



Whitepaper

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List of Abbreviations:

NFT	Non-Fungible Token
ETF	Exchange-Traded Fund
CPI	Consumer Price Index
CPIH	Consumer Price Index
ICO	Initial Coin Offering
SPV	Special Purpose Vehicle
EVM	Ethereum Virtual Machine
DAO	Distributed Autonomous Organization
DApps	Decentralized applications

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Appetiser:

Picture a future where currency finds its bedrock not in fleeting state decisions, but anchored in the timeless essence of land. At this juncture, Landscoins takes its stand—a meticulous blend forged by methodical analysis and visionary foresight. Weaving age-old faith in land with contemporary digital agility, Landscoins opens the door to equitable land investment for everyone. Embark on our tale: a synthesis of time-honoured understanding and avant-garde perspectives, sculpting tomorrow's financial landscape.

Abstract:

This paper delves into the foundational theories shaping the potential currency of tomorrow. It posits that currencies governed by state entities are intrinsically unstable, swayed by populist influences and lacking long-term certainty. To envision the future's ideal currency, we embark on an exploration of current cryptocurrencies, scrutinizing their attributes and limitations.

Our investigation reveals a pronounced imbalance in most existing currencies. Harnessing cutting-edge technology and research, we outline the stages vital to crafting the ultimate future currency. A salient discovery is the longevity of currencies anchored to tangible assets. Historically, government-issued money was tethered to gold, ensuring a direct exchange value with national banks and fostering low inflation rates—unless state entities altered the gold-to-currency conversion rates abruptly.

Our insights spotlight land, specifically arable land and permanent grassland, as the optimal asset base. These lands underpin countless essential goods and services, making them invaluable. Marrying the digital prowess of today with this age-old asset, we introduce a currency that melds the digital flexibility with land's unparalleled anti-inflationary potential. The result is Landscoins—a digital token intrinsically linked to land. The symbiotic relationship between Landscoins and its parent entity ensures the land owned by the company buttresses the token's value. This innovative approach is akin to transacting with portions of land necessary for product or service creation, intertwining both in an inseparable bond.

A revolutionary facet of Landscoins is its democratizing effect on land investment. Historically, acquiring land, especially at advantageous prices, required substantial capital, often barring smaller investors from entering the arena. This conventional model also inherently placed a premium on smaller land parcels, elevating their cost per square meter. With Landscoins, these barriers dissolve. By tokenizing land, we enable fractional land ownership, allowing investors—whether they're injecting large or modest sums—to share the same benefits. This levels the playing field, ensuring every Landscoins holder, irrespective of their investment scale, enjoys the same unit price advantage that traditionally was reserved for 'bulk' land purchasers. In essence, Landscoins isn't just a land-centric currency; it's an instrument of equitable investment, granting token owners an undiluted stake in land, free from the constraints of traditional land acquisition paradigms.

Landscoins pioneers a ground-breaking fusion: an anti-inflationary stance coupled with perpetual liquidity. This synergy of traditional financial tools with modern monetary adaptability positions Landscoins as the future's definitive currency—a currency truly designed to serve.

1. Introduction: In God we trust no more

Traditional currencies are facing an undeniable transformation. Croatia's recent transition to the euro¹ serves as a prime example of a larger global trend. The push for a more interconnected world is making the idea of a universal currency increasingly compelling. The imminent question: Will this new benchmark emerge from longstanding giants like the euro and dollar, or could the disruptive world of cryptocurrencies propose an unforeseen contender?

Since the dissolution of the Bretton Woods agreement in the 1970s, the financial landscape has experienced seismic shifts^{2 3}. With increased volatility in currencies and surges in inflation, many governments, particularly those with shorter electoral mandates, grapple with crisis after crisis. Frequently, their main strategy—aimed at appeasing the short-term desires of their citizens—entails an increase in money supply. Such tactics invariably trigger extended inflation cycles, ushering in successive crises. Each downturn further erodes public trust in conventional currencies.^{4 5 6}

To navigate the complexities surrounding the ideal form of money, our approach will be threefold: first, to define it; next, to elucidate its core attributes; and finally, to compare its multifaceted incarnations.

2. Money - Its Essence and Core Attributes

*"Money is a commodity accepted by general consent as a medium of economic exchange. It is the medium in which prices and values are expressed. It circulates from person to person and country to country, facilitating trade, and it is the principal measure of wealth."*⁷

In understanding money, we distil its nature down to three foundational attributes:

1. **Store of Value:** Money retains and preserves its worth, allowing individuals to defer consumption until they deem fit.
2. **Unit of Account:** It serves as the benchmark for pricing and valuing all goods and services, providing a consistent measure and standard.
3. **Medium of Exchange**⁸: Money facilitates transactions, acting as an intermediary in trade and eliminating the need for a coincidental want, which barter systems require.

2.1. Money: the store of value

*"If I work today and earn 25 dollars, I can hold on to the money before I spend it because it will hold its value until tomorrow, next week, or even next year. In fact, holding money is a more effective way of storing value than holding other items of value such as corn, which might rot. Although it is an efficient store of value, money is not a perfect store of value. Inflation slowly erodes the purchasing power of money over time."*⁸

Nevertheless, in many contexts, government-issued currencies appear to have deviated from this ideal of retaining value. Individuals and institutions, when aiming to preserve the value of their assets, often diversify into real estate, stocks, commodities, or financial derivatives. The shifting value of government currency, dictated by volatile exchange rates and persistent domestic inflation, poses challenges. In nations overwhelmed by hyperinflation, this deviation becomes starkly evident. Traditional currency might be so devalued that alternatives—be it other currencies or even barter systems—become the preferred means of exchange, highlighting a systemic failure in the currency's fundamental function as a store of value.^{9 10}

2.2. Money: unit of account

*"Money is a unit of account. You can think of money as a yardstick—the device we use to measure value in economic transactions. If you are shopping for a new computer, the price could be quoted in terms of t-shirts, bicycles, or corn. So, for instance, your new computer might cost you 100 to 150 bushels of corn at today's prices, but you would find it most helpful if the price were set in terms of money because it is a common measure of value across the economy."*⁸

Delving into this second function of money reveals certain inadequacies. As a unit of account, traditional government-backed currency—in both its physical and electronic forms—tends to fall short compared to some of its digital counterparts. Cryptocurrencies, given their innate digital nature, allow for finer divisions without the need for physical representation. Conversely, the decimal constraints inherent to many traditional currencies often lead to rounding, diminishing their precision as a reliable measure of value.

2.3. Money: medium of exchange

*“Money is a medium of exchange. This means that money is widely accepted as a method of payment. When I go to the grocery store, I am confident that the cashier will accept my payment of money. In fact, U.S. paper money carries this statement: “This note is legal tender for all debts, public and private.” This means that the U.S. government protects my right to pay with U.S. dollars.”*⁸

Undoubtedly, today's government-issued currency remains the primary medium of exchange. But is its dominance guaranteed in the evolving landscape of global commerce? There are compelling reasons to believe it may need to adapt or be overtaken. When evaluating a currency's efficacy as a medium of exchange, especially government-backed ones, we must confront the complexities faced during transactions, both domestic and international.

Consider the traveller's dilemma. The acceptability of foreign currencies varies immensely across regions. While powerful stable currencies like the US dollar or euro are often accepted even outside their home territories, this isn't a universal truth. Many places might accept one form of payment but decline another, be it cash versus card or vice versa. In some countries, a foreign currency might even hold more allure than the native one.

This inconsistency leads to a level of unpredictability, which goes against the very essence of what a reliable currency should offer. Contemplate the potential pitfalls of a US dollar-based credit card in Europe. While some countries might readily facilitate transactions in dollars, others could resist. Still others might accept the dollar, but only as physical cash. The digital era, rife with innovations, promises the potential for a perfect medium of exchange. Yet, if even a currency as influential as the US dollar exhibits inconsistencies in its core function as a medium of exchange, can it truly be envisioned as the undebatable currency of tomorrow?

