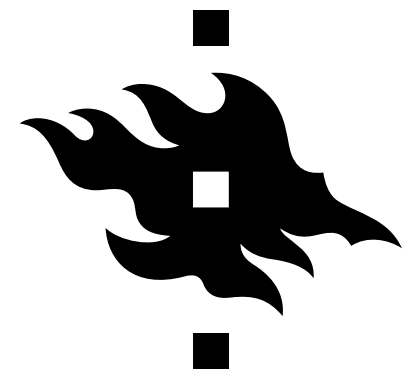# UNIVERSITY OF HELSINKI INVESTMENTS REPORT 2022

UNIVERSITY OF HELSINKI

UNIVERSITY OF HELSINKI INVESTMENTS REPORT 2022

The University of Helsinki is the largest, highest-ranked and oldest university in Finland. The University of Helsinki Group (here after "we") manages assets worth circa two billion Euros, of which some trace back to at least the mid-18th century. The focus of this report is our securities portfolio, which currently is valued at over five hundred million Euros. Our aim is to financially support our academic mission, and simultaneously support our efforts to advance society and sustainable development.

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Performance

+11.14%

Our investments have returned +11.14% per annum since we implemented our current investment strategy in 2019.

Year 2022 is summed up rather well with the following phrase from our previous annual report: "… we might worry about risks – but perhaps we should really fear uncertainty." Our investments produced a −15.67% return for the year, while that of our benchmark index was −12.90%.[1] Our relative return was hurt by our equity funds, which returned −16.18% as their index posted −13.01%, mainly due to their underweight in fossil fuel producers.[2] Our listed spinout stocks weighted further on our relative return, as they lost approximately half of their market value. Finally, our relative return benefited from our listed bonds, which yielded −12.37%, while their benchmark index produced −13.66%. To put our return into perspective, we note that it largely corresponded to those of investors with similar strategies.[3] On a positive note, our equity investments' TCFD carbon footprinting and exposure metric values were around half of those of their benchmark index.[4]

While the negative return might seem dramatic at first, it looks very different at closer inspection. The ex-post sample volatility of our returns was 11.3%. Hence, the total return in 2022 is less than one and a half standard deviations negative – or clearly within normal variation. Furthermore, volatility should reflect what *could* have happened. The problem is just that we can empirically only measure what *has* happened and must make inferences regarding what could have happened. We have assumed a 20% volatility in our risk budget, and from that perspective, the outcome in 2022 corresponds to less than one standard deviation. Either way, the outcome for last year could have been much worse, and statistically *will* be some year in the future, if we continue investing for long enough.

Our investments have returned +11.14% per annum since we implemented our current investment strategy in 2019. Our benchmark index, which reflects global stock and bond market returns broadly including dividends and excluding transactions costs, has returned +7.40% per annum during the same period. The ex-post sample volatility has been essentially equal for our portfolio and benchmark index.[5] Hence, it would be tempting to conclude that we have received 3.74 percentage points more return *per year* than the index by carrying equivalent risk. Unfortunately, we cannot draw that conclusion, for several reasons.
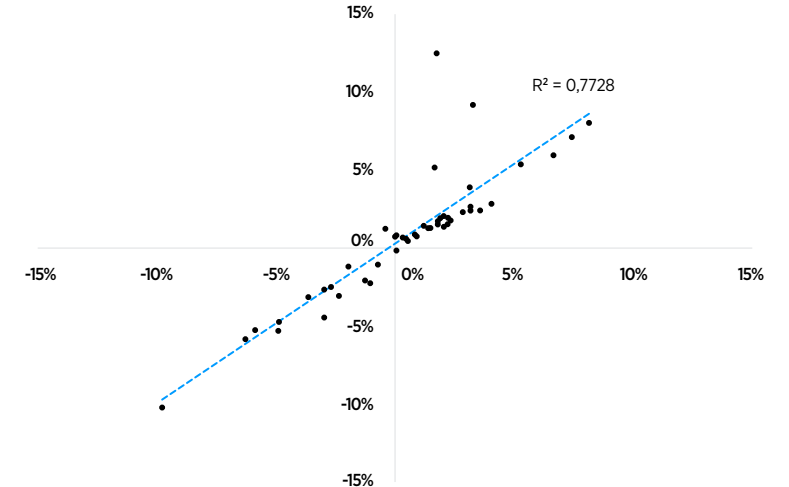
Cumulative portfolio and benchmark index returns 2019–2021
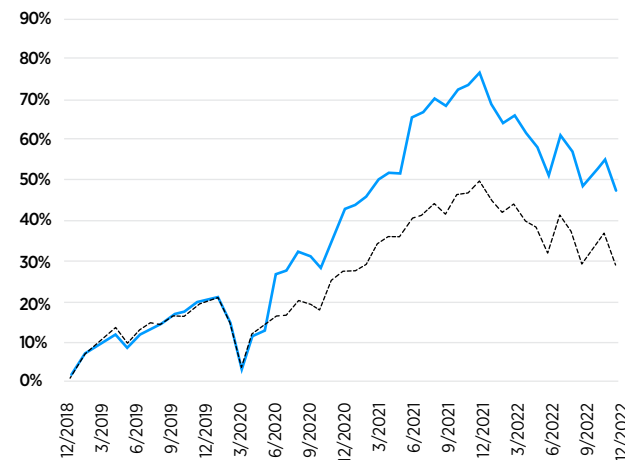
Monthly portfolio (Y-axis) and benchmark index (X-axis) returns 2019–2022

