Edition No. 7

The Piketty Problem

bergsicht

CHAPTER 1

Working for a living – a discontinued model?

Picture two utopian worlds – realms that have never existed and never will, but are worth conjuring up to make sure we know exactly what we are talking about. In one world, *Arcadia*, labour is the sole factor of production; each family lives on what it can produce off its own bat. There are no machines belonging to other people, no telephone networks and no roads. Land – a factor of production that cannot be negated, even in this simplified economy – is non-critical, as it is unconditionally available to every family. In the other of these extreme worlds, *Robotia*, labour is precisely the factor of production that is missing. Instead, intelligent machines take care of everything previously undertaken by humans, from sowing and reaping to bread-baking and distributing the finished loaves to the populace. While we're at it, let's make the kindergarten assistants robots, and the nurses at the bedsides of the elderly as well; the only remaining factor of production is capital.

The world as it really exists lies somewhere between these two, as do the thousands of diverse realities that make up the multifarious social structures to be found around the globe. What unites them all is a combination of labour with other production factors such as land, factories, knowledge, expertise, financial capital and a host of others. How these are blended, and the means by which any given combination of factors finds itself in a particular individual's (or set of individuals') hands, is crucial in determining that society's parameters: exactly how a community co-exists; how peacefully or aggressively people rub along with one another; how successfully a society can assert itself on the international stage; and how optimistically the younger generation looks to the future. The manner in which labour combines with other factors of production is at the heart of *Le capital au XXIe siècle* (2013), a work by Thomas Piketty, a French economist who until recently was completely unknown outside academic circles. Some 300,000 copies of the English translation of this 700-page tome (*Capital in the Twenty-First Century,* Harvard University Press, 2014) have already flown off the shelves, achieving sales otherwise attained in such short order only by popular fiction – the likes of *Harry Potter* or *The Da Vinci Code*.

The book is heavy going and deeply embedded in its own conceptual world – we needed our imaginary realms of Arcadia and Robotia to even begin to grasp what Piketty might be getting at as he explores the problems associated with relative returns on labour and capital, and inequality of capital ownership. One thing is certain, however: what we might term the "Piketty problem" would be in abeyance in Arcadia. In the real world, as he contends – and attempts to demonstrate with endless screeds of data and charts – the first part of the problem he identifies resides in the notion that *return on labour* is *lower* than that generated by other factors of production. In Arcadia, each individual has his human capital and the return it brings – no more and no less. The capital stock – the little patch of land allowed each family in this hypothetical scenario – cannot increase

here, and this obviates the second part of the "Piketty problem": the question of how *ownership of the capital stock* is to be *allocated* among the population in future. Piketty maintains that the distribution of this property will become increasingly unequal and that this in turn represents a worldwide socio-political challenge. He suggests the most effective way to counter the trend is to impose a swingeing, global wealth tax on the ever-declining number of super-earners and the mega-rich. We shall come back to this in due course.

In Robotia, however, where no one needs to work – or rather, no one is permitted to work because the intelligent machines can do everything better (i.e. more productively) than the people – the "Piketty problem", or at least its second part, is the *core* dilemma. How will ownership of the capital stock be divided up? Due to its very absence, labour is incapable of generating income, so the population *has to earn a return on its capital to survive*. If the capital in Robotia were in the hands of a tiny band of super-rich individuals, they would soon find themselves in a "Scrooge McDuck" situation, leading a miserable existence trapped inside a "money bin". Trying to imagine quite what the rest of humanity would live on, or if the cycle of production, consumption and return on capital would even be conceivable in such a form, is likely to stretch our metaphorical envelope to breaking point, but it nevertheless demonstrates the relevance of Piketty's considerations.

So, given that this book makes such demands on the reader's imagination, why has it been such a sensational success? We believe that what the *Neue Zürcher Zeitung*'s Andrea Köhler has called "Piketty hype" is explained not by the sudden eruption of a culture of envy directed against hedge fund oligarchs and "supermanagers" (many character failings may reasonably be laid at the door of our American friends, but such begrudgery is not typically one of them); rather, we think the book's best-selling status belies a deeper cause, as was equally true of the Occupy Wall Street movement. Piketty is *speaking to people's hearts* – on one hand, conjuring a yearning for Arcadia while on the other, abetting the queasy apprehension that advances in productivity will ultimately render the workforce, in its widest sense, superfluous; that human beings will become dependent on a complex of real-world and capital machinery that is increasingly alien to them. Arcadia is a mash-up of Calvin and Rousseau: a decent day's pay for an honest day's work by the sweat of one's brow. No wonder it was the American – not the French – edition that caused all the fuss.