3. The History of Money: From Shells to Bitcoin

From its inception, money has evolved in response to societal needs, technological advancements, and shifts in understanding value. The timeline of money's transformation is a testament to human innovation and adaptability.

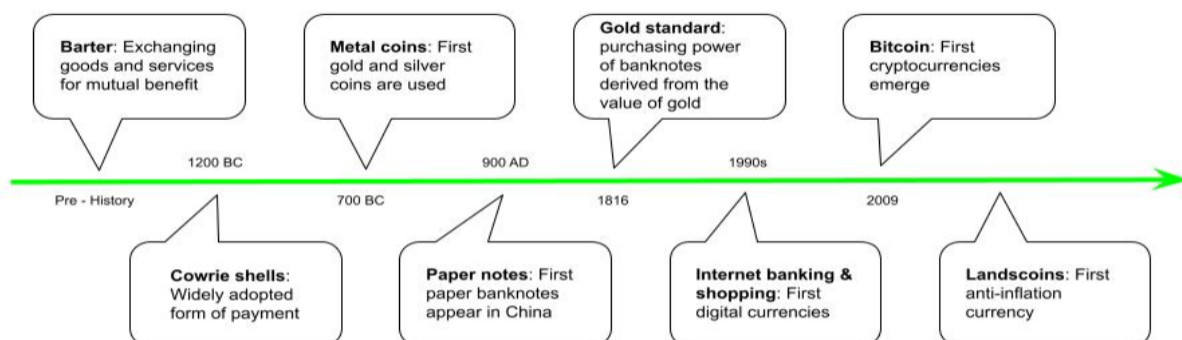
Ancient Beginnings

Ancient civilizations laid the groundwork for the concept of currency. Prior to formalized currency systems, trade often relied on natural objects, and societies utilized barter systems for the exchange of goods and services. One of the earliest mediums of exchange were cowrie shells, cherished for their resilience and relatively consistent supply, tracing back to as early as 1200 BC.

Metals and Paper

The introduction of metal coins around 700 BC marked a major evolution in currency. Typically fashioned from silver or gold alloys, these coins provided a more standardized and tangible value representation. China further advanced the trajectory of money by pioneering paper banknotes in 900 AD, setting the stage for what we recognize as modern paper currency.

The 19th century witnessed the rise of the gold standard, originating in Great Britain in 1816. This system pegged the value of coins and banknotes directly to gold reserves, requiring banks to exchange currency for a fixed amount of gold. Such an arrangement provided a semblance of stability to currency valuation. However, this stability was shaken in the 1970s with the abandonment of the Bretton Woods agreement, leading major economies to detach from the gold standard.



Digital Age: Beyond Tangibility

Entering the digital age, the 1990s coincided with the advent of internet banking and burgeoning online commerce, introducing digital currencies typically anchored to tangible cash deposits. Yet, 2009's launch of Bitcoin marked a ground-breaking shift. Unlike traditional

currencies, Bitcoin, as the pioneering digital currency, operates on an underlying architecture that relies heavily on significant computational power and vast energy consumption, setting a precedent for many that followed. Instead of being backed by physical assets ^{11 12} or a government's promise, its value was, and remains, driven by two factors: the computational resources required to 'mine' it and the unpredictable principle of "What is the next person willing to pay for it?" In this, Bitcoin emphasized the role of collective sentiment, rather than intrinsic value, in determining its worth.

In reflection, money's journey from tangible objects to the digital realm is evident. Bitcoin, in particular, marked a profound shift away from historic currency paradigms, underscoring the collective's pivotal role in valuing contemporary currencies.

4. Introducing cryptocurrencies

Cryptocurrencies are digitally crafted assets that operate within an encrypted network, meticulously verifying, executing, and recording transactions—strikingly absent of intervention from any centralized authority, whether it be a bank or government. This very essence underscores their decentralization. To fortify the security of cryptocurrency transactions, the ingenious mechanism of blockchain encryption is applied, carefully capturing every movement within the realm of a specific cryptocurrency¹³. It's worth noting that the act of political manoeuvring, often tailored to appease the voting masses, rarely stems from entirely unbiased policy architects. This raises concerns about their ability to make prudent decisions in times of utmost necessity, thereby highlighting an inherent vulnerability that casts a shadow over the bedrock of monetary stability. This is where the unique potency of cryptocurrencies comes into sharp relief.

The cryptocurrency landscape, akin to the captivating scenes of the movie 'Highlander,' features a yearly unfolding of contenders. As the film's iconic line asserts, 'in the end there can be only one.' Amidst this ever-evolving ensemble, a solitary currency will rise victoriously, while others gently fade into obscurity. Time alone holds the answers to this enthralling narrative. Even in the present, certain candidates can be sifted out by examining the prevalent challenges that cryptocurrencies grapple with. In this pursuit, six paramount issues take centre stage:

1. Cryptocurrencies lack of value
2. Cryptocurrencies are volatile
3. Cryptocurrencies are highly anonymous
4. Cryptocurrencies are non-ecological
5. Cryptocurrencies lack protection
6. Cryptocurrencies encourage criminal activities¹⁴

4.1. Cryptocurrencies lack of value

Cryptocurrencies, in their distinct nature, often stand apart from traditional assets due to the absence of tangible backing. This creates significant questions surrounding their intrinsic worth.

- **Intrinsic Worth vs. Speculation:** While owning stocks in the conventional world equates to holding a share in a revenue-generating business, cryptocurrencies mostly dwell in the realm of speculation. The guiding principle for many investors is simple: acquire at a lower cost and hope to sell at a profit, even if the intrinsic utility remains elusive.
- **Value Dynamics:** In comparison to traditional stocks, which can offer dividends and a tangible stake in a company's growth, cryptocurrency's value often hinges solely on potential price appreciation. Such a dynamic can give rise to speculative bubbles. Notably, certain market behaviours, like the notorious 'pump and dump' cycles, echo the risky foundations of Ponzi schemes.

Defining 'value' in the world of cryptocurrencies is a challenge in itself. Unlike stable assets rooted in tangible utilities or predictable income streams, the valuation of digital coins pivot precariously on the whims of supply and demand.

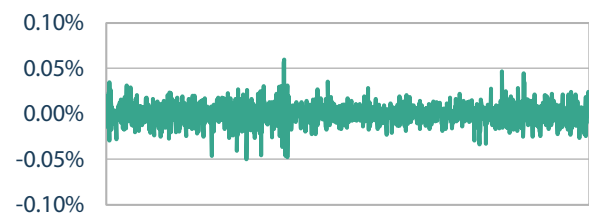
As we endeavour to understand the nuances of cryptocurrencies, it's clear that the conundrum of value is but one of many challenges. Coupled with issues of volatility, anonymity, ecological implications, security, and potential for illicit activities, it forms a complex tapestry that demands thorough exploration. Our journey seeks to navigate these intricacies, providing clarity on the forces shaping the future of digital currencies.

4.2. Cryptocurrencies are Volatile

Cryptocurrencies, especially Bitcoin, are notably susceptible to price fluctuations. In illustrating this point, I've created a comparative analysis using three distinct assets: Gold (GC:CMX), the S&P 500, and Bitcoin.

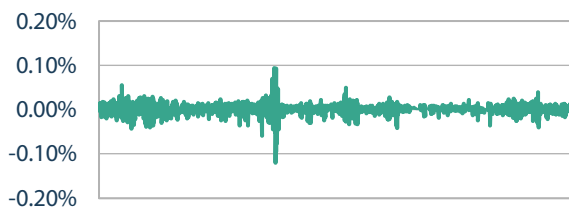
- **Gold (GC:CMX), The Gold Standard:** Gold, as one of the world's most traded commodities, provides an accurate reflection of the gold market's dynamics. However, the nature of gold is unique: it isn't an index. Instead, it's a tangible commodity that either demands storage or representation through time-limited derivatives.