R² = 0,7728

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1   See Jay Solutions Monthly report 31.12.2022. Our benchmark index is defined as 70% MSCI ACWI Net Total Return EUR Index + 30% Bloomberg Barclays Global Aggregate Float Adjusted TR Index Hedged EUR.
2   Our portfolio has a 0.0% weight in the energy sector as compared to 5.8% for the benchmark index.
3   Most notably, the Government Pension Fund Global of Norway: www.nbim.no/en/the-fund/news-list/2023/negative-returns-in-a-challenging-year/.
4   Figures from SEB Portfolio Construction ESG-analysis 30.9.2022.
5   See page 15 on Jay Solutions Monthly report 31.12.2022.

On a positive note, our equity investments' TCFD carbon footprinting and exposure metric values were around half of those of their benchmark index

The Devil is in
Ceteris Paribus

First, as our observations are based on a limited sample, both the mean and the variance of their distribution might represent random noise or be biased. For the mean, this risk is expressed as the t-value for the intercept from the classical Jensen (1968) regression, commonly referred to as α, which is statistically insignificant at 1.00. Hence, while the risk-adjusted excess return (α) certainly is economically significant at 3.50% per annum – and compelling for marketing purposes – it is too probably just a fluke from a statistical point of view.

The volatility of the return residuals from the same regression, or the difference between the actual and expected return in the model, is 6.63% in our sample. If our current return sample is representative of the population, we will see α staying stable, but its t-value rising approximately proportionally to the square root of the sample size. *Ceteris paribus*, the t-value should become significant in about twelve years from now, when we have a sixteen-year track record of the new investment strategy. The devil is however in the theoretical expression *ceteris paribus*, meaning

with other conditions remaining the same, as our return sample might be flawed for many reasons.

First, the sample could contain measurement errors due to stale pricing.[6] These errors could exaggerate the volatility of the return residuals, and hence decrease the t-value of α, potentially leading to what is called a Type II Error in statistics.[7] On the other hand, stale pricing might also result in a too low estimate of systematic risk (β), and hence produce a Type I Error.

Last, but most certainly not least, new observations might show that the volatility of our current sample does not match (too low) the theoretical population, but we are still unaware of it. The sighting of one large observation in the future could change our whole empirical distribution. There is no way for us to know, what we have yet to see.

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6   Please see our 2021 annual report for a detailed discussion about stale pricing in our portfolio.
7   https://en.wikipedia.org/wiki/Type_I_and_type_II_errors.

3.50%

Hence, while the risk-adjusted excess return (α) certainly is economically significant at 3.50% per annum – and compelling for marketing purposes – it is too probably just a fluke from a statistical point of view.

Homoscedasticity and
Hidden Causalities

Our analysis above assumes that all systematic risk is encapsulated in β, or that there is no other causation between benchmark index ("the market") and our portfolio returns. It is a bold hypothesis, which could be rejectable already, or later become such. Let us assume for instance, that returns causate (or even correlate with) liquidity.