CHAPTER 2

Zeitgeist: the mainspring of history

When a book that is difficult to read and crammed full of data makes such waves, it must surely be because it has caught the mood of the moment in a way that is worth analysing and contextualising, whatever one might think of the actual content. Before turning our attention to the latter, let's unpack this notion of *zeitgeist* a little. Even if absolutely every one of the book's claims were incorrect (which is not at all the case!), the veritable tsunami unleashed by such potentially incorrect assertions would have to be examined for its longer-term significance, not least as the book – as has been outlined – culminates in explicit recommendations for *harsh taxation* of the affluent and those who live from their wealth, and supplies both moral underpinning and *academic legitimation* for this view to boot. Experience has shown that swimming against the tide of popular opinion is a Sisyphean task, bordering on the futile; the best you can do is make accommodations and attempt to live with it.

Those of our readers who are no longer in the first flush of youth may recall the Woodstock phenomenon in the dying days of the 1960s. In short, before the cheers at America's entry into the Vietnam War under President Lyndon B. Johnson had died away, and even as two atomic powers were engaged in a chilly struggle for world supremacy, a butterfly was flapping its wings, as it were: the charming little ditty "Blowin' in the Wind" was being aired, in tones reminiscent of a campfire singalong, and a *zeitgeist* was unleashed that ultimately forced America's mighty military machine to withdraw from the ill-fated lower reaches of the Mekong River. The defeat that this entailed hamstrung the USA for years, not least economically, and if the aspirational Ronald Reagan – representing an entirely new and distinctive *zeitgeist* – had not come to power, world history would undoubtedly have followed a very different course for the remainder of the millennium. The fall of the Berlin Wall in 1989 and China's decision to embrace growth, for example, might never have come to pass, or would have happened later and under very different circumstances. But retrospective, fuzzy historical speculation does not concern us here – we simply wish to underscore the importance of the *zeitgeist*.

"Blowin' in the Wind" was released upon a generation raised by parents who had lived through the Second World War, with all its privations and subsequent revelations of atrocities, not to mention an immense death toll, but who in turn – in the sure and certain hope of a better and more secure future – had devoted all their energy to accumulating the trappings of material success. Woodstock represents a profound *crisis of meaning*, a generational conflict, the first questioning of rapacious power politics. But Woodstock was certainly not propelled solely by this negation of the *status quo*. The movement's real momentum was generated by a sense of manumission, a new awareness of life expressed through rock music, drugs and free love that was also unquestionably freighted with *pseudo-religious traits*.

So what is Piketty proclaiming? On one hand, as we have tried to set out, he romanticises – indeed, glorifies – labour. On the other, he demonises something that is anyhow properly understood by very few – capital. Here, once again, we stray into Marxian territory. Piketty bundles unease at shifting labour/capital dynamics in with notions of equivalence and/or equality; he likens the inexorably widening gulf between rich and poor to a pair of scissors, and backs this up with his data; and finally, through the notion of a global wealth tax, he apportions to a non-existent meta-entity a task that ultimately

has more in common with a pseudo-religious "indulgence" than any workable package of measures to tackle inequality. This third element is suspiciously similar to the dictatorship of the proletariat posited by Marx, an endpoint to history in its Hegelian sense, necessarily brought about by the revolt of the workers and appropriation of the means of production. The danger that this long yearned-for utopia – however incomplete and limited to certain regions (which, pray?) – might morph into a *political programme* should not be dismissed out of hand.

Three currents have thus converged. The first is an (entirely justified) sense of unease at the future development of labour, productivity and capital; the second, an evocation of romantic images (honest hard work) and values (equality!); and the third, a *quasi-messianic Last Judgment* (from him that hath shall be taken away). This confluence could become an explosive and persistent trope in the public imagination, and as such should be taken very seriously. This in itself is reason enough to review Piketty's book. The economist and Nobel laureate Paul Krugman has described it as a "magnificent, sweeping meditation" – we shall critique this and draw our own conclusions about whether such praise is justified. Let's first take a look under the bonnet.