Daily % change in price of Gold (GC:CMX)



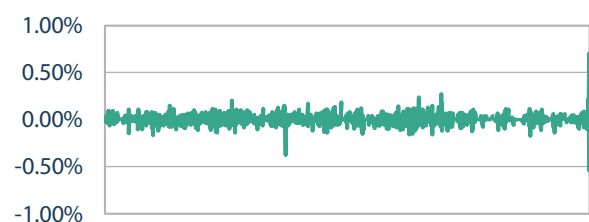
- **S&P 500, The Composite Index:** A compilation of the 500 most influential firms on the US stock exchange, the S&P 500 primarily emphasizes large-cap companies, constituting over 80% of US equities. This index features diverse sectors from healthcare to consumer staples. Criteria for inclusion encompass financial stability, a public float of at least 50%, appropriate sector representation, and a market capitalization exceeding 3.5 billion US dollars¹⁵. Recognized by economists as a reliable gauge of US market performance, the S&P 500 holds a significant position in financial research.

Daily % change in price of S&P500



- **Bitcoin:** The Cryptocurrency Pioneer. Among the earliest cryptocurrencies, Bitcoin boasts a prominent market capitalization. Its influence is so profound that the fate of numerous other digital currencies often hinges on Bitcoin's price trends, positioning it as a foundational benchmark in the crypto arena.

Daily % change in price of Bitcoin



To better elucidate their distinct behaviours, we've sourced data from Fred and Nasdaq's official websites, charting daily percent changes spanning from 8th January 2015 to 6th April 2023. These visualizations are available in Appendices 1, 2, and 3.

Initial observations reveal Bitcoin's heightened volatility compared to the S&P 500 and Gold (GC:CMX). For a quantitative analysis of this volatility, I utilized a methodology championed by Claire Boyte-White¹⁶. The subsequent findings, which can be viewed in the table below (and Appendix 4), suggest a stark difference: while Gold and the S&P 500 hover around a volatility of 0.01, Bitcoin quadruples that figure. This trend extends to annualized volatility, with gold at 0.43, the S&P 500 at 0.54, and Bitcoin soaring to 2.28.

	Gold (GC:CMX)	S&P 500	Bitcoin
Volatility	0.01	0.01	0.04
Annualized volatility	0.43	0.54	2.28

4.3. Cryptocurrencies are highly anonymous

The anonymity offered by cryptocurrencies serves as a double-edged sword, bringing both opportunities and challenges.

- **Transparency vs. Confidentiality:** Cryptocurrencies, through blockchain, ensure a detailed record of transactions. Yet, the true identity of users is cloaked behind public keys or pseudonyms.
- **The Anonymity Appeal:** This level of secrecy, while bolstering privacy and security, inadvertently offers fertile ground for untoward activities. Money laundering, tax evasion, and cybercrimes are some grim offshoots of this veil.

Navigating this digital realm demands careful deliberation. We are met with the intricate challenge of harmonizing the protection of user anonymity with the essential tenets of accountability, ensuring the integrity and safety of the broader crypto ecosystem.

4.4. Cryptocurrencies are non-ecological

As the world accelerates its transition into the digital age, cryptocurrencies emerge at the forefront, bringing with them both revolutionary potential and substantial ecological concerns.

- **High Energy Footprints:** Cryptocurrency mining requires substantial energy casting shadows over its ecological viability.
- **Miners' Sustainable Endeavors:** While there's a trend of miners migrating to renewable energy, the inherent energy consumption tied to cryptocurrency creation is still challenging to justify.

The juxtaposition of the energy demands against the primarily speculative nature of cryptocurrencies' value introduces an ecological and economic dilemma. With the majority of cryptocurrency value hinging on speculative trade, the sustainability of its energy-intensive creation becomes even more pertinent.

4.5. Cryptocurrencies lack protection

In the rapidly unfolding world of digital finance, cryptocurrencies emerge with their trailblazing potentials. However, they present notable vulnerabilities. Unlike many other traded assets, cryptocurrencies don't have robust safeguards against insider trading, leaving investors at a heightened risk. Moreover, deposits in cryptocurrency exchanges lack the protective shield against exchange failures, commonly found in traditional financial institutions. Such lapses mean that even purchased cryptocurrencies could vanish should an exchange collapse. As we delve deeper into the digital currency universe, it becomes imperative to bolster protection and address these inherent challenges

4.6. Cryptocurrencies encourage criminal activities

In the evolving realm of digital finance, cryptocurrencies stand out with their dual-edged nature (part 4.3). Their built-in anonymity, while empowering privacy, simultaneously offers a haven for illicit undertakings. This very trait allows them to be readily employed within the recesses of the dark web, enabling the purchase of illicit goods. Additionally, the untraceable nature of these digital assets facilitates ransomware demands and money laundering schemes, underscoring the complex interplay between technology and unlawful pursuits. As we explore the depths of this digital currency expanse, the task of deciphering and addressing the interplay between cryptocurrencies and criminal endeavours emerges as a pressing concern, necessitating thoughtful strategies to mitigate their exploitative potential.

5. Searching for the perfect currency

In the context of monetary history, the consistency lies in how every form of currency emphasizes scarcity. Despite our modern financial system stepping away from the gold standard, volatility remains a constant companion. The essence of a stable currency always returns to one core idea: anchoring its value to a tangible, finite asset. As we navigate the present, the intersection of stability with digital feasibility is paramount, spotlighting the quest for the most fitting asset to anchor a cryptocurrency.

Traditional Commodities as Anchors: Gold, oil, corn; these commodities are tangible and historically esteemed. However, their shifting demand patterns and divergence from daily necessities highlight inherent challenges. The contemporary economy requires an anchor that seamlessly tracks and counterbalances fluctuations. Physical commodities, with their demand volatility, necessitate vast resources for management and security, accumulating costs and risks.

The NFT Proposition: The digital age presents non-fungible tokens as potential assets. Virtual assets, be they images or sounds, could in theory serve as anchors. However, their primary value, driven by scarcity and speculative nature, lacks intrinsic utility, making them akin to many cryptocurrencies.

Exploring Alternatives: Constructing a theoretical basket of goods might mirror the Consumer Price Index, but such a model would demand intensive human effort, resources, and expertise. Token models backed by funds and companies present another avenue, yet they introduce concerns about scalability, market saturation, and long-term profitability.

Land: A Fundamental Asset Across Sectors: Land, with its inherent stability and an elusive, non-standardized valuation, stands apart from the predictable volatility of traditional markets. One of the challenges in gauging land value lies in the absence of a universal index¹⁷. Data related to agricultural land prices in select European regions hints at this stability, showcasing that land prices are both stable and on an upward trend¹⁸. Unfortunately, such specific data remains sparse; for instance, the United States does not readily offer such information, and it's a rarity among many other countries.

This tapestry of land binds every sector of our economy, albeit with varying degrees of intensity. Consider the pillars of our digital age; data centres that power the world's tech giants are tethered to plots of land. Our transportation networks, from highways to train tracks, are carved upon it. Agricultural giants, no matter how advanced their techniques, owe their yields to the quality of their soil. The renewable energy revolution, while aiming for the skies, finds its foundation on land with solar farms and wind turbine installations.

Highlighting fundamental significance, we see water as the backbone of every community. Every drop we consume, every reservoir we construct, and every irrigation system we deploy depends on land. The interdependence of water and land isn't merely economic; it's deeply symbolic, echoing the intrinsic relationship between humanity's most basic necessity and the land we live upon. As we glance upwards, dreaming of otherworldly ventures, even the ambitions of extra-terrestrial colonization underscore the unparalleled, finite value of land here on Earth, emphasizing its irreplaceable role in our past, present, and future.

Turning to land as the cornerstone for a cryptocurrency embodies the confluence of timeless values and modern innovation. By anchoring our digital future to this ageless asset, we not only draw upon humanity's deep-rooted connection to the Earth but also pave the way for a financial ecosystem that aligns seamlessly with the enduring rhythms of our world.