Given that our portfolio has lower liquidity than the market, we could see excessively high/low returns when the market return is high/low. The causality is not necessarily linear, whereby the linear model estimating β would not pick up all the excess return volatility. Hence, the effects of this additional systematic risk could erroneously show up in α. The scatter plot of the monthly returns seems to insinuate heteroscedasticity, hypothetically caused by a conditionally variable β, but our data sample is unfortunately still much too small for reliable empirical estimation.[8]

It is rather obvious that we can expand this line of argumentation to include pricing efficiency, as well as counterparties. However, it is also possible to view ESG policies through this lens. For example, fossil fuel producing companies have tended to underperform in the rising markets and outperform in the falling markets in our 2019–2022 sample. While a lower β partially explains the difference, there is obviously much more to it, as the energy sector produced large *positive* returns in 2022.[9] The problem is really that the underlying causalities are complex, largely unknown. We have most certainly entered the realm of uncertainty.

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8   https://ssrn.com/abstract=1302329.
9   It would imply a negative β, which is a theoretical impossibility, as it suggests a negative risk premium.

Liquidity, Pricing Efficiency
and Counterparties

Risk is uncertainty for which the probability distribution is known. Risk was properly defined only in the 17th century, which is perhaps a testimony of its unintuitive nature.[10] Uncertainty is – still in the 21st century – mostly just uncertain. Two different types of uncertainty can perhaps be distinguished along the "Rumsfeld matrix": known and unknown uncertainties.[11]

Known uncertainties are events that we know are possible, but have unknown probability. For instance, liquidity and pricing efficiency fall into this category – even though we would like to think about them as risk – as there are few reliable means to estimate their probability distribution. We manage liquidity and pricing efficiency uncertainties by diversifying around 90% of our portfolio into thousands of stocks and bonds in the most liquid and efficient markets around the world. Under most circumstances, we should be able to convert these investments into cash *at their fair value* within one week. Liquidity rules the land of uncertainty.

Counterparty uncertainty is even more slippery than liquidity and pricing efficiency uncertainty. There is no empirical data to evaluate an individual investment manager from that perspective, due to an obvious survivorship bias in the data for existing counterparties.[12] History – as well as painful memories from the Global Financial Crisis – shows that counterparty risk is rather dichotomous: everything is normal until "no-one answers the phone". We manage counterparty uncertainty by investing primarily through a number of larger investment managers that are domiciled in diverse countries.[13] Furthermore, we invest primarily without intermediaries, both to reduce costs, but also the number of links that could break the chain of trust.

90%

We manage liquidity and pricing efficiency uncertainties by diversifying around 90% of our portfolio into thousands of stocks and bonds in the most liquid and efficient markets around the world.

10   https://en.wikipedia.org/wiki/Probability#History
11   https://en.wikipedia.org/wiki/There_are_unknown_unknowns
12   See e.g., https://en.wikipedia.org/wiki/Survivorship_bias
13   See Jay Solutions Monthly report 31.12.2022 for details about counterparties.

Unknown
Uncertainties

When all is said and done, we are still left with unknown uncertainties. Every now and then things that we did not even consider possible happen, and can alter the course of events change profoundly. The historical anecdote about black swans offers a nice way to illustrate this. The expression "black swan" was used by the Roman satirist Juvenal: "Rara avis in terris nigroque simillima cycno", which approximately translates into *A rare bird on this earth, like nothing so much as a black swan*.[14] At the time, no-one had ever seen a black swan in the Roman empire.

Nor had anyone seen a black swan in 16th century England, where the term was used to describe something "something extremely rare (or non-existent)", or even somewhat ridiculous: "The abuse of such places [ancient Roman theaters] was so great, that for any chaste liuer [liver] to haunt them, was a black swan, & a white crow".[15] This all changed in 1697, when real black swans were sighted in Australia. Hence, it had been unknown that the different colors of swans were unknown. Today, the term usually equates to a surprising and impactful event that is often inappropriately rationalized – but is perhaps more an example of an unknown uncertainty.[16]

Complex systems, as the economy and financial markets are, tend to produce entirely unpredictable outcomes of surprising magnitude at times.[17] As these uncertainties cannot be predicted, but not ignored either, what is left is efficient adaptation.[18] We seek to manage this kind of uncertainty within our investments by maintaining ample real options through high liquidity, high visibility through transparent holdings with efficient pricing, and seeing things through the lens (or filter) of science.