CHAPTER 3

Piketty's conceptual world

The subject matter of the 16 chapters can be split into three distinct parts: a theoretical section, in which the fundamental principles of the capitalist economy are laid out; an empirical section, in which large amounts of data on population growth, the capital stock, productivity and income are collated and analysed; and a third, final, section in which the political opinions and intentions of the author are given an airing. An extensive appendix with 687 footnotes and indexes of names and topics bring up the rear of this weighty tome.

Like any other macro-economic study, Piketty's naturally presupposes that the state and evolution of economies and societies can be adequately imaged with voluminous, aggregated computations and constructs. However, where other macro-economic studies have often had recourse to poll and survey results, Piketty draws most of his data from tax records. The calculations are based on a common theoretical foundation and can also be interpreted against certain real-world givens, in part directly and elsewhere indirectly (i.e. using specific assumptions or only with the aid of estimates).

Piketty first turns to the notions of *capital stock* and *income*. He defines a society's capital stock as all assets that can be possessed or traded on a market of some kind – land, real estate, financial capital (shares in companies in the form of equities, financial assets, etc.) and assets held abroad (official English translation by Arthur Goldhammer, 2014, p. 46 ff.). Piketty's observations are made exclusively from a net perspective, so private debt is deducted. Collective property (such as motorways or dams, etc.) is indirectly excluded from the capital stock because national debt is also deducted from state assets and – according to Piketty – these balance out over time. A society's capital stock thus comprises net private and public assets. Human capital is excluded from the capital stock because, in non-slave societies at least, each individual "possesses" him- or herself.

Capital generates a ***return*** r, and here Piketty means the total return stipulated by financial theory (p. 52). Capital gains are not included when tallying the long-term return on capital, however (p. 210 f.), and return on capital is calculated before tax (p. 208).

Income from capital and income from labour (wages) combine to produce total (or "national") income. Piketty opts to view this on a gross basis, i.e. before taxes, deductions and other state transfer payments, but also before the income a citizen obtains from transfer payments such as the operation of schools and railways, or theatre subsidies and the like (p. 18, p. 180 ff.). He justifies this gross perspective with a desire to ensure that the data are comparable across national borders.

This brings Piketty to his *core contentions*: how income from labour and income from capital stack up against one another over the long term. When growth rates are relatively low – occasioned by demographics, for example – and the savings rate is relatively high, the share of total income accounted for by a *society's capital stock increases* significantly (p. 55, p. 173 ff.). The law of diminishing marginal utility holds that returns should actually decline as the capital stock increases (p. 213 ff.) but Piketty is not so convinced. For one thing, he contends that a historical examination of return on capital suggests otherwise (p. 222 – we would place a big question mark over this assertion, cf. chapter 4 below). Moreover, the substitutability of capital for labour must be placed in its proper context: the Cobb-Douglas equation used for the so-called "production function" assumes stable capital income (p. 218) but Piketty questions this, postulating that the *substitutability* of capital for *labour* is greater than economists generally assume.

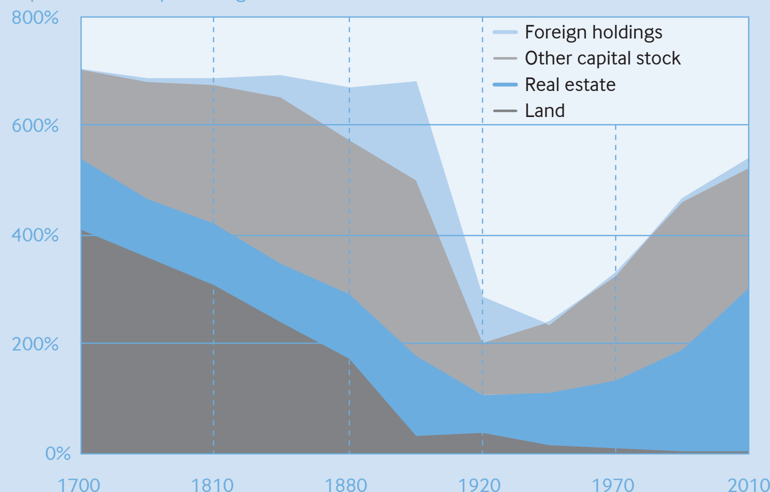
Piketty thus maintains that r does not decline as the capital stock increases, with the result that capital's share of income *increases*. His thesis

$$r > g$$

is derived from this, where r stands for the rate of return on capital (return on assets, ROA) and g for the economic growth rate (p. 25).