5.1. Anchoring Cryptocurrency: The Cobb-Douglas Proposition for Land

Seeking the optimal underlying asset to address the volatility issue of cryptocurrencies, we endeavour to identify a stable, anti-inflationary foundation. To explore the anti-inflationary attributes of land, we propose integrating inflation and land into the renowned Cobb-Douglas production function. Admittedly, this conceptual framework requires certain assumptions, which may not be universally agreed upon. As such, we present this as a hypothesis, acknowledging that empirical proof remains elusive. Nevertheless, the theory presents a highly convincing case. In our quest to understand land's resilience to inflation, we break our exploration down into three distinct stages:

- The Basics of Cobb-Douglas Production Function
- Integrating Land into Cobb-Douglas
- Simplification and Application: takeaways

The Cobb-Douglas production function is a versatile tool employed to illustrate the relationship between multiple inputs in the process of production. Often, these inputs include labour and capital, reflecting their role in generating specific goods or services. The function's primary objective lies in optimizing resource utilization. It achieves this by incorporating elasticity factors for capital and labour, rendering it an easily computable formula to determine the ideal mix of labour and capital for maximizing total output. The classic Cobb-Douglas production function takes the form¹⁹:

<p>Cobb-Douglas production function: $Y = AL^\beta K^\alpha$</p>	<p>Where, Y = total output (the real value of all goods and services produced) L = labour (it represents hours worked) K = capital (equipment, machinery, buildings...) A = total factor of productivity α and β are output elasticities</p>
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Research on the integration of land as a factor in the Cobb-Douglas production function remains limited, with the few available studies often centred around the impact of land quality on agricultural output. For the sake of research continuity, we introduce the variable 'N' to represent natural resources or land, transforming the Cobb-Douglas function into a four-variable model, denoted as $f(L, K, N, A)$.^{20 21 22}

Assuming the technological process remains relatively constant, we treat it as a constant factor and simplify the function into a three-variable model, represented as $f(L, K, N)$.	$Y = f(L, K, N)$
We can use the form adopted by previous research	$Y = AL^\beta K^\alpha N^\gamma$
The production factor (A) can be considered a constant, represented as a factor of (L) labour, thus equal to one	$Y = AL^1 K^1 N^1$ $Y = ALKN$
Expanding capital (K): Capital is created with goods and labour. For the purpose of our function, we can assume that $K = \text{goods} \times L$, resulting in	$Y = LKN$
Considering that the initial raw materials originate from land, where they are either extracted or processed by labour (L), we can express $\text{goods} = N \times L$, where (N) denotes the natural resources or land variable. This transformation further modifies our equation which we can simplify	$Y = L(L \times \text{goods})N$ $Y = L(LNL)N$ $Y = L^3 N^2$
Since our primary focus lies in understanding the relations between the variables rather than the output elasticities, we can remove the exponential powers of both labour (L) and natural resources (N), resulting in the further simplified equation	$Y = LN$
Following this line of reasoning, we find that $\Delta Y = \Delta N \Delta L$. Since our focus is on the output of the entire world, we can treat Natural resources (N) as a limited constant. As the earth's resources are finite and the colonization of other planets remains unattainable or financially impractical, we can simplify further In the context of a hypothetical perfect economy, the output (Y) represents the CPI (Consumer Price Index) basket of goods for the entire world. In this ideal scenario, all output (Y) is purchased by workers, and they are given a money supply (M) to facilitate these transactions. In this perfect equilibrium, where all the money supply (M) allotted to workers is used to buy all goods produced (Y), we arrive at the final equation	$\Delta Y = \Delta N \Delta L$ $\Delta Y = \Delta L$ $\Delta M = \Delta L$

This observation is particularly intriguing, as ΔM (the change in money supply given to workers) should correspond to inflation in this economy. In our model, the single product Y (GDP), which represents the basket of goods and services produced, emanates from the factors of land and labour. However, within the framework of this model, land is limited by the size of the Earth, making the variable N a constant unaffected by inflation. As a result, we can establish that an increase in labour (L) would directly lead to an increase in the money supply (M) given to workers and vice versa.

This relationship aligns with the principles of the Phillips curve, which suggests that higher inflation should be associated with lower unemployment. Summarizing the different potential shocks that may occur in the Phillips curve, we arrive at the following table:

If	then
↑ inflation	↓ unemployment
↓ inflation	↑ unemployment
↑ inflation	↑ employment
↓ inflation	↓ employment

Considering that the motivation to work remains constant and no other factors can improve the labour efficiency of any individual worker, the sole method of increasing labour is to augment the number of workers. With this insight, we can utilize $\Delta M = \Delta L$ from our Cobb-Douglas function, interpreting (ΔL) labour as employment and (ΔM) as inflation, which leads to the following table:

If	then
↑ ΔM (inflation)	↑ ΔL (employment)
↓ ΔM (inflation)	↓ ΔL (employment)

In our exploration of the potential underpinning assets for cryptocurrencies, we ventured into the realm of the Cobb-Douglas production function, adjusting it to factor in land – a fundamental and finite resource. Our reimagined function offers an insightful perspective: in an economic framework where the Earth's resources are limited and constant, the fluctuations in output and monetary supply directly reflect changes in labour. This understanding parallels the foundational principles of the Phillips curve, emphasizing the intrinsic link between inflation and employment. In a hypothetical economy where land remains a static variable, labor becomes the primary driver of both output and monetary changes. Thus, land emerges not just as a symbolic anchor, but also as a mathematical constant, underscoring its stability in a world of variables. Our derivations suggest that anchoring financial systems to such a constant could offer a buffer against inherent economic volatilities, providing a theoretical foundation for the land-based cryptocurrency proposition.

5.2. Conceptual framework reflection on the value of land in the Cobb-Douglas production function

Taking a deeper dive into the conceptual framework, we now endeavour to derive the value of land from the preceding Cobb-Douglas production function, maintaining the same assumptions as before.

Where,

A = total factor of productivity

Y = total output (the real value of all goods and services produced)

M = Money supply of workers for their work

L = Labour

N = Natural resources or land

$\alpha, \beta, \gamma, \epsilon$ and Z are output elasticities

$$\begin{aligned}
Y &= AL^\beta K^\zeta N^\gamma \\
\hline
N^\gamma &= \frac{Y}{AL^\beta K^\zeta} \\
\hline
N^\gamma &= \frac{Y}{AL^\beta N^\epsilon L^\alpha} && \text{Expanding (K) capital} \\
\hline
N^\gamma N^\epsilon &= \frac{Y}{AL^\beta L^\alpha} && \text{Regrouping} \\
\hline
N^{\gamma+\epsilon} &= \frac{Y}{AL^{\beta+\alpha}} \\
\hline
(N^{\gamma+\epsilon})^{\frac{1}{\gamma+\epsilon}} &= \left(\frac{Y}{AL^{\beta+\alpha}}\right)^{\frac{1}{\gamma+\epsilon}} \\
\hline
N &= \left(\frac{Y}{AL^{\beta+\alpha}}\right)^{\frac{1}{\gamma+\epsilon}} \\
\hline
N &= \left(\frac{M}{AL^{\beta+\alpha}}\right)^{\frac{1}{\gamma+\epsilon}} && \text{Since } Y = M
\end{aligned}$$

Example: $(\beta+\alpha) = 1, L = 1, Y = M = 10\$, (\gamma+\epsilon) = 1, A = 1$ then $N = \left(\frac{10}{1 \times 1^1}\right)^{\frac{1}{1}} = 10$

Upon considering N to be constant, the value attributed to the world's land would be 10\$. While introducing time into the model might be deemed irrelevant, as it would solely assess the value of land's rent, which cannot be classified as a good or a commodity, the primary objective of this section remains open to further expansion. For the purposes of this whitepaper, we have decided to retain the current content, recognizing its potential value for future academic research and underscoring the dedication and diligence invested in this project. Notably, in these scenarios, land appears to exhibit immunity to price shocks, establishing itself as a promising anti-inflationary asset with substantial potential.

5.3. How is inflation calculated?

Understanding inflation is crucial for gauging the economic health of a nation. At its core, inflation represents the rate of price rise for goods and services over time, eroding the purchasing power of money. But how do we compute this vital figure?