14 https://www.oxfordreference.com/display/10.1093/oi/authority.20110803100404636;jsessionid=9BE3A5C9D3F02700764A10BB737F96FF#:~:text=Latin%20phrase%20meaning%20literally%20a
15 https://www.grammarphobia.com/blog/2020/05/black-swan-rara-avis.html
16 https://en.wikipedia.org/wiki/Black_swan_theory
17 https://en.wikipedia.org/wiki/Complex_system
18 https://www.amazon.com/Team-Teams-Rules-Engagement-Complex/dp/1591847486

α, β and ESG

α, β, risk and uncertainty can be challenging to discern. Adding Environmental, Social and Governance (ESG) factors to the equation, can easily result in a reaction that was heard at World Economic Forum 2023 in Davos: "I hope E.S.G. just goes away."[19]

ESG investing has lately been a subject of fierce debate. The arguments range from ESG producing abnormal returns, α, to outright anti-ESG legislation.[20] The arguments are so far apart that it seems probable that the parties are not even discussing the same thing. Hence, it seems important to first define, then debate.

An emotionally appealing approach to ESG investing would be to view it as a potential source of α, which is truly "rara avis" (almost never seen) in investments. Unfortunately, there is not much theoretical or empirical evidence to support this approach, as financial markets price in all relevant information quite efficiently – also information related to ESG factors.

Robert G. Eccles defines ESG as managing risk: "It's simply about companies and investors managing material risk factors to ensure long-term value creation."[21] Hence, ESG factors would represent *alternative β*, for which investors can expect a risk premium over the long run – which can be positive, as well as negative. There is both some theoretical and empirical support for this "Greenium"-view.[22]

Our approach is in short to include ESG factors in our utility function, which we try to maximize. Our utility function is in turn derived from our values and goals: to best carry our responsibilities to the university, its partners, society, and sustainable development. In other words, our expected marginal utility of the expected ESG impact is considered along our expected utility of the return and risk when we invest. British women's rights activist and educationist Annie Besant encapsulated the spirit of our approach in one statement: "The true basis of morality is utility; that is, the adaptation of our actions to the promotion of the general welfare and happiness; the endeavour so to rule our lives that we may serve and bless mankind."[23]

19   https://www.nytimes.com/2023/01/19/business/dealbook/esg-business-davos.html
20   https://news.law.fordham.edu/jcfl/2022/11/11/the-rise-of-state-anti-esg-legislation/
21   https://www.forbes.com/sites/bobeccles/2022/12/29/esg-is-not-about-ethical-standards-and-ethical-values
22   https://kenaninstitute.unc.edu/kenan-insight/why-both-sides-of-the-esg-debate-have-it-wrongand-how-to-get-it-right/
23   https://en.wikipedia.org/wiki/Annie_Besant

While our approach sounds easy enough in theory, it is not in practice. First of all, the utility function is only a vague concept, not an exactly defined equation. For example: what is the expected environmental marginal utility of us not investing into fossil fuel producers, versus its expected risk and return marginal utility? We can estimate these variables only with high uncertainty, and the utility function itself is largely unknown. We have chosen to be very selective in our ESG choices, so that we can afford to explore the expected utility of each potential decision beforehand with the oldest of all optimization algorithms: debate.

While it is impossible to measure the marginal impact of each variable that goes into our utility function, the order of them seems rather well established. Diversifying our investments globally with an average Total Expense Ratio below 0.1% is without doubt our most significant act of responsibility. It is based on volumes of scientific evidence and plays a crucial role in fulfilling our fiduciary duty to both the university and its donors.

