and the financial, medical, and legal professions, 44 percent of the top 0.1 percent richest Americans by income benefit from asymmetries of information and the principal-agent problem, or even more if managers and supervisors are added to the mix as they often also receive incentive pay (Table 4).

Table 4: Distribution of top 0.1 percent earners by profession in the United States*

Profession	Share of top earners
Executives, managers, supervisors (non-finance)	40.8%
Executive, non-finance, salaried	15.0%
Executive, non-finance, closely held business	13.6%
Manager, non-finance, salaried	4.7%
Manager, non-finance, closely held business	4.6%
Supervisor, non-finance, salaried	1.3%
Supervisor, non-finance, closely held business	1.7%
Financial professions, including management	18.4%
Not working or deceased	6.3%
Lawyers	6.2%
Real estate	4.7%
Medical	4.4%
Entrepreneur not elsewhere classified	3.6%
Arts, media, sports	3.1%
Computer, math, engineering, technical (non-finance)	3.0%
Other	2.6%
Business operations (non-finance)	2.2%
Skilled sales (except finance or real estate)	1.9%
Professors and scientists	1.1%
Farmers and ranchers	1.0%
Unknown	0.7%

* Percentage of primary taxpayers of the federal personal income tax who are in the top 0.1 percent of the income distribution (including capital gains) and who are in each occupation in 2004.

Source: Bakija, Jon, and Bradley T. Heim. March 17, 2009. 'Jobs and Income Growth of Top Earners and the Causes of Changing Income Inequality: Evidence from US Tax Return Data.'
<http://web.williams.edu/Economics/bakija/BakijaHeimJobsIncomeGrowthTopEarners.pdf>

The financial industry alone is a very significant source of extreme wealth. It accounts for 10 percent of the world's billionaire wealth.

Meanwhile, like CEOs, medical doctors and lawyers are rich or ultra-rich but rarely extremely rich. There is only one billionaire practicing law—he earned \$345 million in fees for a single case where he won a \$10.5 billion award for his client, a big multinational company. No one has become billionaire by practicing medicine, although a dozen medical doctors have become billionaires by running hospitals, pharmaceutical or medical equipment companies. The health

care industry has generated only 0.4% percent of the world's billionaire wealth. We will come back to doctors, lawyers, and other professions when presenting the lowest rung of the ladder of demerit: technology (section 7).

NETWORK EXTERNALITIES

Network externalities exist when a product's value to consumers depends on the number of consumers. The supplier that manages to attract a critical mass of consumers for one reason or another is then likely to attract many more and ends up completely dominating the market.

While network externalities can be found in most industries, they are pervasive in the **information technology industry**. Online social networking is the quintessential example of network externality. People choose Facebook because their friends are already on Facebook. Choosing another site would defeat the purpose of social networking, even if that other site had a better technological backbone or more attractive user interface. The online auction website eBay is another quintessential example. Buyers choose eBay over other sites because they know that it is where all the sellers are, and vice versa. Likewise, Twitter, YouTube, Amazon, Microsoft, Google, Apple, and other big technology companies have benefited from network externalities. There is typically fierce competition to exploit a network externality and become the dominant provider, especially in the information technology industry where entry costs are low (developing a web site is not very expensive). But in the end, the nature of the product—not the talent of the producer—demands that only one company ends up on top.

Being the first company to create the market is a big and often determinant advantage in capturing the externality. Once a dominant provider is established, it becomes difficult for the competition to dislodge it, as doing so entails moving a critical mass of consumers at once. Nevertheless, business strategy is also very important. For instance, Facebook overtook MySpace to dominate the social networking market. Facebook redefined social networking by expanding capabilities in response to user demands, and in particular by integrating applications created by independent developers.⁶² That said, MySpace's market penetration was still small when Facebook took off; most people were not on any online social network at all. Early users were tech savvy and prone to switch to a better website, taking their close network of friends with them. By contrast, many later adopters never checked the competition; they chose Facebook simply because that is where everybody else was. Facebook will thus be much harder to dislodge than MySpace was. Facebook may eventually collapse: no company is eternal, especially in the information technology industry. Meanwhile, Facebook has produced several billionaires. Even if those billionaires eventually dropped off *Forbes'* list, they would most likely remain ultra-rich. Although the information technology industry is frequently subject to major disruptions, network externalities go a long way in explaining why this industry produces a large number of billionaires at any given time.

Another form of network externality exists in the **luxury goods industry**. It works in the opposite way as social networking: consumers draw value in the consumption of goods that very few other people consume, as these goods become marks of social status. Sometimes, increasing the price of a luxury good can increase its demand—contrary to the normal law of supply and demand—as it becomes more coveted by the ultra-rich. A handful of luxury brands of fashion, cosmetics, and jewellery, as well as arts trading, have produced 2 percent of the world's billionaire wealth, a substantial amount given that these brands cater to a small percentage of the population.

Although network externalities are here discussed together with market failures for simplicity of exposition, they are technically not market failures because they create benign monopolies, i.e., monopolies that do no harm to consumers because consumers draw value from there being a single provider. That is why they are not regulated. However, in the case of some technology firms, the revenue source consists of the advertisers, not the users, and the former could

potentially suffer from monopsony (i.e., single buyer) pricing: the combined US market share of web advertising of Google and Facebook had already reached 37 percent in 2013.⁶³

Although not economically inefficient, network externalities produce windfall rents that are not meritocratic. A shrewd business strategy is necessary to edge out competitors and capture the network externality that is the source of extreme wealth. However, the externality exists independently. It is not a product of the business strategy, but is inherent to the nature of the product. Information technology billionaires thus capture and benefit from network externalities, but they do not create them. So the source of the extreme wealth, the externality, is not something that the billionaire contributes to society. Talent, effort, and risk-taking are certainly necessary to capture and benefit from the externality. But the wealth concentration that the externality creates is not proportional to, and indeed is largely independent from, that effort, talent, and risk-taking. It is the externality (e.g., the fact that everyone wants to use the same social networking website, whichever it is) that creates the extreme wealth, while the business strategy merely determines who gets it (e.g., a better-quality site is more likely to capture the externality, everything else equal). Network externalities create winner-takes-all markets where, by necessity of the nature of the product, one individual can become extremely rich while others, perhaps slightly less talented or simply less lucky, get nothing. Thanks in large part to network externalities, the founders of some leading information technology companies have accumulated wealth thousand or ten thousand times as high as that of their unsuccessful yet equally talented—or only marginally less talented—competitors (i.e., billions or tens of billions of dollars compared with millions, which is what most talented computer programmers can expect to earn in their lifetime).

To sum up, network externalities are like gold lying underground. Exploiting it does not harm society—to the contrary, it does a lot of good. The company that manages to get the gold is usually the best. However, that company did not contribute that gold to society; the gold existed independently of it. So it does not merit the corresponding extreme wealth. Just as governments all over the world charge royalties on mining, there is a meritocratic case to impose taxes on wealth derived largely from network externalities.

INTELLECTUAL PROPERTY

The inventor billionaire is Exhibit One of the meritocratic case for extreme wealth. For that reason, the issue of intellectual property is explored in more depth in the appendix. In summary:

- Intellectual property rights (e.g., patents, copyrights) both incentivize innovation and disincentivize the use of available knowledge. They are therefore a second-best solution to improve economic efficiency. The current level of protection of intellectual property is arbitrary, subject to cronyism, and probably fails to maximize economic efficiency.⁶⁴
- Inventors do not seem to need billion-dollar incentives to fully exercise their talents.
- Investors do need billion-dollar incentives to fund research and development because it is a very risky investment. However, there is no need for such investment and its returns to be concentrated in few hands; sophisticated financial instruments can spread risk and return, and they should be made available to the public.
- Promoting innovation does therefore not require extreme wealth from an economic efficiency perspective.
- Inventor billionaires are also problematic from a meritocratic perspective. While some inventors are exceptionally brilliant, giving them huge rewards raises a range of equity issues with regard to other brilliant innovators. Knowledge creation that is useful but not marketable is not rewarded. Technological progress is incremental, cumulative, and progressive, yet oftentimes only the inventor who adds a small element to a vast body of knowledge created by others wins big. Like network externalities, the race to the patent office is a winner-takes-

all market, with a luck component because sometimes several ways exist to make something work but only one way becomes the industrial standard that creates extreme wealth.

- There are few inventor billionaires and they are concentrated in the **information technology industry** because of market failures in that industry (including network externalities and vendor lock-in). To become an information technology billionaire, business acumen is more important than technological innovation itself.

VENDOR LOCK-IN

Vendor lock-in (also known as *bundling* or *tying*) refers to practices that make customers dependent on their supplier, such that they cannot switch to other suppliers without substantial costs. Vendor lock-in thus allows the supplier to overcharge customers.

While vendor lock-in can be found in all industries, it is pervasive in the **electronics** and **information technology industries**: cell phones that work only with the SIM card of a specific telecommunication company force consumers to buy a new phone if they want to switch carriers; printers that work only with a specific type of ink cartridge force consumers to buy that one type of cartridge, which can be overpriced; same story with computers that work only with some printers or monitors, with computers that work only with a specific operating system, or with software that works only with a specific operating system. More than in any other industry, vendor lock-in has been core to the business strategies of big electronics companies. Apple's strategy, for instance, relies on controlling the whole customer experience of its products and pushes the lock-in even into retailing.⁶⁵

Antitrust laws used to clearly make vendor lock-in illegal. However, lawmakers and judges have over time come to realize that a strict ban on vendor lock-in is not a good idea, as it is so widespread. For instance, a hotel providing free breakfast is technically doing vendor lock-in: it forces you to buy a separate product (a meal), of which the price is included in what you really want (a room). However, forcing hotels to close down their cafeterias and expecting separate restaurants to open up next door is not economically efficient. Only vendor lock-in practiced by companies enjoying a dominant market position can be found illegal nowadays, and even then other conditions must be met.⁶⁶ The key test is whether the lock-in is on balance in the interest of consumers.

While complex, this argument is by no means purely theoretical. AT&T was broken up in 1984 to separate its long-distance and local phone services as well as equipment manufacturing business. A federal judge ordered the breakup of Microsoft in 2000 to prevent operating systems from locking-in software, but Microsoft won an appeal the year after, reflecting the evolving jurisprudence about where the balance of consumer benefit lies.⁶⁷ The European Parliament recently passed a non-binding resolution that would break up Google.