Where r is greater than g over the long term, Piketty argues that inherited wealth will become more dominant. Those possessing such assets can increase their wealth via r, while those living exclusively on income from labour must content themselves with a lower growth rate for their wages. This necessarily results in a *concentration of capital ownership* and will, according to Piketty, ultimately lead to social catastrophe (p. 571).

The *empirical section* of the book is packed with long-term data that are, by definition, based on estimates, such as the assumption that per capita income did not increase between 0 and 1700 AD; global population, he conjectures, also grew only very marginally (0.1 % p. a.) over this period (p. 73). Piketty assumes that both variables, the growth of per capita income and pop-



Note: Data for UK. Other developed countries reveal a similar pattern.
Source: Thomas Piketty, Capital in the Twenty-First Century (2014). Chart: bergsicht M1 AG

ulation expansion, resemble a bell curve with peaks between 1950 and the present day (p. 99). He sees this as confirmation that the capital stock is expanding – and thus that the share of total income accounted for by capital returns is trending upwards. Piketty uses numerous charts to demonstrate that, for long periods of time, exactly the opposite was true: the capital stock/total income ratio was, he claims, falling continuously from 1700, most conspicuously between the two great world wars, and labour's share of income was therefore increasing. However, since the 1970s, capital has been reasserting itself again – which for Piketty is an alarming red flag.

The empirical section also contains countless projections that are not underpinned by any models, but instead more closely resemble trend assumptions. Piketty estimates, for instance, that the capital/income ratio will re-escalate to about 700% for the world as a whole by 2100, restoring it to the same proportions as in 1700, albeit in an entirely altered composition, with agricultural land relegated to a spear-carrying role while capital goods (Robotia!) command the stage (p. 196).

The insight that the French economist considers decisive – that return on capital is outstripping economic growth in developed countries, *placing labour income in a sobering bind* – is based on a collection of data selected from a relatively short period, the years between 1975 and 2010 (p. 222). Without wishing to get distracted by a discussion on the statistical significance of such limited data sets (especially where data spanning entire centuries have been used elsewhere), we concede that such a trend does appear to emerge from Piketty's data over the period in question.

Finally, Piketty explores the question of inequality in wealth and income distribution, and uses a series of tables to make cross-border comparisons that are adjusted for currency effects (but presumably not for purchasing power). His bottom line: there are yawning disparities. While the Scandinavian countries appear to be relatively egalitarian, the USA is revealed as an *enormously inequitable society* – and this gap is only widening. Piketty locates the source of the problem – and this may not be so wide of the mark – in local norms for the compensation of senior management. The best-off cohort (1% of the population) "earns" approximately 12% of total national income, while the 50% of the lowest-paid get to divvy up no more than 25% of total income between them (p. 247). The same yardstick as before is applied here, with income being measured before tax and deductions, as well as before any transfer payments; this relativises the import of the tables to a different extent for each country.

Similar results emerge from the analysis of wealth distribution. Here too, the USA stands out as an immensely unequal nation: in 2010, the *über*-rich (once again 1% of the population) evidently had their hands on 35% of all assets. Piketty's suggestion (p. 248) that the American middle classes will be completely impoverished by 2030, by which time the super-wealthy will own about half of all assets, is nothing short of incendiary. He uses long-term charts to demonstrate that conditions have shifted considerably over time, and once again it is the two world wars that had an equalising effect; the gulf has since widened significantly (p. 348).

Relatively little time is devoted to drawing *conclusions* from these theoretical and empirical investigations. Piketty establishes that market forces alone are not in a position to achieve social equilibrium (p. 376). Indeed, the opposite is the case. The drive towards greater efficiency (and thus enhanced productivity) inherent in market forces increases the relative share of capital in a society. Touching on another hot-button issue, Piketty ascribes the excessive salary regimes in the USA to unfettered market forces. On the basis of his findings, he advocates a *distinctly progressive tax on capital* (p. 572); as capital is fluid and volatile, it would have to be possible to impose this tax *globally*. Piketty himself admits that this idea is *utopian* (p. 515), and we have already made our feelings about the nigh-on eschatological consequences and risks of such a policy abundantly clear. But the book's explosive power resides precisely in its utopian appeal and positive reception in the USA. As one seasoned observer of the nation across the pond told us: "That's what they want to hear."