Excluding investments in fossil fuel producers is another major contributor to our utility – even though it can introduce some extra return volatility – as we seek to contribute in the efforts to limit global warming. Our portfolio still has a long way to neutrality, but we have made significant progress in reducing its carbon footprint: Our equity holdings' TCFD Carbon Footprint was 49% (49 tons CO_2e/\$M invested versus 96 for MSCI ACWI) lower than that of their benchmark index, our Carbon Intensity was 59% lower (69 tons CO_2e/\$M revenue versus 168 for MSCI ACWI), and our Weighted Average Carbon Intensity was 53% lower (71 tons CO_2e/\$M revenue versus 151 for MSCI ACWI).[24] Furthermore, 65.7% of our listed equity funds were classified as Article 8 and 34.3% as Article 9.[25]

While we do feel the pressure to drive down our carbon footprint faster, we are acutely aware of the potential trade-off with our other responsibilities, and dangers of taking emotionally appealing shortcuts. We have for instance resisted carbon offsetting due to lack of verifiability, which seems increasingly justified with recently surfacing concerns.[26] Moreover, recent research suggests that we should not have overly high expectations for ESG-labeled funds.[27] Overall, we consider unrealistic and unverifiable ESG-related claims ("greenwashing") a governance risk, which we seek to manage by selecting transparent and measurable solutions.[28]

0.1%

Diversifying our investments globally with an average Total Expense Ratio below 0.1% is without doubt our most significant act of responsibility.
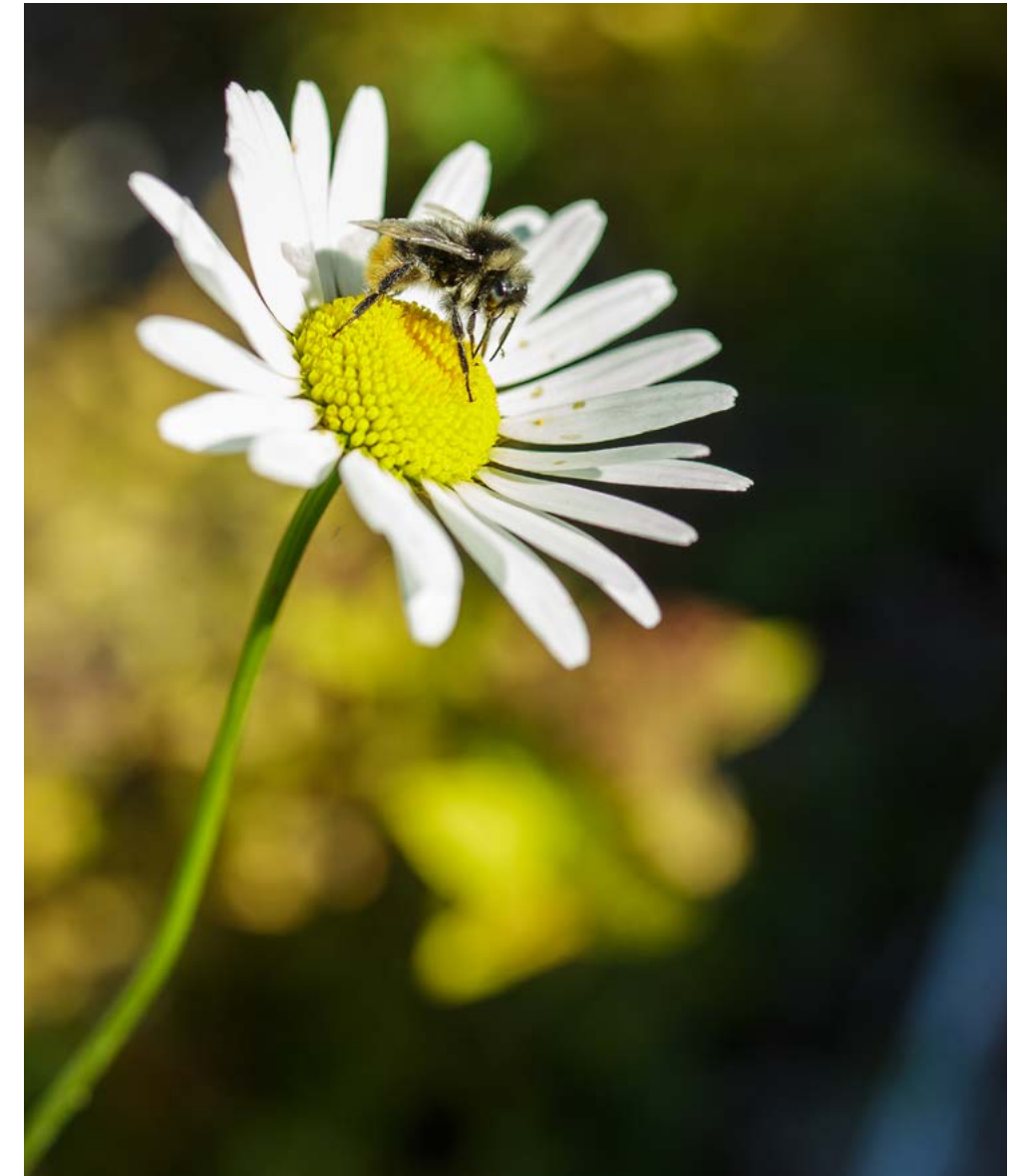
24 Figures from SEB Portfolio Construction ESG-analysis 30.9.2022. For TCFD Carbon Footprinting and Exposure Metrics definitions, see https://www.tcfdhub.org/Downloads/pdfs/E09%20-%20Carbon%20footprinting%20-%20metrics.pdf
25 https://kpmg.com/fi/fi/blogs/home/posts/2022/06/fund-classification-and-responsible-promotion-sfrd-disclosure-obligations-examined.html
26 https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe
27 https://corpgov.law.harvard.edu/2021/07/29/does-socially-responsible-investing-change-firm-behavior/
28 https://www.esma.europa.eu/press-news/esma-news/esma-and-ncas-look-marketing-financial-products