No large information technology monopoly has been broken up since 1984, however. Antitrust lawsuits are complex and costly. Regulators are reluctant to intervene in the fast-changing and complex business models and strategies of information technology companies. Consequently, some harmful vendor lock-in practices are allowed to persist, enabling the accumulation of extreme wealth, a situation that is both economically inefficient and non-meritocratic. When courts eventually do intervene, the penalty is usually an order to stop the harmful lock-in practice and a fine, which may be too low to dissuade harmful lock-in practices.

The Economist makes the case against breaking up the big information technology monopolies despite the market failures pervading that industry.⁶⁸ Information technology monopolies are deemed to benefit consumers on balance, and the fast pace of innovation is likely to enhance competition better than government intervention could. While sensible, this argument is by no means self-evident; it is subject to debate among mainstream economists, and lawmakers and judges are called on to make tough decisions, subject to cronyism on both sides of the issue.

More importantly for the present paper, *The Economist's* argument is entirely based on economic efficiency.⁶⁹ Even if one concedes that argument and thus agrees that information technology monopolies should not be broken up, there is still a meritocratic case to redistribute the extreme wealth that these monopolies produce. Information technology monopolies rely on business strategies that combine vendor lock-in with intellectual property and network externalities, all of which are problematic in terms of meritocracy, as discussed earlier. In other words, the world may need information technology monopolies from an economic efficiency perspective, but that does not imply that it needs information technology billionaires from a meritocratic perspective.

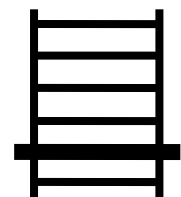
The electronics and information technology industries account for 2 percent and 8 percent of the world's billionaire wealth, respectively.

In the preceding discussion of monopoly—including asymmetries of information, network externalities, intellectual property, and vendor lock-in—this paper reviewed how several economic regulations susceptible to produce ultra or extreme wealth are meant to improve economic efficiency—making the most of limited resources. Whether or not they succeed in that respect is subject to ongoing debate, and further curtailing of monopoly power and hence of extreme wealth may be justified on economic efficiency grounds. There is a particularly strong argument for new legislation on asymmetries of information (e.g., executive pay and bonuses in the financial industry) and on intellectual property to improve economic efficiency.

In any case, the fact that certain business practices are legal and that laws maximize economic efficiency does not mean that the extreme wealth they produce as a byproduct is merited. Monopoly power in its various forms, even when legal and efficient, creates a disconnect between talent, effort, and risk-taking on the one hand, and income and wealth on the other. Talented, hard-working, and risk-taking people who for one reason or another manage to fill a monopolistic position reap disproportionately more money than marginally less talented or simply less lucky competitors.

This section on monopoly shows how most lucrative professions—executive management, finance, law, medicine, information technology engineering—are subject to monopoly rents or other market failures that the government can only partially correct, often under the influence of cronyism.

6 GLOBALIZATION



International trade is commonly known to increase the returns of skilled workers relative to unskilled ones, thereby increasing inequality within the bottom 99 percent of the income distribution. There is another, rarely discussed issue affecting the very top of the income and wealth distribution. Globalization, as well as population and economic growth, increases a company's potential customer base and therefore potential profits.

The strongest of all alpha males of human prehistoric nomadic bands could not be extremely rich because he had only two dozen people around him whom he could exploit. By contrast, Egypt's pharaohs were so rich that they could build pyramids because they could extract pretty much all the surplus labour of hundreds of thousands of people. Today's billionaires cannot coerce their consumers into buying their products as pharaohs could, but they could afford pyramids because their potential customer base is hundreds of millions of people.

If globalization as well as population and economic growth increased the number of producers at the same pace as the number of consumers, they would not produce extreme wealth as competition would drive prices down. Competitive markets of textbook economics assume that

infinity of consumers meets infinity of suppliers. In the real world, however, infinity of consumers (or rather, seven billion) meets a dozen multinational companies that control anything from 20 percent to 80 percent of the global market, plus a second tier of a few companies serving the domestic market only, plus a more or less large number of independents that cater to local, niche markets. That situation is the norm for pretty much every industry, and such market concentration produces extreme wealth.

Market concentration exists because large multinational companies can exploit economies of scale in production and distribution: the more goods a company sells, the lower its cost per unit. Economies of scale are a technological reality in all industries: division of labor increases productivity. Some of the lower cost is passed on to consumers; the rest is kept by the company's owners. Economies of scale are thus not a market failure because they allow making the best use of limited resources. It is for this reason that government antitrust agencies do not break up big multinational companies unless they become too few to the point that they no longer need to compete on price and thus stop passing part of their lower costs to consumers. It is also why globalization is lower than monopoly in the ladder of demerit: cutting unit costs represents a genuine contribution to society, unlike taking advantage of asymmetries of information, for instance.

In practice, economies of scale are often achieved by mergers and acquisitions (or by franchising, which is popular in the retail trade and hotels and restaurants industries): a large company acquires smaller ones, becoming larger still and allowing it to absorb ever-bigger companies. Oxfam's *Behind the Brands* campaign, for instance, has highlighted how many food brands are owned by just 10 multinational companies.⁷⁰ While market failures produce some 'winner-takes-all markets,' economies of scale imply that 'a dozen winners take most' in every industry.

Economies of scale are the reason big multinational companies are necessary from an economic efficiency perspective. However, economic efficiency does not imply that owners of big multinational companies ought to be billionaires in terms of meritocracy. Globalization creates opportunities for economies of scale by opening up new markets. Population and economic growth have the same effect simply by adding the number of consumers who have the ability to pay for a product in existing markets. All three phenomena happen independently of the actions of extremely rich people, so they don't merit them. For example, although it takes effort, talent, and risk-taking to gain market share by exploiting economies of scale, extreme wealth continues to grow even when market share stabilizes, because the market itself continues growing regardless of billionaires' actions. That growth represents a wedge between wealth accumulation on the one hand, and effort, talent, or risk-taking on the other hand. Hence entrepreneurs' extreme wealth can continue growing after retirement, or even after their death to the benefit of their heirs, oftentimes as fast as when they were living and working. Consequently, inherited wealth can be preserved over generations without effort or talent and with well-diversified investment portfolios. As a result, also, the American, European, and Japanese companies that dominated global markets in the 1980s were in a privileged position to conquer, with relatively little effort, the Eastern European, Chinese, and other emerging markets that opened up to international competition in the 1990s, which boosted their customer base and thereby boosted their stock market valuations and their owners' wealth.

National borders still matter and constitute a situational rent that is not merited. Before going global, most multinational companies start by gaining a dominant position in their own national market. The bigger the national market, the best platform it is to conquer the world, because big national markets allow the realization of substantial economies of scale and lower costs compared with those of competitors from smaller countries. The United States is a case in point, as it represents 22 percent of the world's GDP—a huge domestic market—and 36 percent of the world's billionaire wealth. However, there are also outliers: Sweden and Switzerland produce much more billionaire wealth relative to their size than other countries, while Japan produces much less (probably reflecting its deflation and stock market stagnation over the past three decades). Overall, the elasticity between countries' billionaire wealth and GDP is 1.11,

meaning that a 1 percent increase in GDP is correlated with a 1.11 percent increase in the billionaire wealth. The bigger a country is, the higher is its billionaire intensity (i.e., billionaire wealth divided by GDP).

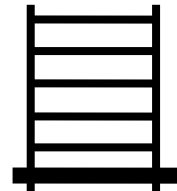
All billionaires have benefited from globalization, population, and economic growth. Besides aristocrats who made their fortune through plunder or inheritance, there were no billionaires (in today's dollars) before the industrial revolution because markets were too small. Likewise, we can be confident that, barring policy change, there will one day be a trillionaire, not because humans' intrinsic abilities will grow but simply because the global economy will grow.

It is thus legitimate to ask whether wealth should be capped at some point. From a meritocratic perspective, a wealth tax of around 1.5 percent a year is justified as it would capture the real rate of return of risk-free investments, which all wealthy people can choose to earn without effort, talent, or risk-taking. The average interest rate of 10-year US Treasury bonds between 1900 and 2010 was 1.7 percent a year after inflation (4.9 percent before inflation).⁷¹ Higher levels of taxation could be justified, as billionaires do not deserve the size of the economy they are born into any more than its growth.

While all industries are affected by globalization and population and economic growth, these phenomena are relatively more important for mature industries where companies compete on cost more than on innovation. Large segments of manufacturing come to mind, such as food processing or textiles. Economies of scale are also very important in retail trade, which is the source of as much as 15 percent of the world's billionaire wealth.

In conclusion, globalization and population and economic growth are not meritocratic, because they happen independently of extremely rich people's actions, and yet they are necessary to create extreme wealth. Economies of scale affect all industries, and all billionaires have benefited from them. They are a particularly important element of success in retail trade and most segments of manufacturing.

7 TECHNOLOGY



It is commonly believed that technological progress is driving up the incomes of skilled workers relative to unskilled ones and thus increasing inequality among the bottom 99 percent of the population. However, studies generally use gross inequality measures like the ratio of the top to bottom deciles, as well as gross measures of skills like college degree versus high school degree. There is another phenomenon going on, allowing some highly skilled workers to reap fortunes compared with only marginally less highly skilled workers: information and communication technologies allow professionals to provide services, which hitherto necessitated face-to-face contact, to a mass audience. To be clear, this section is not about the information technology industry, which was discussed under the monopoly section, but about the way in which information technologies transform some professions (and not others).

The classic example is **show business**. Before the age of television, top athletes and artists could only charge the finite audience that could fit a stadium or concert hall, and they could only give so many performances per year. They could get rich that way but rarely ultra-rich. With the advent of the motion picture, they became able to sell a single performance to a mass audience. The best artists and athletes are now millionaires as a result. The rest, by contrast, struggle to make a living from their art or sport. In addition, show business is limited by the attention span of consumers, who dedicate that attention to the very best because television gives them access to the very best. It takes only 20 teams of 20 players to make up a typical soccer premier league, and you have no time to watch games of other leagues unless you are a soccer addict.