Our reservations

What else can we say about the book? It is pretty ponderous; because – and this may sound contradictory – it is written unscientifically. However resounding the applause may have been in some academic circles (we have already mentioned Paul Krugman's encomium, and we should not forget his fellow Nobel laureate, Joseph Stiglitz), Piketty's "Capital" fails to cut the mustard when it comes to scientific rigour. While the author uses his theory to posit seemingly consistent hypotheses, he neglects to subject them to the *falsification* that the rules of the game require, and does not measure the assertions he advances against reality with any *tenable statistical methodology*. Piketty's habit of making a claim that he then goes on to relativise only a few pages later is particularly annoying; it makes it very difficult to get to grips with him, as he forestalls all objections. The length of the data series selected is arbitrary – Piketty will trawl back to the mists of prehistory in one instance, while preferring very short timescales in others, and it is hard to escape the impression that he is doing this for the benefit of his own argumentation.

We have noted that his core contention – capital income has risen as a share of total income – is more or less borne out by the data set if you begin the comparison in 1975; if you were to start only *five years earlier*, the validity of this assertion would be far less certain. As this is such a conspicuous example of the French economist's approach, we have reproduced his chart (p. 222) here, but we have augmented it with the years 1970 to 1975. (It must be said that Piketty has been kind enough to make the numbers he has crunched freely available, including the data for the additional five years that we have utilised. But might this also be part of a tactic to take the wind out of critics' sails?)

To recap: what we are dealing with here is not some sideshow to the main thrust of his argument – as we have demonstrated above, we are addressing Piketty's *central r>g hypothesis*. If, however, the data turn out to be too diffuse for us to conclude that capital income has verifiably increased due to systemic factors, the entire *house of cards collapses* in on itself. A choir of similarly critical voices is beginning to make itself heard. The *Financial Times* (25. 5. 2014, p. 1), for example, uncovered irregularities in Piketty's data sets in the form of incorrectly transcribed entries from original sources, and it has even been suggested that the original data sources are a chimera, with the data being "construed" at key junctures.

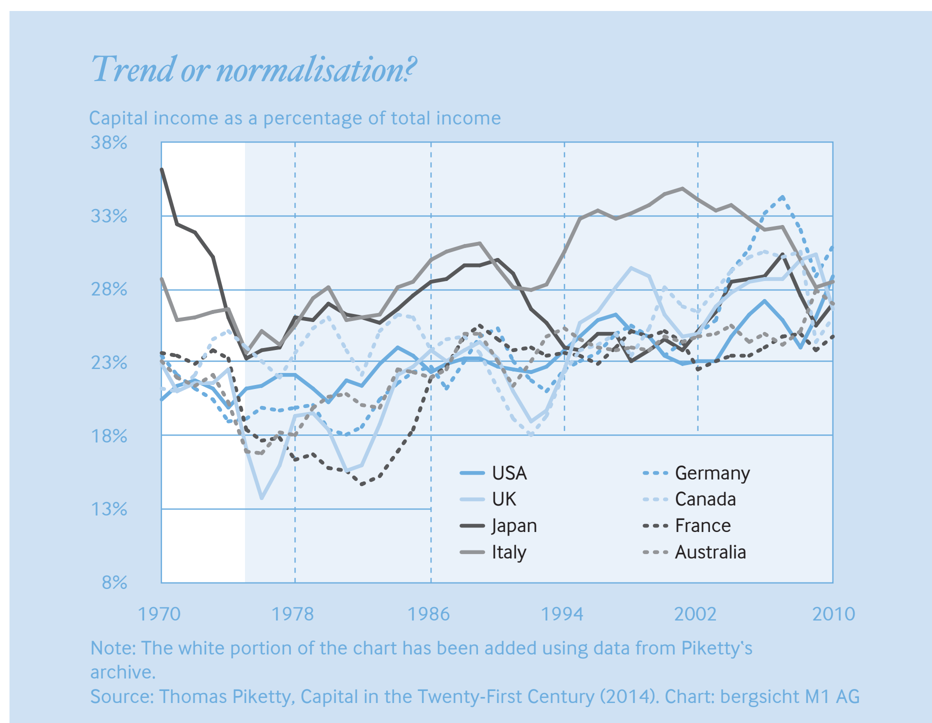
Further objections to Piketty's "Capital" relate to the correctness of his theory, his methodology and data sources, and some fundamental aspects of his approach.