In essence, the inflation rate is calculated by comparing the cost of a selected basket of goods and services at two different points in time as seen below. This basket aims to represent the typical spending patterns of an average individual or household. However, the construction and weight assignment of this basket introduces numerous complexities.

$$\text{(Current basket of goods - Previous basket of goods)} \div \text{Previous basket of goods} \times 100\%.$$

This provides a percentage indicating how much prices have risen or fallen over a specific period.

$(\text{Current basket of goods} - \text{Previous basket of goods}) \div \text{Previous basket of goods} \times 100\%$. This provides a percentage indicating how much prices have risen or fallen over a specific period.

Key Elements in Inflation Calculation:

- **Basket Composition:** This changes annually and can vary across countries. It reflects the items an average consumer might purchase in a given year.
- **Weight Assignment:** Each item in the basket is assigned a weight based on its relevance to average expenditure. Adjusting these weights can potentially sway the final inflation figure.^{23 24 25 26}

Prominent methodologies for inflation calculation include:

- **Consumer Price Index (CPI):** A representation of average spending patterns. Items are weighted based on general consumption trends.
- **CPIH:** Builds upon CPI by incorporating housing costs. For instance, in 2023's UK data, housing had a weightage of 31.4% in CPIH, contrasting with 13.8% in CPI. A difference of 17.6%, and percentage difference of 127,5%²⁷
- **HICP (Harmonised Index of Consumer Prices):** An inflation measure adopted across European countries, ensuring uniformity in comparison. It excludes owner-occupied housing costs, making it distinct from many national CPI measures.

Challenges and Concerns:

- **Potential for Manipulation:** With governments and affiliated institutions both defining the basket and overseeing inflation targets, there's room for potential conflicts of interest. This is exemplified when aiming for specific targets, such as the standard 2% inflation rate.
- **Granularity Issues:** Products in the basket may come in multiple brands and quality standards. Switching between these or accounting for changes in product quality can introduce inconsistencies.

To construct a basket that genuinely mirrors average consumption, one might contemplate:

- **Focusing on the Middle 80%:** By doing this, extreme outliers are removed, providing a clearer view of general spending.
- **Leveraging Digital Data:** Modern technology, especially credit card transactions, can reveal detailed spending habits. However, venturing into this territory raises significant ethical and privacy concerns.

In conclusion, the journey of understanding and calculating inflation is strewn with complexities, from selecting the right basket of goods to potential biases in data interpretation. As we forge ahead into a data-driven era, striking the right balance between accuracy and

ethical considerations is paramount. Using a blend of traditional and modern methodologies, while always being conscious of their inherent challenges, allows for a more holistic and genuine grasp of the economic landscape.

5.4. Central Banks: Navigating the Ties with Governments

Central banks, often viewed as the bedrock of a nation's financial stability, frequently boast of their autonomy from governmental interference. These institutions bear significant duties, such as minting money and ensuring currency's steadiness. However, the intertwining of their roles with government strategies necessitates a careful examination of their so-called "independence".

The Importance of Independence:

Central banks wield influence that has profound impacts, touching individuals across all economic tiers. Given their expansive reach, it becomes paramount to ensure that these entities are not only powerful but also shielded from political whims. Establishing distinct boundaries between political aspirations and monetary decisions is thus a priority for many nations.

The danger of intertwining politics with monetary policy is evident in history. An unchecked government might opt for lenient monetary tactics to score temporary electoral points, potentially leading to long-term economic disturbances. Several regimes have, unfortunately, learned this the hard way, with their economies bearing the brunt of such short-sighted decisions.

A Delicate Balance:

Central banks, while striving for currency stability, simultaneously face the governmental power to accrue debt via bonds. The UK's banknotes offer an insightful example, carrying the pledge "I promise to pay the bearer on demand the sum of X pounds" beneath the "Bank of England" insignia. Such banknotes essentially represent a form of zero-interest debt, this dynamic shifts intriguingly when considering inflation.

Bonds, akin to banknotes, serve as representations of government promises, but with an added element of liquidity. Their distinction primarily lies in the interest they accrue. Yet, a pressing question emerges: What happens when the appetite for these bonds wanes or financial entities run dry of purchase capital? Governments, in fiscal dilemmas, might inundate markets with bonds, risking a bond market plummet and subsequent currency instability.

Central Banks to the Rescue:

In such precarious situations, central banks leap into action, often acquiring excess bonds to stabilize markets. In dire circumstances, they might resort to printing additional currency, a move that starkly contrasts their proclaimed independence.

Reality vs. Rhetoric:

While the narrative of autonomy is promoted, the true story showcases a symbiotic relationship between governments and central banks. They partake in an intricate dance, each ensuring economic equilibrium. The professed independence becomes muddled when central banks are seen addressing the ramifications of government-induced fiscal challenges.

The quest for an entirely autonomous central bank is, in many ways, a pursuit of a harmonious collaboration rather than sheer separation. While the ideals of independence resonate, the intricate tapestry of modern finance calls for a seamless partnership between central banks and governments. This collaboration remains pivotal in steering the course of contemporary economic landscapes.

6. Creating the perfect currency

The pursuit of an optimal currency, one that combines the reliability of tangible assets with the adaptability of digital forms, has been an ongoing quest in the financial realm. Drawing upon insights presented in sections 5 to 5.4, the synthesis of a cryptocurrency, anchored to the solidity of an anti-inflationary asset, stands out as a visionary solution. The asset of our choice? Land real estate.

Land has consistently showcased resilience against inflation's tides, making it a formidable anchor for currency value. By interlacing the worth of this unyielding asset with a digital token, we aspire to inaugurate a cryptocurrency that epitomizes stability and dependability. Enter "Landscoins."

Landscoins isn't just another entity in the vast landscape of cryptocurrencies. As outlined in sections 4.1 to 4.6, the realm of digital currency faces a myriad of complexities: from the volatile shifts in valuation and limited protective measures to ecological concerns and inadvertent endorsements of shadowy activities. Landscoins has been carefully designed to tackle these issues head-on.

A Deep Dive into Landscoins:

- **Structural Integrity:** We initiate by analysing the foundational design of the Landscoins token. This exploration ensures the stability and robustness of the cryptocurrency from its core.
- **Underpinning Corporate Framework:** Moving beyond the token's design, we focus on the overarching corporate structure that supports and reinforces Landscoins. This framework is pivotal for its longevity and reliability in the market.
- **Evolutionary Stages:** Tracing the journey of Landscoins, we detail its progression: from its initial conception to the anticipated broad acceptance. Each phase has been meticulously planned to adapt to market demands and trends.
- **Investment Blueprint:** Concluding this section, we provide a comprehensive perspective on our investment strategy for Landscoins. This includes return projections and the multitude of benefits that Landscoins aims to introduce to the financial ecosystem. The strategy is designed not just for short-term gains but for sustained growth and stability in the dynamic world of cryptocurrency.

In the dynamic landscape of digital currencies, Landscoins stands as a distinguished entity. Rooted firmly in the enduring value of land, it bridges traditional asset stability with contemporary financial innovation. Its foundation, anchored to the trusted realm of real estate, offers a counterbalance to the ever-fluctuating cryptocurrency market. Landscoins, thus, represents both a nod to time-tested investment principles and a forward-thinking approach to the digital financial future

6.1. The token: Landscoins

Token Fundamentals:

- **Asset-Backed Nature:** At the heart of Landscoins is its intrinsic linkage to the company shares overseeing land assets. This assures stakeholders that behind each token is a tangible real estate asset, establishing trust and tangibility.
- **Token to Share Ratio:** The ratio has been meticulously set at 100:1. For every 100 Landscoins tokens, there corresponds one company share. With a cap of 200,000,000 tokens, and 2,000,000 company shares available, this fixed ratio ensures a consistent and transparent conversion system.
- **Initial Emission and ICO Pricing:** The token creation is strictly limited to 200,000,000 units, pricing the Initial Coin Offering (ICO) at 1 US dollar per Landscoins token. This attractive pricing, combined with its real asset linkage, holds potential for appreciation even before complete token emission.
- **Blockchain Foundation:** Instead of venturing into creating a novel blockchain, Landscoins prudently functions within the Ethereum blockchain's ambit. This choice not only provides the security and efficiency of an established infrastructure but also benefits from the versatility of Ethereum's smart contracts.