Computers and the internet are transforming many professions in the same way television transformed show business (and as machines transformed craft professions during the industrial revolution). Take **higher education**, for instance. Nowadays, there are thousands universities with hundreds of thousands auditoriums that look very much like the theatres predating the motion picture industry. The best teachers now get jobs at top universities and make more money than the average ones, but not extremely more because they can teach only 300 students at a time. Online colleges are nevertheless developing fast. One can predict that the higher education industry will be unrecognizable 20 years from now.⁷² Millions of students throughout the world will have access to the lectures of the same handful of top teachers in their specialties. Those handfuls of teachers will become ultra-rich—and several owners of for-profit online universities will be among *Forbes'* list of billionaires (there is already one).⁷³ The hundreds of thousands other higher education teachers, including thousands of very bright ones, will have to make do with one-on-one tutoring, for which they will not be able to charge very much.

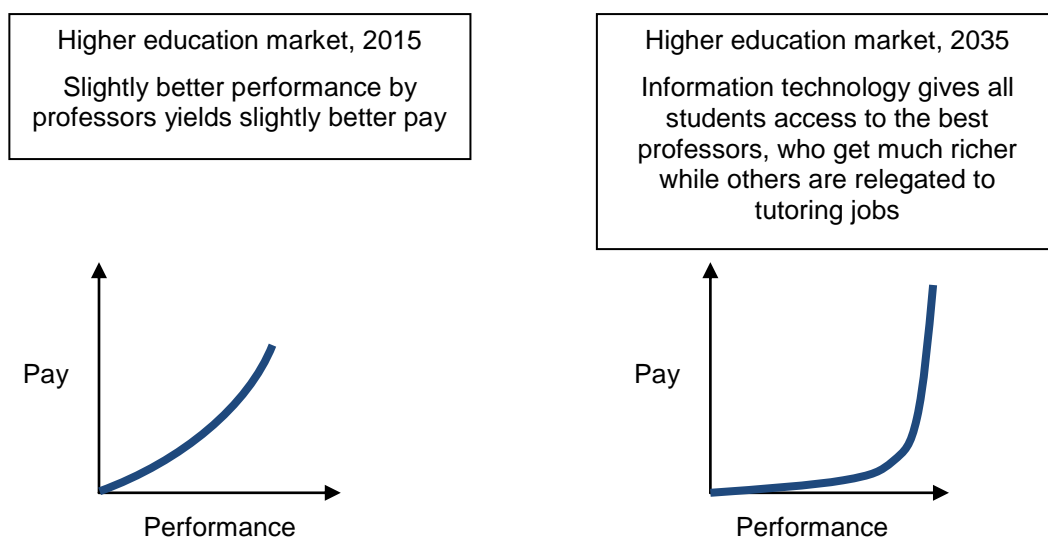
Many jobs are likely to disappear as a result of the automation of knowledge, while others are safe.⁷⁴ Among the safe ones are two professions that we discussed already: law and medicine (see page 21). The reason lawyers and medical doctors do not become extremely rich is that they must continue to serve their clients individually. They cannot dispense standardized services to a mass base of clients through an internet platform. (Information technologies are changing these professions to some extent, as doctors can specialize in diagnosing illnesses of many patients by looking at images, for instance; however, each diagnosis remains a unique service, unlike a digitalized music record that can be recorded once and then sold millions of times.)

Like globalization, technology is thus a necessary condition for a profession to generate extremely wealthy individuals. The two go together: technology enables professionals to reach a client base beyond their physical location; globalization expands that client base to hundreds of millions of people. The different rungs of the ladder of demerit are indeed by no means exclusive. Show business is also subject to powerful network externalities. Social life is only possible with common cultural references. Hence, every summer a new tune tops the hit parade because everyone wants to listen to the music that everyone else talks about, and American elementary schoolchildren cannot be socially adapted if they have not watched *Star Wars*.

Professions going online do not create any problem of economic efficiency. There is no market failure and no one is harmed, at least in the dry terms of economic efficiency: redundant teachers are simply no longer needed in their current jobs and are redeployed elsewhere in the economy.

Contrary to the higher rungs of the ladder of demerit, technology is fundamentally meritocratic, as it increases the economic returns to talent itself. The higher rungs were a series of privileged positions that talented people could seize and that were highly lucrative—not so much because of the talent put into them, but because of the nature of the positions themselves (e.g., CEOs can leverage asymmetries of information regardless of their productivity, a good-enough website can become hugely popular thanks to a network externality). By contrast, television increases artists' income in direct proportion to the quality of their act. Technically, knowledge automation shifts the production function from a geometric curve to an exponential one as depicted in Figure 7.

Figure 7: Technology drives meritocracy to its extreme



There are, however, a couple of major qualifications to the statement that becoming ultra-rich by reaching a wider customer base thanks to information technologies is meritocratic.

First, luck skews the returns to talent. Life is full of serendipity. The people who make it to the hit parade or who become world-class higher education teachers are not always the very best. They can be the lucky contenders among many very able also-rans. Track and field offers the purest example of a meritocratic race. It is a very controlled environment: every runner starts at the same time from the same line with no special equipment, and the first passing the finish line wins. Yet even there, luck is not completely absent. A sprinter might have trained intensely for years and be deemed the favourite by bookmakers, only to be hampered by an injury on the eve of the Olympics finals. Other markets leave much more room to chance than that.

Second, technological progress pushes meritocracy to its limits. It is easy to believe in meritocracy in a normal competitive market, where marginal additional effort yields marginal additional pay as in the left-hand panel of Figure 7. It is harder to believe in meritocracy in a winner-takes-all market, where you need to be the best because you get trashed if you are merely very good. Yet this is the world we are heading toward, as more and more professions are transformed. It may lead to unhealthy and asocial competitive behaviour. Tyler Cowen's 2013 book *Average Is Over* describes that society.⁷⁵

Combining these two caveats depicts an extremely meritocratic society where the vast majority of people are relegated to unemployment or menial jobs. Through talent and hard work, an elite gets decent professional or managerial jobs plus a lottery ticket, of which the prize is a top job. Only the lottery winners become ultra-rich. Even supporters of meritocracy may not feel comfortable with such society.

While professions going online can produce ultra-wealth, they are not a significant source of extreme wealth. Almost all celebrities are millionaires, not billionaires. There are only three billionaire artists and one billionaire athlete (Table 5). (Another artistic profession that generates significant billionaire wealth is fashion design, but it does not rely on information technology to reach a mass public.)

More generally, there are very few professional billionaires, by which I mean people who became extremely rich by selling services that they personally provide or through their intellectual property. Even the people in Table 5 have derived a significant portion of their wealth from owning motion picture companies (as opposed to directing movies) or sport teams

(as opposed to playing in them). There are no management consultant billionaires and no accountant billionaires. As noted, there is only one practicing lawyer billionaire, who now turns down hundreds of prospective clients every year because the automation of knowledge does not allow him to serve them all at the same time. The two dozen educators and doctors who are billionaires have derived their wealth from the tutoring firms and hospitals they founded, not from teaching or practicing medicine on their own. Overall, the professional and administrative services industries have produced a very small amount of billionaire wealth (almost all the billionaire wealth for that industry reported in Figures 3 and 4 derives from the information technologies sub-industry, which is discussed in the 'Monopoly' section of this paper). Table 4 in the 'Monopoly' section confirms that scientific, technical, and artistic professions account only for a modest 7.2 percent of the top 0.1 percent of income in the US.

Table 5: Hall of Fame: Showbiz celebrity billionaires

Celebrity	Wealth source	Wealth (2014)
George Lucas	Moviemaker	\$4.9 billion
Steven Spielberg	Moviemaker	\$3.4 billion
Oprah Winfrey	Television	\$2.9 billion
Michael Jordan	Basketball	\$1 billion

Source: Author's compilation based on data from *Forbes* and: Ozanian, Mike. June 11, 2014. 'Michael Jordan Is a Billionaire After Increasing Stake in Hornets.' *Forbes*. <http://www.forbes.com/sites/mikeozanian/2014/06/12/michael-jordan-is-a-billionaire-after-increasing-stake-in-hornets/>

As Piketty has shown, the higher one goes in the income distribution, the more important capital income becomes over labour income.⁷⁶ It is almost impossible to become a billionaire mainly through labour income. Virtually all self-made billionaires are basically entrepreneurs or businesspeople, either founding a company or buying and selling existing companies. Besides the one lawyer and the handful of artists and athletes of Table 5, the only exceptions are the few CEO billionaires, discussed in section 5 on monopoly, who are compensated in the form of stock options that renders them capitalists as well.

In conclusion, the automation of knowledge is transforming many professions in a way that is going to significantly increase income and wealth inequality. This phenomenon is fundamentally meritocratic, although not impervious to a substantial element of luck, but it pushes meritocracy to an extreme that few people would countenance. Besides, the automation of knowledge is not very relevant to extreme wealth. Although it is likely to boost ultra-wealth, this phenomenon is negligible when it comes to extreme wealth, for extreme wealth is overwhelmingly the product of capital income, not labour income. This means that the only rung of the ladder of demerit that is arguably meritocratic is also negligible as a source of extreme wealth.

CONCLUSION

Billionaires are ‘ordinary men and women who have achieved incredible success through hard work, determination, luck, and risk’.⁷⁷ Beyond their talent, effort, and risk-taking, this paper has explored six underlying social, political, and economic drivers of extreme wealth, and has argued that these drivers are not meritocratic.

While it is self-evident that crime, cronyism, and inheritance are not meritocratic, it is arguable for monopoly, globalization, and technology:

- Crime represents a negative contribution to society.
- Cronyism represents a negative contribution to society as well, but less clearly so than crime because it is not always illegal, and lobbying for private interests is sometimes in the public interest.
- Inheritance represents neither a positive nor a negative contribution to society.
- Many monopoly rents exist owing to the nature of products and the laws that underpin their markets regardless of individuals’ own contributions. However, unlike inheritance rents, it does take hard work to capture monopoly rents.
- Gaining market shares by creating economies of scale and cutting costs represents a positive contribution to society. However, benefiting from population and economic growth and globalization with constant market share does not.
- Exploiting technologies to reach more customers represents a positive contribution to society and constitutes a return to talent itself, not a rent. However, technology stretches meritocracy to an extreme, and luck always remains a factor in determining individuals’ wealth.