Theoretical aspects

The hypothesis that *r>g* leads to a rise in capital's share of total income can, for theoretical reasons (the compound interest effect), be defended only if all *returns* on capital are *reinvested* and no decrease in capital – whatever the cause – takes place. Such assumptions simplify reality enormously; a portion of wealth may be consumed, squandered or charitably redistributed even before it is accumulated, and world wars or natural catastrophes can dramatically reduce a nation's capital stock.

Piketty's view of "capital" is ultimately very narrow. Human capital is overlooked, as we have pointed out, and know-how is ignored completely, as Harvard professor Ricardo Hausmann has – in our opinion, correctly – observed (*Finanz und Wirtschaft*, 7. 6. 2014, p. 2). In the absence of this factor, which in modern companies such as Apple, Google or Tesla is husbanded by a small group of experts and co-owners, it is impossible to map the workings of an economy today.

Piketty's thinking excludes *considerations of risk*. In our opinion, it may well be true that *r* would have to outpace *g* over the long term, as fluctuations in economic growth have fallen substantially compared with earlier periods (e.g. the late 19th century). As a result, the flow of funds earned from labour has become significantly more consistent, and the fact that in many families both spouses are now bringing home a wage has reduced the volatility of wage income still further. Capital, on the other hand, follows a much more fickle trajectory, and very long "dry spells" – or phases of capital destruction



Note: The white portion of the chart has been added using data from Piketty's archive.
Source: Thomas Piketty, Capital in the Twenty-First Century (2014). Chart: bergsicht M1 AG

– may occur. Depending on the holding period of assets, such periods may even wipe out wealth entirely. It is thus inexpedient to philosophise about the dangers of a return *r* without factoring in fluctuation.

Methodological questions

Piketty's labour income/capital income differentiation is based on notions from the era of industrialisation – that is to say, it is rooted in the 19th century. The mixed income base enjoyed by a very important (perhaps the most important!) part of society – the *self-employed* – is therefore not reflected in it. Tax considerations aside, the self-employed are neutral with respect to the distinction between waged income and capital income.

Moreover, Piketty's book fails to include the efforts of developed states to take the sting out of inequality through *transfer payments*. This is all the more incomprehensible as his recommendations incline towards transfer payments, the very thing he has neglected in his empirical analysis. As has been shown in research by the Swiss Federal Statistics Office (FSO News, Sept. 2013), transfer mechanisms (AHV retirement benefits, taxes, etc.) are particularly efficient in our country; the Gini coefficient (a bellwether of inequality) is correspondingly low for Switzerland.

At this juncture, we should note that we do not understand how Piketty incorporates *institutional saving* via pension funds and other retirement income instruments in his section on (re)distribution. Thanks to pension funds, a number of countries (including Switzerland) are edging ever closer to the concept of a "people's share". Ready for Robotia ... Piketty also rides roughshod over the unique ownership structures of the relatively recent phenomenon known as the *sovereign wealth fund*. These funds have become important – by which I mean influential – and powerful stakeholders in companies. They are owned by a country's collective polity and thus represent exactly the opposite of a wealth concentration in the hands of a coterie of capitalists. According to the *Financial Times* (16. 6. 2014, p. 17), USD 29.1 trillion in tradable securities are currently in public ownership around the world. Hardly small change ...

Piketty fails to properly include exogenous shocks in his analysis – not only do the two world wars of the 20th century leave him relatively cold, in his data universe, they even have a positive effect, as they reduce the capital stock/total income ratio to which he attaches such significance. Piketty engages just as little with the two mega-shocks of most recent times – the end of the Cold War (and the associated multiplication of land and labour as production factors) and the explosion of know-how as a production factor in the wake of the technology revolution. The extrapolation of trends (that may well be correctly identified) into the distant future strikes us as similarly problematic; a certain amount of caution should be exercised even in long-term demographic forecasts, let alone for such capricious and volatile variables as capital and income.

At no stage does Piketty address the *persistence of wealth*; he approaches the question of distribution from an entirely static perspective. Quite how ineluctable the slippery slope leading down to Skid Row may become, and exactly how much vim and vigour is required to ascend to the ranks of the wealthiest and highest-earning, is, however, of presumably critical importance for the cohesion of a society. The lower the momentum, the greater the danger, we may assume, that a powerful oligarchic elite will form, whose wealth resides in – and is preserved by – received (cartel) privileges.