Implementation and Constraints:

- **Token Exchange Commencement:** The fixed exchange rate, while straightforward in its conception, will come into effect starting from stage 3 of the Landscoins implementation phase, as delineated in the table in part 6.7. This strategic timing arises from legislative constraints, ensuring that every step of Landscoins' journey adheres to the regulatory framework.
- **Future Expansion Mechanism:** As Landscoins envisions growth and expansion, provisions have been made for the potential creation of additional tokens. Such a decision isn't unilateral. Cryptocurrency holders and company shareholders jointly have the prerogative to vote for this expansion. However, one principle remains sacrosanct: the foundational exchange ratio of 100 tokens per share shall persist unwaveringly.

6.2. Landscoins & the Ethereum network

The Strength of Ethereum: Why It's the Ideal Platform for Landscoins

Cryptocurrencies have revolutionized the world of finance, creating opportunities for a universal payment system that emphasizes value preservation. In an ideal world, such an asset would be free from geopolitical influence and accessible to anyone with an internet connection. Land ownership has always been a cornerstone of individual wealth creation and storage. Yet,

it comes with its administrative and logistical challenges. Tokenization offers a solution to these challenges, providing numerous benefits:

- **Liquidity**: Tokenization enhances the liquidity of land assets due to the ease of token transfer, exchange, and scalability.
- **Cost Efficiency**: Transferring tokens incurs minimal fees.
- **Fractional Ownership**: Tokenization allows for splitting the underlying asset, further enhancing liquidity.

The Ethereum network, with its decentralized structure and ability to create smart contracts via its “Smart Chain”, stands out as a beacon of stability and innovation in the crypto world. This makes it the optimal platform for the Landscoins token network. The participative nature of the Ethereum network also empowers its members, fostering a stronger, more democratic community.

Highlighting Ethereum's Robustness and Innovations

Ethereum's track record speaks volumes about its resilience and adaptability. For instance, it overcame challenges like the DAO project bankruptcy and successfully implemented major upgrades like the transition from Proof-of-Work to Proof-of-Stake. Recent innovations, such as the Shanghai upgrade, further emphasize its commitment to user benefits and progressive development.

A promising upgrade on the horizon is "danksharding" (known as EIP-4844). By introducing additional blockchain layers like "Layer2" (L2) to relieve the primary layer (L1) of excessive data storage, this upgrade is set to radically improve Ethereum's scalability. The anticipated ability to process over 100,000 transactions per second underscores Ethereum's commitment to staying at the forefront of blockchain technology.

Tokens vs. Cryptocurrencies: The Landscoins Choice

Tokens, particularly those running on Ethereum, have distinct advantages over traditional cryptocurrencies. Their accessibility to a broader user base, coupled with Ethereum's expansive distribution channels, ensures that tokens are easily distributable and implementable. Moreover, Ethereum's focus on security, fortified by its decentralized nature, ensures the integrity of transactions and digital assets.

Economic and Ecological Sustainability

In the ongoing discourse about cryptocurrency's environmental impact, Ethereum stands out for its eco-friendly initiatives. By transitioning to a Proof-of-Stake mechanism, Ethereum has dramatically reduced its energy consumption and environmental footprint. Economically, Ethereum operates with far less capital resources compared to its competitors, further solidifying its position in the crypto market.

The Power of Smart Contracts

Ethereum's smart contract functionality is a game-changer. Unlike traditional cryptocurrencies, tokens associated with smart contracts can introduce myriad extensions, enhancing the user experience for token holders.

6.3. Landscoins and the Ethereum Ecosystem: Technical Foundations and Innovations

Hashing and Blockchain Integrity

Hashing is the backbone of blockchain integrity. This mathematical procedure transforms input data, of any length, into a fixed-length string of characters known as a hash. Cryptographic hashing functions, such as SHA-256, are central in cryptocurrency networks, ensuring every unique data block produces a unique hash. Contemporary cryptocurrency networks use hashing to process transactional data, which encompasses the sender, recipient, and the amount being transferred. These transactions are aggregated into blocks. After verification, based on principles like Proof of Work or Proof of Stake, blocks are added to the blockchain. Notably, each new block also carries the hash of its preceding block, ensuring the integrity of the entire chain.

Traditional vs. Ethereum Cryptocurrency Networks

Traditional cryptocurrency networks aim to provide decentralized digital payment platforms. In contrast, Ethereum offers not only a medium for payment but also a platform for creating smart contracts and decentralized applications (DApps). Ethereum's stateful blockchain stores the state of each smart contract, allowing for intricate operations and interactions. Ethereum also introduced Gas, a pricing mechanism for transaction fees that also facilitates the execution of smart contracts.

Token Creation on Ethereum

Ethereum's support for smart contracts allows users to create custom tokens with predefined attributes and functionalities. These tokens can be utilized for various purposes, from standard currency transfers to access for specific participant groups. They are governed by standards like ERC-20, which ensures seamless token interaction across applications and exchanges.

Types of Smart Contracts on Ethereum

Smart contracts on Ethereum can be categorized based on their operational areas, from providing financial services like lending and insurance to the creation and trading of non-fungible tokens (NFTs). They can also serve in governance systems, digital identity verification, supply chain management, and more.

Landscoins Technical Specification

The Landscoins token contract, written in the Solidity programming language with the Solidity pragma 0.8.0 compiler version, inherits functionalities from "Token" and "ERC20" contracts. This contract organizes several files, including "Token", which contains the foundational

requirements for a token on Ethereum, and "ERC20", outlining standards for tokens on this platform.

The contract includes basic constants such as name ("Landscoins"), symbol ("LSD"), and maximum divisibility (set to 18 decimal places). The token's maximum supply in circulation is represented by a uint256 variable, initialized at 200,000,000.

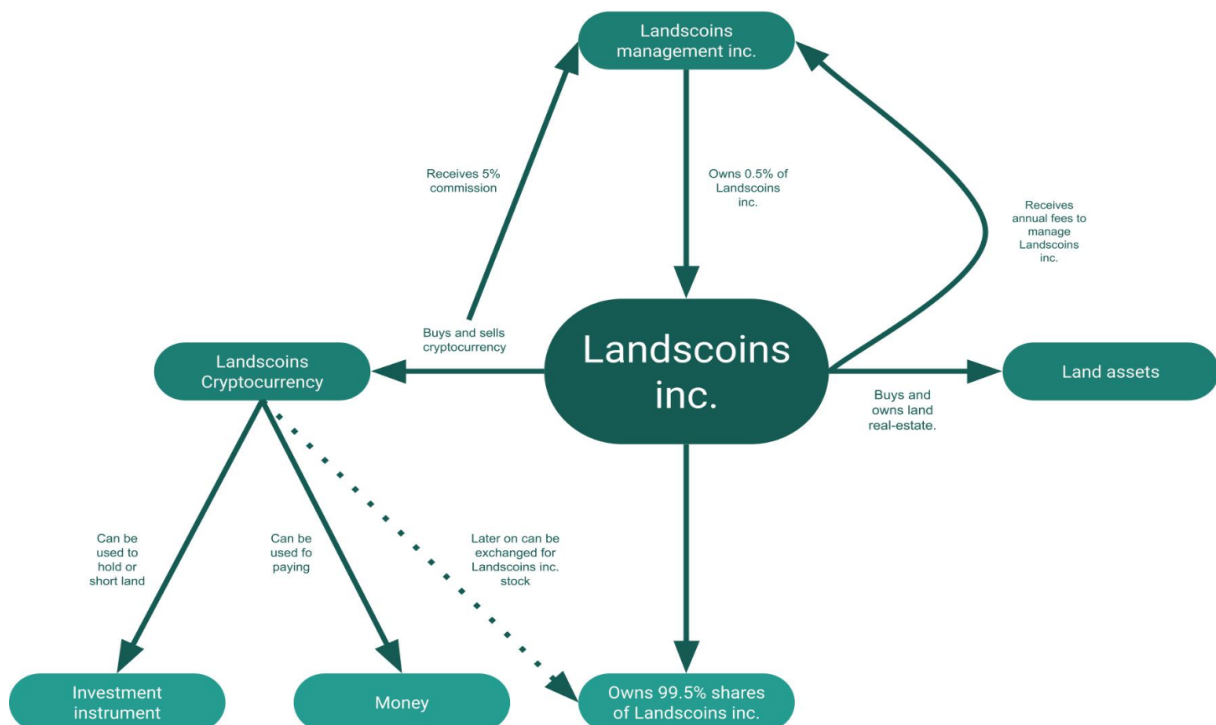
Objects within the Landscoins contract include two data type collections: pairs of address and uint, known as mappings. These mappings serve to ascertain the current coin balance of an address and also manage permissions for specific addresses to send coins. This mechanism is closely tied to the Approval event, where one address provides another with access to a portion of its balance.