Inheritance aside, talent, effort, and risk-taking are necessary to become extremely rich. But monopoly skews the returns to talent, effort, and risk-taking. According to meritocracy, people who benefit from the various market failures discussed in this paper should be rich, but not as much as they are. In some cases, network externalities have generated wealth for a few individuals 10,000 times as high as the wealth that other gifted individuals could expect.

This paper has also quantified the non-meritocratic drivers of extreme wealth. Over one-third of billionaires are heirs. Those who are not are either entrepreneurs who have founded a successful company or businesspeople who buy and sell existing companies. Most of them have presumably been helped by cronyism or monopoly, and all of them by globalization (Table 6). Cronyism appears to be a dominant source of extreme wealth in developing countries, a finding particularly relevant for Oxfam.

Table 6: The ladder of demerit quantified

Driver of extreme wealth	Share of the world’s extreme wealth affected by driver (2014)
Crime	~0%
Cronyism	14 to 43% ^{2,3}
Inheritance	37%
Monopoly	19% ^{2,4}
Globalization	100%
Technology	~0%

1. Author’s calculations based on *Forbes* data. Total is greater than 100 percent as some billionaire wealth fits more than one row. 2. Estimated; see previous sections of this paper. 3. Lower bound: High presumption of cronyism. Higher bound: High and moderate presumption of cronyism. 4. Presumption of monopoly power: Finance, health care, legal, and information technology industries, plus hired CEOs.

It is important to bear in mind the limitations of the data (Box 2). Nevertheless, data limitations tend to reinforce this paper's conclusions rather than undermine them: the origin of the extreme wealth not reported by *Forbes* is more likely to be criminal, crony or inherited than entrepreneurial. The analytical framework presented in this paper could be used to analyse ultra-wealth using other data sources such as tax records or data garnered by wealth management firms.

It is also important to note that, contrary to the figure for inheritance, the figures of Table 6 for cronyism and monopoly are estimates, not facts. They measure *presumption* of cronyism and monopoly. They rely on an analysis that lumps billionaires in large industries. They nevertheless rest on theory backed by observed patterns that some industries do produce more extreme wealth relative to their sizes than others. Further research could refine these estimates, including by relying on more disaggregated national account data produced by most national statistics agencies, which is done for the United States below.

With these caveats in mind, putting it all together and taking away double-counting (as some billionaire wealth meets several criteria), 65 percent of total billionaire wealth has been accumulated with the help of inheritance, cronyism, or monopoly. More precisely, 65 percent of the world's billionaire wealth meets at least one of these criteria:

- Wealth mainly acquired in a corruption-prone country and state-dependent industry (high presumption of cronyism)
- Wealth mainly acquired in the mining, oil, and gas industry
- Wealth inherited or 'inherited and growing'
- Wealth mainly acquired in the finance, health care, and legal industries or as CEO of a company that one has neither founded nor inherited (high presumption of the asymmetries of information market failure)
- Wealth mainly acquired in the information technology industry (presumption of network externality, vendor lock-in, and public good market failures)

Cronyism and inheritance alone (the first three criteria alone) account for 50 percent of the world's billionaire wealth.

Moreover, 100 percent of billionaire wealth has benefited from globalization, economic growth, and population growth, which boost extreme wealth over time regardless of individuals' actions. Meanwhile, both the highest and lowest rungs of the ladder of demerit—crime and technology—have been found to be negligible sources of extreme wealth. However, the latter (technology) is probably a significant source of ultra-wealth, and may become increasingly important in the future as the automation of knowledge progresses.

Wealth derived from mining, oil, and gas is included in the 65 percent headline figure because extractive industries are the quintessential source of rent and because that industry was found to generate more billionaire wealth than average even in countries not prone to corruption. The pharmaceutical, electronics, and luxury goods industries were not included in that figure despite having been identified as prone to intellectual property, vendor lock-in, and network externalities market failures, respectively. Only the information technology industry was included in the headline figure because it is highly subject to all three market failures. The retail industry and large segments of manufacturing were identified as more prone to economies of scale than the rest of the economy, but they were not included in the 65 percent figure either, as they are contained in the 100 percent of the economy that is subject to globalization. Last but not least, 28 percent of the world's billionaire wealth was found to be moderately prone to cronyism, either because it was derived from corruption-prone countries or from state-dependent industries but not both. Adding moderate presumption of cronyism to the 65 percent figure while subtracting double-counting yields 79 percent. However, the hypothesis that state-dependent industries produce more billionaire wealth than average was not supported for advanced countries (except for the extractive industries, already included in the 65 percent). Adding only the 9 percent of

billionaire wealth from corruption-prone countries while eliminating double-counting would bring the headline figure to 71 percent of the world's billionaire wealth having benefited from cronyism, inheritance, or monopoly.

As the figures quoted above suggest, there is some but not much overlap among the various drivers of extreme wealth explored in this paper. They are complementary, and together they explain the bulk of extreme wealth. This finding is confirmed by a deeper dive in the industry analysis of Figure 4 for a single country, the United States, which on its own produces 36 percent of the world's billionaire wealth. Table 7 disaggregates the industries of Figure 4 that produce extreme wealth into their sub-industries. Only the sub-industries that have more than one billionaire and a billionaire wealth intensity above 5 percent are shown.

A first finding of Table 7 is that over three-fourths of US billionaire wealth is generated by industries that account for less than one-fourth of GDP. In other words, not all industries are equal when it comes to wealth concentration. The industries and sub-industries are ranked by billionaire wealth intensity (billionaire wealth divided by value added). The first page of Table 7 shows the industries that produce substantial extreme wealth relative to their sizes—with asset management on top—the second page shows those that don't; the cut-off of billionaire intensity being the overall average: 10 percent.

A second finding is that all industries that do concentrate wealth (those on the first page of Table 7) do so for a reason: when it is not state-dependency, it is one market failure or the other; and when it is neither, the extreme wealth that does exist is inherited. For instance, the US Department of Commerce Bureau of Economic Analysis disaggregates manufacturing into 19 sub-industries, from wood products to textiles, and from cars to machinery. Only four of these sub-industries produce any significant extreme wealth: chemicals, electronics, food, and medical devices (part of 'miscellaneous manufacturing'). The chemicals' extreme wealth comes mostly from pharmaceuticals and cosmetics, which are subject to the intellectual property market failure. Electronics is prone to vendor lock-in. Food, however, belongs to the group of mature manufacturing industries that are very competitive and typically do not produce much extreme wealth. It turns out that the food billionaire wealth that is observed in the United States is mostly inherited. It was built in a previous generation, at a time when some brands like Mars or Campbell exploited economies of scale and conquered the American—and later the world—market and used trademarks (another form of intellectual property not discussed in this paper) to maintain customer loyalty while charging marked-up prices, thereby generating a sustainable flow of profits and extreme wealth.

Nevertheless, both Tables 6 and 7 leave some billionaire wealth unaffected by cronyism, inheritance, or monopoly: 35 percent in Table 6 (or just 21 percent if moderate presumption of cronyism is taken into account). That 35 percent balance is arguably not meritocratic either, as it is driven by globalization, population and economic growth.

A closing argument against the merited character of extreme wealth is that, on a planet of more than seven billion people, there are bound to be a few hundred people who are consistently lucky in life (and at the same time talented and hard-working) such as to accumulate extreme wealth. The remaining 35 percent of billionaire wealth has been built by particularly successful entrepreneurs and businesspeople. An appetite for risk and good flair to anticipate the value of companies and assess alternative business strategies are the two most important qualities of billionaires. They are necessary, but not sufficient qualities. All billionaires take calculated risks, meaning that they know that forces beyond their control could bankrupt them. Indeed, *Forbes* data shows substantial volatility in the wealth of individual billionaires, and every year a significant portion of them drops off the list (a couple of billionaires even went bankrupt before becoming billionaires again with a completely different business). For every shrewd investor who becomes a billionaire, there are shrewd investors who go bankrupt. The former are few but highly visible; the latter are many but anonymous. While it is meritocratic that a risk-taking and shrewd investor gets wealthier than a risk-averse and naive investor, it is not meritocratic that a risk-taking and shrewd investor whose bets succeed gets wealthier than an equally risk-taking

and shrewd investor whose bets do not, because the difference between the two is only luck. In other words, risk-taking is meritocratic *ex ante*, but not *ex post*: risk-taking investors deserve higher *expected* returns, but *actual* returns do not necessarily reflect merit. To come back to Merlot's quote reproduced at the beginning of this conclusion, the determining quality of billionaires is to be lucky—the other qualities being necessary but not sufficient. And luck is not meritocratic.

Table 7: Extreme wealth in the United States, 2012

Industry	Share of GDP (%)	Share of billionaire wealth (%)	Billionaire wealth intensity (%)	State-dependent proportion (%)	Inherited proportion (%)	Market failure¹
<i>Asset management</i>	0.3	12.4	443.4	0	6.4	AI
<i>Pipelines</i>	0.2	1.7	116.4	100	57.7	
<i>General merchandise stores</i>	0.9	8.0	90.6	0	80.5	
<i>Data processing, internet publishing, software production</i>	1.9	15.7	82.6	0	0.5	NE, IP, VL
<i>Other recreational services</i>	0.4	2.1	48.7	100 ²	0.0	
<i>Oil & gas</i>	1.7	6.1	37.1	100	37.5	
<i>Food</i>	1.4	4.1	28.6	0	78.3	
<i>Hotels</i>	0.8	2.2	28.2	0	100.0	
<i>Broadcasting & telecommunications</i>	2.4	6.7	27.7	12 ³	36.7	NE, IP, VL
<i>Sports & arts⁴</i>	0.5	1.3	23.9	0	25.6	NE, IP
<i>Motion pictures</i>	0.7	1.4	20.0	0	39.8	NE, IP
<i>Miscellaneous manufacturing⁵</i>	0.5	0.9	18.0	0	56.2	IP
<i>Publishing</i>	1.2	1.9	16.3	0	88.8	
<i>Electronics</i>	1.6	2.4	15.8	0	0.0	VL, IP
<i>Mining</i>	1.0	0.9	15.2	100	24.3	
<i>Other retail⁶</i>	2.8	4.0	14.1	0	6.9	
<i>Food & beverage stores</i>	0.9	1.1	13.3	0	60.4	
<i>Chemical products⁷</i>	2.3	3.1	13.0	6 ⁸	54.4	IP
SUBTOTAL	21.5	76.0	..	..	..