Fundamental questions

Almost axiomatically, the question arises of whether equality is in fact a socio-political goal worth striving for. Karl Popper once wrote: "If there could be such a thing as socialism combined with individual liberty, I would be a socialist still. For nothing could be better than living a modest, simple, and free life in an egalitarian society. It took some time before I recognized this as no more than a beautiful dream; that freedom is more important than equality; that the attempt to realize equality endangers freedom; and that, if freedom is lost, there will not even be equality among the unfree." (K. Popper, *Unended Quest*, 2005, p.36). We are in no doubt that there is a trade-off between equality and freedom and that the maximisation of either one of these principles alone will necessarily end in social disaster.

However: given that we have an ageing population that no longer has access to labour income (wages), is a notional increase in capital income as a share of total income necessarily such a bad thing? It is certainly pretty impressive how many of today's developed economies are managing to finance the approximately 30-year lifespan enjoyed by a good portion of their pensioners. We may well be closer to Robotia than we think.

The final – and ultimately, most important – question in any assessment of the substance of Piketty's "Capital" concerns the actual relevance of income/wealth distribution. The answer to this question ought to be given at the very beginning of Piketty's book – this would at least allow us to decide whether it might in fact be worth reading. Unfortunately, no response is supplied, either at the beginning or later on; it is merely presupposed. We believe that there is another parameter – *equality of consumption* (what can the rich and the poor afford to buy?) – that tells us far more about the state of a society than income/wealth distribution. We suspect this parameter has changed dramatically in developed countries over the last 150 years – and for the better. There is hardly a family in Switzerland, and other comparable countries, whose grandparents or great-grandparents did not experience hunger at some point in their lives. New clothes, a well-heated home, a car, holidays? These are all taken for granted today. Of course, some people in modern society still live in poverty. And yes, it is true that not everyone can afford a Maserati. But an awful lot of folk can and do take the car to get from A to B. So we can assert, without fear or favour: the developed world has become extremely egalitarian as far as consumption is concerned, and on these terms, the content of Piketty's book fails to engage with the truly relevant topics of our age.

CHAPTER 5

Missed opportunities

Our assessment of this alleged masterpiece (a study that, according to Paul Krugman, means “we’ll never talk about wealth and inequality the same way we used to”) can thus only be scathing. The text has been cobbled together as a political polemic – constructed using every trick in the book – but for that very reason it has the potential to become the cornerstone of a new pseudo-religion. Its credo would be the (hardly innovative) notion of equality and equalisation, and its weapon expropriation, through extreme taxation legitimised by “scientific” methodology. Thanks to the inter-state fiscal measures set in motion by the OECD, such a regime is not beyond the realms of possibility. Those happening to find themselves in the highest income and/or wealth brackets – and, in our opinion, those who fall well short thereof, as it is generally the middle classes that cop it in such “exercises” – would be well advised to factor the proliferation of this pseudo-religion into their strategic planning.

And on that note, this edition of *bergsicht* could come to a close – but we are disinclined to conclude our remarks without pointing out some of the opportunities missed in Piketty’s excursus on the progress of capitalism. Were we minded to write a book about it, a number of topics might present themselves as candidates for closer examination.

It stands to reason that the substitution of human labour with intelligent machines must be considered. At the beginning of this commentary, we posited in Robotia the most extreme case of a total replacement of human endeavour by machines. As utopian as such a notion may be, we have been heading that way since automation first began to take hold, and the tempo of technological change has now increased to double-quick time. Quite what certain sections of society will do when they are outperformed, both qualitatively and quantitatively, by these intelligent machines is a genuinely thorny issue, and this dilemma is in no way limited to routine tasks – anything but. We recently witnessed the unveiling of a machine for knee operations; some day, it will replace the work of surgeons, whose enthusiastic scalpelling and stitching is not always entirely beyond reproach. Industrial processing centres have shown us just how precisely such “work” can be executed. This is the direction of travel, whether we like it or not, and the changes already afoot may take us well out of our comfort zone.