The Monopoly of
Homo Sapiens

Looking back at the last year – and maybe decade – it would seem like we have entered a period of increasing uncertainty, after the equilibrium that emerged following World War II. It is however not all doom and gloom, when we view things in a larger context.

First, the recent geopolitical turbulence is obviously not the first of its kind during three hundred or so years of history of our endowment. In addition to World War II, it has seen e.g., World War I and the Napoleonic wars, which all match anything seen recently, at least inferring from human casualties.[29] Not to mention the 1918 flu pandemic, the Great Famine of 1876–1878 and the Finnish famine of 1866–1868. Our endowment made it through then – and it will surely now also.

Second, there is another side of the coin. Some of the turbulence could be symptoms of underlying technological and societal changes, which create new welfare. Regressive political movements express their desire to return to "good old times", as people increasingly feel that their livelihood and social fabric is threatened by new technology. Not much unlike the textile workers in 19th century England, known as the Luddites, who sabotaged textile machinery to protect their professional monopoly.[30] Eventually, the textile workers would however find new trades, and the machines would provide a much better supply of textiles.

The textile machines of our age might already have seen daylight. Computers perform increasingly advanced information processing, of which many must have seemed hypothetical less than three decades ago, when computers turned out to play chess astonishingly well.[31] The development has progressed along something that reminds of Moore's law, dotted with breakthroughs ranging from conquering the Chinese board game Go to predicting protein structures.[32] As of very recently, extracting information from language, producing logical new information, and expressing it in terms of language is no longer the monopoly of Homo Sapiens.[33]

Automation challenges white-collar work, one of the few remaining professional bastions of human beings. While it is impossible to forecast the – uncertain again – path and speed of progress, it seems safe to say that automation will take over with time (or increasing computing power). The economic and societal impact will surely be dramatic, perhaps resonating with that of the progression from agricultural to industrial societies. One logical outcome is probably an acceleration in the decline of labor share.[34]

For these reasons it is easy to see why it is now – more than ever – important for us to maximize our capital share by developing our intellectual property and investing into stakes of businesses. This will best protect us against the declining labor share by giving us an interest in future productivity increases. Through this, we should be able to accumulate capital with the power of cumulative returns. *Sic parvis magna* – great things from small things – as English explorer Sir Francis Drake's motto read.[35]

29 https://www.vox.com/2015/6/23/8832311/war-casualties-600-years
30 https://en.wikipedia.org/wiki/Luddite
31 https://en.wikipedia.org/wiki/Deep_Blue_(chess_computer)
32 https://en.wikipedia.org/wiki/DeepMind
33 https://en.wikipedia.org/wiki/ChatGPT
34 https://www.imf.org/en/Blogs/Articles/2017/04/12/drivers-of-declining-labor-share-of-income
35 https://en.wikipedia.org/wiki/Francis_Drake

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