Two pivotal events in the Landscoins contract are the Approval and Transfer events. While the Approval event logs permissions given to one address by another regarding balance access, the Transfer event captures details of successful coin transfers, including sender, recipient, and amount transacted.

6.4. The company structures

Landscoins company structure: Navigating the Corporate Landscape

The Landscoins organization is founded on the principles of transparency and fairness, a commitment which manifests in its unique and strategic corporate structure. To provide a lucid view of its intricate design, we delve into its two main pillars.



When deliberating the creation of the Landscoins structure, the aim was to establish clear connections and roles within the company. At its heart are two special purpose vehicle (SPV) companies: Landscoins Management Inc. and Landscoins Inc.

Landscoins Management Inc. is the operational dynamo. With a specialized team at its helm, it ensures the seamless functioning of its counterpart, Landscoins Inc. Financially, it has a stake in the company; it holds 0.5% of the original Landscoins Inc. stock. This stake is a testament to its foundational role and equates to the expenses borne during the establishment of the Landscoins structure. As the Landscoins cryptocurrency makes its debut in the market, Landscoins Management is allocated a nominal 5% service contribution. On the operational side, it's compensated for its pivotal role, with annual fees reflecting its year-round expenses. These are projected to hover around 2% and encompass real estate taxes, salaries, digital infrastructure maintenance, and legal counsel.

Venturing into Landscoins Inc., it's the birthplace, marketplace, and safeguard of the Landscoins cryptocurrency. Beyond this digital realm, it also dabbles in the tangible—buying, selling, and retaining land assets. Its commitment to its cryptocurrency holders is unwavering. "Upholding the value of the Landscoins cryptocurrency, Landscoins Inc. pledges to consistently repurchase at a value matching 95% of its current assessed net worth, a measure that factors in a 5% premium for ensuring liquidity and covering transfer costs."

How does it finance this pledge?

- Through its cash reserves.
- By leveraging mortgages on its land assets.
- By tapping into other capital-raising avenues.

In dire circumstances, where all these avenues are exhausted, the company might resort to liquidating its land assets. This is a strategic, albeit slow, process ensuring assets aren't undervalued. Given its resources, the company anticipates being able to buy back around 60% of all its issued cryptocurrency, warding off liquidity concerns.

A visionary move on its part, Landscoins Inc. retains 95% of its own stock. The long-term game plans? Swap these for Landscoins cryptocurrency once they grace the stock market. The projected exchange? A neat 100 Landscoins tokens for a slice of Landscoins Inc. stock. The Landscoins cryptocurrency, meanwhile, isn't just another digital coin. It's both currency and commodity. You can spend it, invest in it, speculate on land values through it, and so much more.

6.5. Evolution of Landscoins: Milestones and Horizons

Landscoins' journey is charted through distinct phases, each symbolizing a pivotal moment in its progression and market value. These phases are not rigid constructs but offer a glimpse into the anticipated trajectory and plans for the cryptocurrency. These are benchmarked against the token's market capitalization.

1. Seedling Phase (Under \$100,000 Market Capitalization):

- **Token Creation:** The initial step in Landscoins' journey.
- **Investment Strategy:** Due to limited capital, funds are conserved in short-term, liquid deposits, primed for investment upon reaching a substantial amount.
- **Trading and Exchange:** Tokens can be actively traded in cryptocurrency markets. Moreover, the company offers a buyback option once a month post net worth assessment or token-to-stock exchange at the firm's main location (Note: The latter has a \$1,000 minimum threshold due to early-stage transactional costs and a commitment to ensure token value).

2. Growth Phase (\$100,000 to \$10,000,000 Market Capitalization):

- **Investment Diversification:** The focus shifts to investing in a variety of land-related ventures, ensuring risk is spread out and inflation is hedged effectively.

3. Ascension Phase (\$10,000,000 to \$100,000,000 Market Capitalization):

- **Stock Exchange Debut:** A significant milestone, where the company's net worth allows it to be listed on a stock exchange.
- **Token-to-Stock Exchange:** Token holders gain the privilege of converting their tokens to company stocks. The conversion rate stands at one stock for every 100 tokens, based on the initial 2,000,000 stocks in relation to the 200,000,000 tokens.
- **Buyback and Exchange Dynamics:** Though tokens can still be bought back post net worth evaluation or exchanged at the company, the stock exchange will predominantly dictate the asset's price.

4. Expansion Phase (Over \$100,000,000 Market Capitalization):

- **Diverse Investment Strategy:** Landscoins diversifies its portfolio by investing in international land opportunities, bolstering the token's stability.

5. The Crossroads (Upon Approaching 200,000,000 Tokens):

- **Investment Evaluation:** All stakeholders – stockholders, token holders, and the management, jointly assess available investment opportunities.
- **Potential Expansion:** If there's consensus on the value of available opportunities, the decision to introduce new tokens (and corresponding stocks) could be made, ensuring the value ratio remains consistent. This flexibility is paramount to ensure the stability – a core trait of reliable currencies.

6.6. Investment strategy

Land as the Bedrock: The Numbers Behind Landscoins' Investment Strategy

Landscoins' strategy is rooted in a fundamental premise: maximize returns while minimizing both risk and expenses. The cornerstone of this approach is land - an asset that has, time and time again, shown its resilience and profitability.

Why Land?

- **Stability & Inflation Hedge:** Throughout history, land has been an unyielding bulwark against the tumultuous tides of market fluctuations, offering a tangible hedge against inflation.
- **Continuous Cash Flow:** Through its rent, land ensures a consistent flow of income, guarding against liquidity issues.
- **Direct High Returns:** A direct investment in land has historically promised greater returns.

To support our emphasis on land, we've relied on comprehensive data, albeit a note of caution: globally, detailed data on land prices and rents is somewhat elusive. This makes Eurostat's data on European regions particularly invaluable.

Eurostat's Land Data: A Deep Dive

Eurostat offers a treasure trove of information:

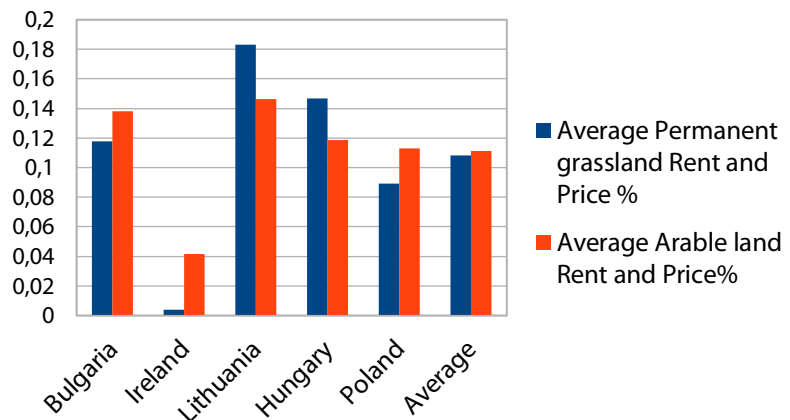
- **Categories Analysed:** Our focus narrows down to arable land and permanent grassland. The timeframe chosen for this analysis spans from 2013 to 2021, with data prior to 2013 left out due to irregularities in data provisioning among countries. All values are evaluated in euros per hectare.
- **Arable Land Prices:** The countries under this purview include Bulgaria, Denmark, Estonia, Ireland, Greece, Spain, Latvia, Lithuania, Luxembourg, Hungary, Netherlands, Poland, Slovenia, Finland, and Sweden.
- **Permanent Grassland Prices:** Our examination covers Bulgaria, Denmark, Estonia, Ireland, Greece, Spain, Latvia, Lithuania, Luxembourg, Hungary, Netherlands, Poland, Slovenia, and Sweden.
- **Land Rent Prices:** This segment incorporates Belgium, Bulgaria, Ireland, Croatia, Lithuania, Hungary, Austria, and Poland.