Table 7: Extreme wealth in the United States, 2012 (continued)

Industry	Share of GDP (%)	Share of billionaire wealth (%)	Billionaire wealth intensity (%)	State-dependent proportion (%)	Inherited proportion (%)	Market failure ¹
<i>Leasing</i>	1.1	0.9	8.4	0	0.0	
<i>Securities & other financial brokerage</i>	1.1	0.8	7.0	0	17.8	AI
<i>Retail trade</i> ⁹	1.1	0.5	4.0	0	21.6	
<i>Real estate</i>	11.8	4.8	4.0	100	15.9	
<i>Transportation</i> ¹⁰	2.8	1.1	3.9	0	52.0	
<i>Construction</i>	3.6	1.1	3.2	100	29.9	
<i>Recreational services</i> ¹¹	1.9	0.6	3.0	0	0.0	
<i>Finance</i> ¹²	5.2	1.4	2.6	84 ¹³	36.4	AI
<i>Wholesale trade</i> ¹⁴	5.9	1.4	2.4	88 ¹⁵	77.6	
<i>Education</i>	1.1	0.3	2.4	0	27.9	
<i>Manufacturing</i> ¹⁶	6.7	1.4	2.1	0	15.1	
<i>Utilities</i>	1.7	0.3	1.6	100	0.0	
<i>Agriculture</i>	1.2	0.2	1.3	100 ¹⁷	0.0	
<i>Professional & administrative services</i>	10.5	0.4	0.4	0	29.0	
<i>Health care</i>	7.1	0.2	0.3	0	0.0	AI
<i>Diversified billionaire wealth</i>	..	8.8	..	..	37.7	
<i>Other services</i>	2.2	..	..	..	..
<i>Government</i>	13.5	0.0	0.0	..	..
SUBTOTAL	78.5	24.0	..	..	..
TOTAL	100.0	100.0	..	..
AVERAGE			10.0	20.5	31.9	

Sources: Author's calculations based on *Forbes* data for billionaire wealth and the Bureau of Economic Analysis for value added and GDP.

Notes:

1. Asymmetries of information (AI), network externalities (NE), intellectual property (IP), vendor lock-in (VL).
2. All the billionaire wealth of 'other recreational services' is found in the gambling sub-industry.
3. *The Economist* does not consider broadcasting as a state-dependent industry, but telecommunication is.
4. Almost all the billionaire wealth of 'performing arts, spectator sports, and museum' derives from sport teams.
5. All the billionaire wealth of the sub-industry 'miscellaneous manufacturing' is found in medical devices and equipment.
6. Apparel retail accounts for almost two-thirds of the billionaire wealth of the 'other retail' sub-industry. Note that many apparel companies are vertically integrated and include some manufacturing activities, but the whole wealth has nevertheless been assigned to retail trade.
7. About a third of the billionaire wealth of the sub-industry 'chemical products' is found in pharmaceuticals and another third in cosmetics.

8. *The Economist* considers 'chemicals' as a state-dependent industry; however, most of the billionaire wealth of the US chemical industry is not found in heavy industry but in final chemical products, which are here not considered as state-dependent.
9. Excluding the food stores, general stores, and other retail sub-industries, which are accounted for separately as they have a billionaire wealth intensity above 5 percent and more than one billionaire. This industry thus consists solely of car dealerships.
10. Excluding the pipelines sub-industry, accounted for separately.
11. Excluding the arts and sports, hotels, and other recreational services sub-industries that are accounted for separately as they have a billionaire wealth intensity above 5 percent. This industry thus consists solely of restaurants.
12. Excluding the asset management and securities brokerage sub-industries, which are accounted for separately.
13. Banking is state-dependent according to *The Economist*; insurance is not. This industry excludes asset management and securities brokerage, which are accounted for separately.
14. Vertically integrated agribusinesses are particularly difficult to classify as their activities straddle manufacturing, transportation, and trading, with some agriculture although large agribusinesses typically outsource agricultural production itself to independent farmers. The agribusiness billionaire wealth has been assigned to wholesale trading, and it accounts for the bulk of that industry's billionaire wealth.
15. *The Economist* considers commodities trading as an industry prone to cronyism, but not wholesale trade in general.
16. Excluding the electronics, food, chemical products, and miscellaneous manufacturing sub-industries, which are accounted for separately.
17. All the billionaire wealth in the agriculture industry is found in forestry, which is a state-dependent industry according to *The Economist*.

APPENDIX: INTELLECTUAL PROPERTY

Knowledge is the ultimate public good. For economists, *public goods* are goods that can be consumed by one individual without reducing their availability to many more people. Think of a radio broadcast, for instance. Producing it does cost some money. But once produced, it can be listened to by any number of people at no additional cost. Ideas are the same.

Public goods raise a dilemma for markets, and constitute a market failure. Charging for knowledge is not economically efficient because it artificially rations a free (once produced) and valuable resource. For example, once a drug has been invented, preventing the production of affordable generics kills people. It is best for knowledge to be fully available to all without restriction. However, giving away knowledge for free means that its creators are not compensated for their production costs and so do not have an incentive to create knowledge in the first place, which is also inefficient. For example, if competing companies sell generic drugs at low cost, drug companies cannot afford the research and development costs of new drugs.

Governments can deal with this market failure in two ways. One is public funding of knowledge creation. Examples include public funding of fundamental research and of radio and television broadcasting. This is an imperfect or 'second-best' solution because the taxes necessary to finance government spending may themselves be a source of inefficiencies (although not all taxes are inefficient).

The alternative solution is time-bound intellectual property rights. In the United States, patents allow technology innovators to claim royalties for the use of their invention for a period of 20 years. Those royalties incentivize creation but artificially ration use, so they are also a second-best solution. The time limit of patents is meant as a compromise between the two pitfalls of public goods.

To assess the degree to which patents incentivize technological progress, it is worth considering talent, effort, and risk-taking separately.

Economic incentives do not seem to increase an individual's creativity, and perhaps not other forms of talent either. Daniel Pink argues that motivating creative work requires providing staff with autonomy, mastery, and purpose.⁷⁸ It is also necessary to 'take money off the table' by offering a compensation package sufficient to allow creators not to worry about money. That said, offering additional financial incentives does not improve the quality of creative work. Indeed, experiments show that financial incentives decrease creativity, perhaps because creators are distracted by the pressure to perform. These experiments were conducted both with small sums of money and with sums corresponding to monthly salaries.⁷⁹ We lack data for very large sums, but it is plausible that the result would hold: either you have a great idea, or you don't. The prospect of earning, say, a billion dollars instead of a million dollars is not likely to improve your idea.

Effort, by contrast, can be increased through financial incentives. However, there are only 24 hours in a day, and it would probably not take much financial incentive to max out an individual's effort. Indeed, there are millions of people in the world putting in 70-hour workweeks at every income level, from very poor people struggling to survive to high-flying professionals. Boosting individuals' work hours cannot possibly be a rationale for offering billion-dollar incentives, and the number of hours worked cannot possibly be a predictor of becoming a billionaire.

To the contrary, risk-taking does require the big financial incentive that patents provide. Technological progress increases as the number of people working on research and development increases. Investing in research and development to pay the salaries of all those people is very risky. Some research will not yield any useful results, or the competition might win the race to the patent office. The **pharmaceutical industry** (representing 2 percent of

billionaire wealth) pays tens of thousands of researchers in the United States alone, many of whom do not develop a single marketable drug during their whole career. Venture capitalists fund scores of startups in the **information technology industry**, most of which fail. The financial return on the few successes must be large enough to make up for all the losses, otherwise investment in research and development would dry up.

Investors need big financial incentives to spur technological progress, but the innovators themselves do not. That is an important point for our discussion of extreme wealth. Top-notch innovators cannot be cloned, so if they needed billion-dollar incentives to exercise their talent, the world would need billionaires from an economic efficiency perspective. But that does not appear to be the case. By contrast, investors can be replaced and risk can be spread with financial instruments. It is not necessary for all the investment in research and development, and all the resulting profits, to be concentrated into few hands. Indeed, the state can step in with grants and prizes. (Grants provide research funding upfront, the state assumes all the risk, while prizes provide research funding after innovations have proven themselves, hence they mimic the incentive provided by patents.) Most startups are funded by private equity firms that themselves cater to wealthy individual investors. Piketty shows that returns to capital increase with the size of investors' wealth because scale gives access to financial instruments thus far out of reach of the general public.⁸⁰ The financial industry should democratize and increase the mass public's access to risky but lucrative investment products, with proper safeguards including education about the critical need to diversify one's portfolio.

A final comment regarding the economic efficiency argument of intellectual property is that the 20-year limit of patents is arbitrary. To optimize the trade-off between incentivizing innovation and allowing everyone to make full use of innovation, the duration of patents should in theory vary for different types of inventions, although it is quite difficult in practice to determine how much. For copyrights (another form of intellectual property that incentivizes the production of cultural content), the arbitrariness is even more striking: copyrights expire only 70 years after the creator's death. It is dubious that creators are incentivized by the returns to their unborn great-grandchildren, as testified by mainstream economists to the Supreme Court.⁸¹ This law has more to do with cronyism.⁸² From an economic efficiency perspective, copyrights are probably both not generous enough, as it is hard to make a living as an artist unless you make it to the hit parade, and too generous, as they incentivize top artists to retire early.

The fact that the cap on intellectual property rights is arbitrary is evidence that extreme wealth derived from intellectual property does not result solely from merit. It is the result of public policy, and it is legitimate to ask whether the public policy strikes the right balance between the conflicting efficiency arguments as well as alternative conceptions of social justice. For instance, instead of capping intellectual property in terms of years, it could be capped in terms of royalties: patents and/or copyrights would lapse as soon as their holders have received a predetermined amount of royalty payments, and the amount could vary depending on whether the creation is a song, a book, or inventions of various kinds; more for drugs as they require massive investments, less for computer software as it requires much less investment.