Regrettably, serious debate about the societal and economic ramifications of these developments is sorely lacking, and blatantly political books such as Piketty’s “Capital” help little; indeed, they prevent any such discourse from taking place. In addressing issues of this kind, it is far less a question of “left” or “right” than it is of posing relevant questions and finding plausible answers to them. How, for example, should a state manage the income base of those portions of the population that have been replaced? Is it not worth kicking around the notions of an unconditional basic income or negative income tax? Or: how will the superseded portions of the population be kept busy? Will amusement parks be enough? Or will we have to invent new facilities with other, perhaps more creative, approaches? What purpose will people find in their lives if machines can do everything better than them? What do theologians and philosophers have to say on the matter? Will we bump ourselves off from sheer boredom? Is social unrest brewing? Will we still place the same value on freedom in future? The road to Robotia is truly paved with weighty questions.

A second topic that we feel would repay serious contemplation is that of how things really stand on the equality front – a dilemma that has been haunting politics for more than 200 years and undoubtedly has many millions of deaths on its conscience. Don’t mountains of data such as those amassed by Piketty potentially skew our perceptions of real conditions? The difference we have posited between the (relatively low) inequality of consumption and the putative rise in inequality of income and wealth (increases upon which Piketty insists) thus suggests a *real improvement* in the conditions of the poorer strata of the population that would appear to have eluded the economist’s data set. This could be construed as a kind of invisible “windfall profit”. What exactly do we mean by this?

Thirty or forty years ago, a mainframe computer such as an IBM 360 series would have cost several million Swiss francs and only a select few, in fact only companies and public institutions such as universities or tax offices, would have been able to afford such a machine. Nowadays – in the general scheme of things only a very short time later – everyone, both rich and poor, has a much more powerful computer in their pockets or in their hands: a smartphone. Thanks to this device, the *production factor of human capital* has increased enormously in value, across all social strata and all continents. The relative wealth effect is felt much more strongly among the poor than among the rich, but this development is nowhere to be found in our French economist’s data, even though we are dealing with the most important socio-political event since the introduction of printing, or general education, or the automobile.

We submit that, by this metric, “equality” has been increasing – and continues to do so. The *endowment problem*, a socio-political irritation that is usually given a wide berth by economists, has been correspondingly *attenuated*. The endowment problem describes the real existence of huge disparities in people’s provenance; it makes almost all the difference in the world whether you were born in a Nairobi slum or on Lake Zurich’s “Gold Coast”. Thanks to the mobile mainframe in the form of a smartphone, and with every caveat and qualm in respect of their other life circumstances, the human capital of slum-dwellers has gone forth and multiplied, and inequality has been reduced.

The story continues. Thanks to “Google Earth” and similar software products, it will be possible to define, definitively and efficiently, the property rights for the tiniest parcels of land (e.g. the kind that typically predominate in slums). Defining property rights is in one respect a question of cultural preconditions (the enforceability of the rule of law and more besides) but it is

also principally dependent on the associated costs. These have been minimised by the latest technological developments, allowing the world's poorest citizens the opportunity to acquire title to property and achieve a credit rating – and thus to have a chance of finally emancipating themselves. In other words, wide-ranging land reform in the relatively near future will make it possible to effect far more comprehensive changes to the distribution of the world's capital stock than any fiscal intervention, however extreme (and in all probability economically disastrous) these measures may be. If we may also be permitted to dream a little dream of our own, it would be of a modern Arcadia in which everyone, even the poorest, would own at least a tiny plot of land and, thanks to the increased leverage of their human capital afforded by a smartphone, would be able to lead a life worth living.

All this, if I may make so bold, is infinitely more interesting than our French friend Piketty's 700+ pages of pseudo-intellectual psychobabble banging on about equality. But let's devote one last thought to him, with a view to exploiting a possible opportunity. For his monograph, Piketty draws on a large amount of data which he is unlikely to have collated all by himself. There will have been assiduous assistants, public data sources, secondary literature in economics – a valuable public good, in other words. I wonder how M. Piketty is going to approach the question of distributing the royalties that accrue to his bestseller? Will he pocket them himself as his "decent day's pay for an honest day's work by the sweat of his brow"? Or will he socialise them – paying his dues to his university, for example (an institution financed by the public purse) – so that at least one person will be following his utopian ideal? *On verra*.

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Translated by: Richard Hall (www.motif.ch)

M1 AG
P.O. Box 344, Museumstr. 1
9004 St. Gallen – Switzerland
Phone +41 (0) 71 242 16 16
Telefax +41 (0) 71 242 16 17
info@m1ag.ch

Subscribe: www.bergsicht.ch