To recap, intellectual property is an imperfect and arbitrary solution to the public goods market failure. How does it measure up against meritocracy?

That people ought to own their intellectual creation sounds both meritocratic and intuitive enough. However, the opposite idea—that knowledge should be free for all to use—is also intuitive. After all, private property has existed since the dawn of civilization, but the abstract idea of intellectual property was codified into law only in the 19th century, with roots dating to the 16th. To this day, the music and motion picture industries must spend big advertising money to remind people that products that look free, such as digital information that can be copied at no cost—are, by law, not free.

A first cut at the meritocratic argument suggests that the duration of patents should be unlimited: if people deserve to own their inventions, why impose a time limit? However,

unlimited patents would harm economic efficiency because they would create a permanent rationing of knowledge.

On closer look, however, meritocracy calls for much less than unlimited patents, and perhaps hardly any patent at all. Let's take the telephone as an example. Had Alexander Graham Bell not invented the telephone in 1876, would we be using telegraphs to this day? No, someone else would have invented the telephone a little later. An inventor's true contribution to society is not the present value of his or her invention through the end of time, but a tiny acceleration in technological progress. It turns out that someone else invented the telephone the same day as Bell, and Bell was entangled in lawsuits to defend his patent until after it expired 20 years later.⁸³ This example is a dramatic illustration of a common phenomenon: the race to the patent office. Technological progress is incremental, cumulative, and cooperative, as inventors throughout the world take stock of all available knowledge and each add their little improvement on a previous design.⁸⁴ Overall, one can reasonably conclude that anything that is useful will be invented very soon after it becomes technologically feasible based on ongoing progress in relevant fields.

There is also a certain lottery element to patents because there are often different ways to make something work, but only one way is eventually adopted as standard and becomes profitable. While it helps to patent as many varieties of new technologies as soon as possible, the technology that emerges as the global standard that creates a billionaire is not necessarily the earliest invention. Operating systems predated Microsoft; online social networking predated Facebook; online search engines predated Google; Amazon and eBay were very early movers in the online retailing and auction businesses but not completely alone. The founders of each of these companies did improve on existing technologies, but business strategy was more important to their success than the technological innovation itself. It does not mean that some innovators are not exceptionally good. But patents are a winner-takes-all market that skews the relationship between merit and economic reward. For every winner who gets richly rewarded, other bright innovators, perhaps slightly less quick or simply less lucky, get nothing at all.

The meritocratic case appears stronger for copyrights. If Bell had not existed, we would be using telephones all the same. By contrast, if Mozart had not lived, the vacuum left on classical radio programs would be filled by lesser composers, and our lives would be a bit duller as a result. It is not by chance that Mankiw uses artists (plus Steve Jobs, who blended arts into technology) as his best examples of meritocracy (see quote on page 5). But as discussed in section 7 on technology, they account for a negligible proportion of extreme wealth.

A couple of other considerations undermine the meritocratic character of intellectual property. One is the marketability of knowledge. Albert Einstein surely made a most significant contribution to humankind. Yet he did not make any big money out of it. Likewise, for all the natural scientists who laid the foundations for all profitable technologies. It is not meritocratic that some innovators fail to get rich because their innovation, while as useful as others, is not as marketable as others. Many if not most patents are filed by inventors who do not know whether their inventions will ever be marketable; they file them just in case someone else finds a way to monetize their invention, in which case they would get royalties. To become a billionaire, it is more important to find out how to make money out of an invention than to invent it. From a meritocratic perspective, the reverse should be true, as the invention itself is the contribution to humanity, while the monetization merely redistributes wealth between inventor and consumers.

The second consideration about intellectual property rights and meritocracy has to do with values. Wikipedia and Facebook are two giants of the internet that both make significant contributions to society. Yet the latter has produced billionaires, but not the former. In this case, it is largely by choice of the inventor. The idea that knowledge should be free for all to access remains a powerful one and has generated the open-source movement in the information technology industry. Wikipedia espouses that philosophy. Likewise, the inventor of the World Wide Web, Tim Berners-Lee, could have patented his invention and taken a cut from every advertising dollar spent on the web, thereby becoming the world's first trillionaire.⁸⁵ Had he gone

that path, others would surely have proposed open-source alternatives, but that might not have dethroned the World Wide Web. Thanks to the network externality, Facebook remains dominant even though non-profit online social networking alternatives abound.

Giving away one's invention as open source can itself be a part of a profitable business strategy. The market for smart phones' operating system is an example. Apple's strategy relies on vertical integration (i.e., providing hardware, operating system, and software), vendor lock-in (i.e., making its hardware and software incompatible with competitors' products), and intellectual property (i.e., charging for its inventions). By contrast, Google made Android open source and does not get a penny for it and it relies on other companies to provide the hardware. As people increasingly shop online with their smart phone, Google reckons that offering a free mobile phone operating system with its own web search, email, and other services built onto it is an important part of its strategy to sell advertisement, which is its main revenue source. In the end, the business strategy around an invention is more important to building a fortune than the invention itself.

How important is the billionaire-inventor phenomenon anyway? It turns out that it is not very significant. Outside of the information technology industry, there appear to be only one or two dozen billionaires who have personally invented a new technology out of the 1,645 of Forbes' list.⁸⁶ (A handful of them have invented medical devices such that, given its small size, the medical devices industry has a high billionaire wealth intensity.)

In the past couple centuries, inventors built industrial empires. For instance, most car brands bear the name of a founder who actually designed cars. The same is true for many other manufacturing companies. The fact that today's billionaire-inventors are largely confined to the information technology industry underscores the maturity of other industries and the low startup costs of information technology companies, but also the network externalities, vendor lock-in and intellectual property market failures that prevail in this industry.

NOTES

- ¹ Oxfam. January 20, 2014a. *Working for the Few: Political Capture and Economic Inequality*. <http://www.oxfam.org/en/policy/working-for-the-few-economic-inequality>
- ² Oxfam. January 2015. *Wealth: Having It All and Wanting More*. <http://www.oxfam.org/en/research/wealth-having-it-all-and-wanting-more>
- ³ Stein, Ben. January 24, 2014. 'Income Inequality Debate.' *Fox News: The O'Reilly Factor*. <http://www.foxnews.com/on-air/oreilly/2014/01/27/income-inequality-debate>. Davis, Evan. January 23, 2015. 'The BBC World Debate: A Richer World, but for Whom?'. <http://www.weforum.org/sessions/summary/bbc-world-debate-richer-world-whom>. Davidson, Adam. May 1, 2012. 'The Purpose of Spectacular Wealth, According to a Spectacularly Wealthy Guy.' *The New York Times Magazine*. http://www.nytimes.com/2012/05/06/magazine/romneys-former-bain-partner-makes-a-case-for-inequality.html?pagewanted=all&_r=1&_ *The Economist*. January 20, 2011. 'The Rich and the Rest.' <http://www.economist.com/node/17959590>. See also *The Economist's* special report on global leaders: <http://www.economist.com/node/17929075>. *The Economist*. October 13, 2012. 'True Progressivism.' <http://www.economist.com/node/21564556>. See also *The Economist's* special report on the world economy: <http://www.economist.com/node/21564414>.
- ⁴ Stiglitz, Joseph E. 2013. *The Price of Inequality: How Today's Divided Society Endangers Our Future*. New York: W.W. Norton.
- ⁵ Oxfam. 2014b. *Even It Up: Time to End Extreme Inequality*. <https://www.oxfam.org/en/research/time-end-extreme-inequality>
- ⁶ Mankiw, N. Gregory. 2013. 'Defending the One Percent.' *Journal of Economic Perspectives* 27 (3): 21–34. Mankiw, N. Gregory. 2010. 'Spreading the Wealth Around: Reflections Inspired by Joe the Plumber.' *Eastern Economic Journal* 36: 285–298. <http://www.palgrave-journals.com/ej/journal/v36/n3/full/eej201022a.html>. Solow, Robert, and N. Gregory Mankiw. 2014. 'Correspondence: The One Percent.' *Journal of Economic Perspectives* 28 (1): 243–248.
- ⁷ Arnsperger, Christian, and Philippe Van Parijs. 2003. *Éthique Économique et Sociale*. Paris: La Découverte. Lamont, Julian, and Christi Favor. 2013. 'Distributive Justice.' In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta. <http://plato.stanford.edu/archives/spr2013/entries/justice-distributive/>
- ⁸ Mankiw. 2010. Op. cit.. Page 36.
- ⁹ Swift, Adam. 2006. *Political Philosophy: A Beginners' Guide for Students and Politicians*. Cambridge, MA: Polity.
- ¹⁰ *The Economist*. January 24, 2015. 'America's New Aristocracy.' <http://www.economist.com/news/leaders/21640331-importance-intellectual-capital-grows-privilege-has-become-increasingly>. *The Economist*. April 18, 2015b. 'Dynasties.' <http://www.economist.com/news/leaders/21648639-enduring-power-families-business-and-politics-should-trouble-believers>
- ¹¹ Oxfam. 2014b. Op. Cit. For the impact on democracy, see Oxfam 2014a. Op. Cit.
- ¹² Davis. 2015. Op.cit.
- ¹³ Merlot, Charles. 2014. *The Billionaire's Apprentice: How 21 Billionaires Used Drive, Luck and Risk to Achieve Colossal Success*. Create Space. Page 7.
- ¹⁴ For a description of the methodology underlying *Forbes'* database, see: Dolan, Kerry, and Luisa Kroll. March 3, 2014. 'Inside The 2014 *Forbes* Billionaires List: Facts And Figures.' *Forbes*. <http://www.forbes.com/sites/luisakroll/2014/03/03/inside-the-2014-forbes-billionaires-list-facts-and-figures/>
- ¹⁵ *Wealth-X* and UBS. 2013. Op. cit. *Wealth-X* and UBS. 2014. *Wealth-X and UBS Billionaire Census of 2014*. <http://www.billionairecensus.com/home.php>
- ¹⁶ Vardi, Nathan. June 15, 2011. 'Joaquin Guzman Has Become the Biggest Drug Lord Ever.' *Forbes*. <http://www.forbes.com/sites/nathanvardi/2011/06/15/joaquin-guzman-has-become-the-biggest-drug-lord-ever/>
- ¹⁷ Carlyle, Erin. March 13, 2012. 'Billionaire Druglords: El Chapo Guzman, Pablo Escobar, The Ochoa Brothers.' *Forbes*. <http://www.forbes.com/sites/erincarlyle/2012/03/13/billionaire-druglords-el-chapo-guzman-pablo-escobar-the-ochoa-brothers/>
- ¹⁸ Fontevecchia, Agustino. March 18, 2014. 'Crooked Billionaires: From Berlusconi to Kwong Yu, Here Are the Wealthy Facing Serious Legal Trouble?' *Forbes*. <http://www.forbes.com/sites/afontevecchia/2014/03/18/crooked-billionaires-from-berlusconi-to-wong-kwong-yu-here-are-the-wealthy-facing-serious-legal-trouble/>

- ¹⁹ Novack, Janet. May 9, 2014. 'Prosecutor: Beanie Babies Billionaire Tax Cheat Didn't Deserve 'Get-Out-Of-Jail' Card.' *Forbes*. <http://www.forbes.com/sites/janetnovack/2014/05/09/prosecutors-beanie-babies-billionaire-not-so-charitable-didnt-deserve-a-get-out-of-jail-card/>
- ²⁰ *The Economist*. March 15, 2014. 'The New Age of Crony Capitalism.' <http://www.economist.com/news/leaders/21598996-political-connections-have-made-many-people-hugely-rich-recent-years-crony-capitalism-may>
- ²¹ Roxann Henry quoted in: *The Economist*. March 29, 2014. 'Just One More Fix.' <http://www.economist.com/news/business/21599799-trustbusters-have-got-better-detecting-cartels-and-bolder-punishing-them-incentives>
- ²² Phillips Erb, Kelly. May 20, 2014. 'Holder Warns on Offshore Accounts, Says No Bank Is 'Too Big to Jail.' ' *Forbes*. <http://www.forbes.com/sites/kellyphillipserb/2014/05/20/holder-warns-on-offshore-accounts-says-no-bank-is-too-big-to-jail/>
- ²³ *The Economist*. 2015b. Op. cit.
- ²⁴ Corporate Europe Observatory. 2014. *The Fire Power of the Financial Lobby: A Survey of the Size of the Financial Lobby at the EU Level*. http://corporateeurope.org/sites/default/files/attachments/financial_lobby_report.pdf
- ²⁵ Rivlin, Gary. April 30, 2013. 'How Wall Street Defanged Dodd-Frank.' *The Nation*. <http://www.thenation.com/article/174113/how-wall-street-defanged-dodd-frank#>
- ²⁶ Gilens, Martin, and Benjamin I. Page. 2014. 'Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens.' *Perspectives on Politics* 12 (3): 564–581. Gilens, Martin. 2005. 'Inequality and Democratic Responsiveness.' *Public Opinion Quarterly* 69 (5): 778–796. <http://www.princeton.edu/~mgilens/Gilens%20homepage%20materials/Inequality%20and%20Democrat%20Resp/Gilens%202005>. Bartels, Larry M. August 2005. 'Economic Inequality and Political Representation.' <https://www.princeton.edu/~bartels/economic.pdf>. See also: <https://represent.us>
- ²⁷ Nsehe, Mfonobong. November 8, 2011. 'Who Were Africa's Richest Dictators?' *Forbes*. <http://www.forbes.com/sites/mfonobongnsehe/2011/11/08/who-were-africas-richest-dictators/>
- ²⁸ Oxfam. 2014a. Op. cit.
- ²⁹ West, Darrell M. 2014. *Billionaires: Reflections on the Upper Crust*. Washington, DC: Brookings Institution Press.
- ³⁰ Short of investigative journalism, researchers Bagchi and Svejnar have compiled press stories about billionaires on *Forbes'* list, on the basis of which they have classified them in two categories: politically-connected and not politically-connected. This approach is somewhat subjective by their own admission, as having political connection is not proof of bending the law to one's advantage and as some crony billionaires might not have been the subject of media stories. It is nevertheless a good way to triangulate results obtained by other methods. They find that 13% of billionaire wealth was politically-connected in 1987, 11% in 1992 and 1996, and 4% in 2002. This paper's figure of 14% of 'high presumption of cronyism' for 2014 (Figure 5) is on the high end of that range, reflecting a more expansive definition of cronyism: not only individual companies seek privileges from the state, but whole industries do. By the way, Bagchi and Svejnar find that politically-connected billionaire wealth lowers economic growth, but total billionaire wealth does not. Bagchi, Sutirtha and Jan Svejnar. 2015. 'Does wealth inequality matter for growth? The effect of billionaire wealth, income distribution, and poverty.' *Journal of Comparative Economics*. <http://ssrn.com/abstract=2091834>
- ³¹ Countries where corruption is rife are here defined as countries that have a rating of one standard deviation below zero on the Control of Corruption index of the Worldwide Governance Indicators developed at the World Bank (<http://info.worldbank.org/governance/wgi/index.aspx#home>). This index aggregates indices of various sources that measure the perception of corruption by a large number of enterprises, citizens, and experts. The figure quoted here would of course differ if another measure of corruption (or, more generally, of poor governance) were used. However, the difference is not likely to be big because governance indicators are highly correlated with each other. For instance, applying the same criterion (one standard deviation below zero) to the other Worldwide Governance Indicators yields 18 percent of billionaire wealth accumulated in countries with poor government effectiveness (China being rated an effective government), 22 percent in countries with weak regulation, and 21 percent in countries with poor rule of law.
- ³² *The Economist*. March 15, 2014. 'Planet Plutocrat.' <http://www.economist.com/news/international/21599041-countries-where-politically-connected-businessmen-are-most-likely-prosper-planet>.
- ³³ Gandhi, Aditi, and Michael Walton. 2012. 'Where Do India's Billionaires Get Their Wealth?' *Economic and Political Weekly* 47 (40): 10–14. <http://www.michaelwalton.info/wp-content/uploads/2012/10/Where-Do-Indias-Billionaires-Get-Their-Wealth-Aditi-Walton.pdf>
- ³⁴ *The Economist*. 2014. Op. cit.
- ³⁵ Ibid.
- ³⁶ This paper adopts the same list of state-dependent industries as *The Economist's* cronyism index—namely, casinos; coal, palm oil, and timber; defense; deposit-taking and investment banking; infrastructure and pipelines; oil, gas, chemicals, and other energy; ports, airports, real estate, and construction; steel, other metals, mining, and commodities; and utilities and telecoms services. Note

that more industries could be considered as state dependent, such as health care and media (due to high regulation), private equity (due to tax breaks), or even agriculture (due to high subsidies and tariffs in many advanced economies). Note also that *The Economist* refers to these industries as 'rent-heavy' rather than 'state-dependent.' Sources of rents other than privileges granted by the state are discussed in the following sections of this paper and not in *The Economist's* cronyism index.

Assigning each billionaire to a particular industry is not straightforward. Many companies straddle several industries, and many billionaires have made their fortunes from several companies. For each billionaire, the author has assessed which industry has been the main source of his or her wealth based on the information provided in the *Forbes* database, which was not designed for that purpose. 6% of the world's billionaire wealth was not allocated to an industry as its source was too diversified. The results presented in this report therefore differ slightly from those of *The Economist's* cronyism index, which has assigned billionaire wealth to industries according to the current value of billionaires' portfolios using additional proprietary market information. *The Economist* thus finds that, in 2014, 32 percent of the world's billionaire wealth is derived from state-dependent industries (58 percent and 17 percent respectively in developing and advanced countries).

Assigning billionaires to countries is easier, but not completely straightforward either. The author has assigned each billionaire to the country where most of his or her wealth has originated, which is usually but not always his or her country of citizenship. Here, too, minor discrepancies may exist with the results of *The Economist*. Although all the wealth of a given billionaire is assigned to a single country, in reality most billionaires have become rich in part by tapping global markets. Figures 3 and 4 compare countries' billionaire wealth (which is partly derived from global markets) to countries' value added (which is exclusively created on the country's domestic market). Nevertheless, the comparison makes sense because the country's domestic market serves as the springboard from which billionaires conquer the global market.

This paper also adopts the same definition of 'developing' versus 'advanced' economies as *The Economist*; namely, that of the International Monetary Fund except that Poland is considered 'advanced,' and Hong Kong, Singapore, South Korea, and Taiwan are considered 'developing.'

³⁷ These countries are: Algeria, Angola, Argentina, Brazil, Chile, China, Colombia, Egypt, Hong Kong, India, Indonesia, Kazakhstan, Kuwait, Lebanon, Macao, Malaysia, Mexico, Morocco, Nepal, Nigeria, Oman, Peru, Philippines, Romania, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Taiwan, Tanzania, Thailand, Turkey, Uganda, Ukraine, United Arab Emirates, Venezuela and Vietnam.

³⁸ These countries are: Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, United Kingdom and the United States.

³⁹ *Forbes*. April 29, 2011. 'The World's Richest Royals.' <http://www.forbes.com/sites/investopedia/2011/04/29/the-worlds-richest-royals/>

⁴⁰ Piketty, Thomas. 2014. *Capital in the Twenty-First Century*. Cambridge, MA: Harvard University Press. Page 441.

⁴¹ *Wealth-X* and *UBS*. 2014. Op. cit.

⁴² *The Economist*. 2011. Op. cit.

⁴³ Piketty. 2014. Op.Cit. Pages 362–366 and 377–429.

⁴⁴ *Ibid.* Pages 435 and 448.

⁴⁵ Arnott, Robert, William Bernstein and Lillian Wu. Fall 2015. 'The Rich Get Poorer: The Myth of Dynastic Wealth'. *Cato Journal*: Vol. 35, No.3.

⁴⁶ This finding is based on the billionaires' biographies of *Forbes'* database, which were not written for the purpose of this count.

⁴⁷ *The Economist*. 2015b. Op. cit.

⁴⁸ *Ibid.*

⁴⁹ Stiglitz. 2013. Op. cit.

⁵⁰ Hayek, Friedrich August. 1976. *The Mirage of Social Justice*. Vol. 2 of *Law, Legislation and Liberty*. London: Routledge and Kegan Paul. Pages 71-72; Italics in original; bold emphasis added.

⁵¹ Holmberg, Susan, and Michael Umbrecht. October 23, 2014. *Understanding the CEO Pay Debate: A Primer on America's Ongoing C-Suite Conversation*. New York: Roosevelt Institute. <http://www.rooseveltinstitute.org/policy-and-ideas/big-ideas/understanding-ceo-pay-debate>. Bivens, Josh, and Lawrence Mishel. June 20, 2013. 'The Pay of Corporate Executives and Financial Professionals as Evidence of Rents in Top One Percent Incomes.' *Economic Policy Institute Working Paper 296*. <http://www.epi.org/publication/pay-corporate-executives-financial-professionals>. *The Economist*. October 20, 2009. 'Executive Pay: This House Believes That on the Whole, Senior Executives Are Worth What They Are Paid.' <http://www.economist.com/debate/days/view/402>. *The Economist*. August 16, 2010. 'Regulating Pay: This House Believes That Bosses' Pay Is None of the Government's Business.' <http://www.economist.com/debate/overview/180>

- ⁵² Montier, James. December 2014. 'The World's Dumbest Idea.' *GMO White Paper*. <https://www.gmo.com/docs/default-source/research-and-commentary/strategies/asset-allocation/the-world-s-dumbest-idea.pdf?sfvrsn=0>
- ⁵³ *The Economist*. January 18, 2007. 'The Stockpot.' <http://www.economist.com/node/8514030>
- ⁵⁴ Piketty. 2014. Op. cit.
- ⁵⁵ Ibid. See also Fernandes, Nuno, Miguel Ferreira, Pedro Matos, and Kevin J. Murphy. February 2013. 'Are US CEOs Paid More? New International Evidence.' *The Review of Financial Studies* 26 (2): 323–367. <http://rfs.oxfordjournals.org/content/26/2/323.abstract>
- ⁵⁶ *The Economist*. 2015b. Op. Cit.
- ⁵⁷ This count is based on the information available in *Forbes*' billionaire biographies, which were not written for that purpose.
- ⁵⁸ Murphy, Andrea. April 4, 2012. 'CEO Compensation: Highest-Paid Bosses.' *Forbes*. <http://www.forbes.com/sites/andreamurphy/2012/04/04/ceo-compensation-highest-paid-bosses/>. AFL-CIO. 2014. *Executive Pay Watch: High-Paid CEOs and the Low-Wage Economy*. <http://www.aflcio.org/Corporate-Watch/Paywatch-2014>
- ⁵⁹ Stiglitz. 2013. Op. Cit. Bivens and Mishel. 2013. Op. Cit. Stiglitz, Joseph E. July 18, 2012. 'Market Failures in the Financial System.' *New Vision*. <http://www.newvision.co.ug/news/633096-market-failures-in-the-financial-system.html>
- ⁶⁰ Cochrane, John H. Spring 2013. 'Finance: Function Matters, Not Size.' *Journal of Economic Perspectives* 27 (2): 29–50. <https://www.aeaweb.org/articles.php?doi=10.1257/jep.27.2>
- ⁶¹ Malkiel, Burton G. Spring 2013. 'Asset Management Fees and the Growth of Finance.' *Journal of Economic Perspectives* 27 (2): 97–108. <https://www.aeaweb.org/articles.php?doi=10.1257/jep.27.2>. Greenwood, Robin, and David Scharfstein. Spring 2013. 'The Growth of Finance.' *Journal of Economic Perspectives* 27 (2): 3–28. <https://www.aeaweb.org/articles.php?doi=10.1257/jep.27.2>
- ⁶² Taulli, Tom. December 26, 2013. 'Will Facebook Stock Suffer the MySpace Syndrome?' *Business Insider*. <http://www.businessinsider.com/facebook-vs-myspace-2013-12>
- ⁶³ Sterling, Greg. May 13, 2013. 'More Antitrust Pain for Google: FTC to Probe Display Ads Biz.' *Marketing Land*. <http://marketingland.com/more-antritrust-pain-for-google-ftc-to-probe-display-ads-biz-45425>
- ⁶⁴ *The Economist*. August 8, 2015. 'A Question of Utility.' <http://www.economist.com/node/21660559>
- ⁶⁵ Tynan, Dan. November 3, 2009. 'Bad Apple: Five Classic Apple Marketing Tactics That Lock You In.' *PCWorld*. http://www.pcworld.com/article/181200/apple_marketing_locks_you_in.html
- ⁶⁶ Ahlborn, Christian, David S. Evans, and A. Jorge Padilla. Spring 2004. 'The Antitrust Economics of Tying: A Farewell to Per Se Illegality' *Antitrust Bulletin* 49 (1/2). http://www.justice.gov/atr/public/hearings/single_firm/comments/219224_b.htm#a9
- ⁶⁷ Ibid.
- ⁶⁸ *The Economist*. November 29, 2014. 'Should Digital Monopolies Be Broken Up?' <http://www.economist.com/news/leaders/21635000-european-moves-against-google-are-about-protecting-companies-not-consumers-should-digital>. *The Economist*. November 29, 2014. 'Everybody Wants to Rule the World.' <http://www.economist.com/news/briefing/21635077-online-businesses-can-grow-very-large-very-fastit-what-makes-them-exciting-does-it-also-make>
- ⁶⁹ Ibid.
- ⁷⁰ <http://www.oxfam.org/en/grow/campaigns/behind-brands>
- ⁷¹ <http://observationsandnotes.blogspot.com/2010/12/us-treasury-bond-real-return-history.html>
- ⁷² *The Economist*. June 28, 2014. 'A Winning Recipe.' <http://www.economist.com/news/business/21605925-two-big-brazilian-education-firms-now-process-merging-show-how-universities-can-do>.
- ⁷³ *The Economist*. June 28, 2014. 'The Digital Degree.' <http://www.economist.com/news/briefing/21605899-staid-higher-education-business-about-experience-welcome-earthquake-digital>
- ⁷⁴ *The Economist*. January 18, 2014. 'The Onrushing Wave.' <http://www.economist.com/news/briefing/21594264-previous-technological-innovation-has-always-delivered-more-long-run-employment-not-less>
- ⁷⁵ Cowen, Tyler. 2013. *Average Is Over: Powering America Beyond the Age of the Great Stagnation*. New York: Dutton.
- ⁷⁶ Piketty. 2014. Op. cit. Pages 276–277 and 301–302.
- ⁷⁷ Merlot. 2014. Op. cit.

- ⁷⁸ Pink, Daniel H. 2011. *Drive: The Surprising Truth About What Motivates Us*. New York: Riverhead Books.
- ⁷⁹ Ibid.
- ⁸⁰ Piketty. 2014. Op. cit. Pages 435 and 448.
- ⁸¹ <http://cyber.law.harvard.edu/openlaw/eldredvashcroft/supct/amici/economists.pdf>
- ⁸² Smallwood, Karl. June 17, 2012. 'Why Isn't Mickey Mouse in the Public Domain?' *Mental Floss*. <http://mentalfloss.com/article/30946/why-isnt-mickey-mouse-public-domain>
- ⁸³ http://en.wikipedia.org/wiki/Alexander_Graham_Bell#The_race_to_the_patent_office
- ⁸⁴ *The Economist*. April 25, 2015. 'Now and Then.' <http://www.economist.com/news/science-and-technology/21649448-patent-records-reveal-way-inventions-are-made-has-changed-over>
- ⁸⁵ Wright, Robert. June 24, 2001. 'The Man Who Invented the Web.' *Time*. <http://content.time.com/time/magazine/article/0,9171,137689,00.html>
- ⁸⁶ This count is based on the information available in *Forbes'* billionaire biographies, which were not written for that purpose.

Oxfam Discussion Papers

Oxfam Discussion Papers are written to contribute to public debate and to invite feedback on development and humanitarian policy issues. They are 'work in progress' documents, and do not necessarily constitute final publications or reflect Oxfam policy positions. The views and recommendations expressed are those of the author and not necessarily those of Oxfam.

The author thanks Maxime Lambrecht and Tyler Morrill for their contributions to this paper. Any error is the responsibility of the author alone.

For more information, or to comment on this paper, email djacobs@oxfamamerica.org.

© Oxfam International November 2015

This publication is copyright but the text may be used free of charge for the purposes of advocacy, campaigning, education, and research, provided that the source is acknowledged in full. The copyright holder requests that all such use be registered with them for impact assessment purposes. For copying in any other circumstances, or for re-use in other publications, or for translation or adaptation, permission must be secured and a fee may be charged. E-mail policyandpractice@oxfam.org.uk.

The information in this publication is correct at the time of going to press.

Published by Oxfam GB for Oxfam International under ISBN 978-1-78077-985-0 in November 2015.
Oxfam GB, Oxfam House, John Smith Drive, Cowley, Oxford, OX4 2JY, UK.

OXFAM

Oxfam is an international confederation of 17 organizations networked together in more than 90 countries, as part of a global movement for change, to build a future free from the injustice of poverty:

Oxfam America (www.oxfamamerica.org)
Oxfam Australia (www.oxfam.org.au)
Oxfam-in-Belgium (www.oxfamsol.be)
Oxfam Canada (www.oxfam.ca)
Oxfam France (www.oxfamfrance.org)
Oxfam Germany (www.oxfam.de)
Oxfam GB (www.oxfam.org.uk)
Oxfam Hong Kong (www.oxfam.org.hk)
Oxfam India (www.oxfamindia.org)
Oxfam Intermón (Spain) (www.oxfamintermon.org)
Oxfam Ireland (www.oxfamireland.org)
Oxfam Italy (www.oxfamitalia.org)
Oxfam Japan (www.oxfam.jp)
Oxfam Mexico (www.oxfammexico.org)
Oxfam New Zealand (www.oxfam.org.nz)
Oxfam Novib (www.oxfamnovib.nl)
Oxfam Québec (www.oxfam.qc.ca)

Please write to any of the agencies for further information, or visit www.oxfam.org.