Appendices 5-12 encompass the raw data, while appendices 13-20 graphically represent the year-on-year percentage growth in prices. Trends from 2013 to 2021 have been captured in appendices 21-24.

In assessing volatility, we compared land metrics against gold, S&P, and Bitcoin. Notably, land consistently emerges as more stable. The peak yearly average volatilities were documented in Luxembourg for land prices (0.26) and Bulgaria for rents (0.18). This is against gold's volatility benchmarked at 0.43 (see section 4.2 and appendices 25-28).

Unravelling Rent-to-Price Ratios

Our examination of the yearly rent-to-price ratio, as detailed in appendices 29-32, reveals Bulgaria as a standout, particularly in terms of permanent grassland. Its impressive rent-to-price ratio for permanent grassland registers at a remarkable 7.41%. When viewing the broader landscape across nations, the average yearly rent-to-price ratio for arable land is 3.59%, surprisingly lower than the 3.98% for permanent grassland, challenging the common presumption that arable land would yield a higher average rent.



Land, Inflation, and Patterns in Economic Dynamics

The intricate correlation between land prices and inflation is woven with complex patterns. Employing Eurostat's HICP ²⁹ data, we delved deep into this relationship. The distilled data is mapped out in appendices 33-35. Within these pages, the influences of land price fluctuations and shifts in evaluative methodologies, as experienced in Latvia, muddle the straightforward interpretation of trends. Nonetheless, a discernible pattern surfaces: in most nations, land prices climb at a rate noticeably outstripping inflation. The exceptions, such as Spain, Greece, Ireland with their storied real estate bubbles, and Finland with its restrained land price appreciation, offer absorbing case studies.

Empirical Literature

Mwangi's empirical research in Kenya mirrors some findings of our European analysis. She observed a consistent rise in land prices over the years across all areas under scrutiny, even as inflation consistently edged up. While there were occasional periods where land prices and inflation moved in tandem, these moments were insufficiently frequent to establish a concrete relationship. Consequently, her conclusions, much like ours, did not firmly tie inflation to land prices. Mwangi's detailed approach, which involved determining the strength of the linear association between the variables using the correlation coefficient and substantiating it with the t-test, highlights the intricate nature of these dynamics. ³⁰

The philosophical foundation of land as a potent anti-inflationary asset is rooted in the writings of David Ricardo. In his magnum opus, "On the Principles of Political Economy, and Taxation," he exalts the stature of land, placing it on a pedestal above mere commodities. ³¹ Venturing beyond Ricardo, luminaries like Martin Feldstein ³² and Jacob Harmon offer alternative methods to probe this connection. Harmon notably employs farm credit bonds to elucidate the relationship with inflation. ³³ Conversely, Bruce Sherrick's comprehensive data compilation broadened the sample scope, fortifying the link between land and inflation. ³⁴

In wrapping up, Landscoins' focus on land isn't merely a strategic decision—it's underpinned by substantial data and historical precedents. Our journey through the intricacies of the financial terrain reveals that land, in its undying essence, remains our anchor. It not only promises stability amidst market turbulence but also heralds a future replete with growth. As we forge ahead with Landscoins, the immutable value of land as an asset is irrefutably at the core of our strategy.

6.7. The Unique Benefits of Landscoins

Once Landscoins completes its 3rd implementation phase, users will experience three distinctive benefits:

1. **Direct Derivative of Land Commodity:** Landscoins can function as a direct derivative of the land commodity. This means investors can both hold and short the coin, capitalizing on its price fluctuations just like with traditional real estate.
2. **Exchangeable for Company Stock:** Holders can exchange their Landscoins for shares in Landscoins Inc. This not only provides investors with rights within the company but also enables them to capitalize on the appreciation of land.
3. **Use as Conventional Currency:** Beyond its investment advantages, Landscoins can be used for everyday transactions, akin to ordinary money. Yet, it comes with the financial benefits described above.

Why Hold Landscoins Over Traditional Savings?

Consider the common financial advice: maintain at least three months' worth of salary in a bank account for emergencies. Let's examine how storing this in Landscoins could amplify your returns:

Traditional Scenario: Three months of salary lies dormant in a bank, accruing minimal interest.

Landscoins Scenario: The same amount in Landscoins appreciates, drawing from both land real estate value growth and its rent, with only management costs subtracted. This return, when compared to traditional bank interest, reveals a stark difference in potential profit.

For instance, assuming you maintain a steady spending pattern and allocate your funds in Landscoins, you could anticipate a surplus equal to half a month's return on investment annually. This translates to six months of land investment returns over a year.

A Practical Illustration:

Consider the 2021 average salary of a US worker: approximately \$60,575. If this individual were to use Landscoins, mirroring the appreciation trends seen in Lithuania's land (as outlined in section 6.4), they stand to gain significantly.

Crunching the numbers: $(60,575/2) \times 18.3\%$ presents a yearly benefit of \$5,552.57. Even with associated costs considered, this boost in buying power is undeniably impressive..

Core Advantages and Distinctive Attributes of Landscoins

Landscoins isn't just another cryptocurrency; it's a pioneering financial tool uniquely positioned in the digital economy. At its core, Landscoins stands on a solid foundation of benefits, and its distinct attributes further propel it ahead of the competition. These characteristics reflect not just the innovation behind the coin but the vision of the Landscoins team.

1. **Inherent Stability:** Unlike many cryptocurrencies prone to wild fluctuations, Landscoins derives its stability from its connection to the tangible asset of land.
2. **Democratizing Land Investment:** Whether you're a financial novice or a seasoned investor, Landscoins opens the door to land appreciation for everyone.
3. **Liquidity with Value Appreciation:** Where most appreciating assets come with liquidity concerns, Landscoins breaks the mould by offering both.
4. **Eco-Conscious Potential:** Given its foundation in land assets, there lies the possibility to drive sustainable land use and champion environmental initiatives.
5. **Transparent Governance:** Owning Landscoins isn't just about financial gains—it's about having a voice. Converting Landscoins into Landscoins Inc. stock translates to an active role in company decisions.
6. **Future-Proofed Design:** As technology evolves, so does Landscoins. It's built with the future in mind, ready to adapt and integrate advancements.
7. **Comprehensive Ecosystem:** Beyond its monetary function, Landscoins is nurturing a community, fostering engagement, and establishing a holistic ecosystem for its users.

Landscoins intertwines the tried-and-true advantages of traditional assets with the agility of digital technology. Its compelling combination of foundational strengths and unique attributes set it on a trajectory to redefine the cryptocurrency landscape, highlighting stability, inclusivity, and proactive evolution.

Representing a blend of innovation and vision, Landscoins aims to be the financial instrument for a new age—ensuring growth, engagement, and adaptability in an ever-evolving global economy.

7. Mapping the Future: Landscoins' Limitations and Our Proactive Solutions

Every innovative endeavour faces its own set of challenges, and Landscoins is no exception. However, understanding these challenges and proactively addressing them is what sets pioneering initiatives apart. In this chapter, we meticulously outline the anticipated limitations of Landscoins and, more importantly, our considered solutions to navigate them. By being transparent and proactive in our approach, we aim to fortify the trust and confidence of our community. Let's delve into these aspects to understand better the road ahead.

1. **Early-Stage Limitations:** In its nascent phase, Landscoins might not offer the full suite of benefits promised in its matured state. Specifically, functionalities like the token-stock exchange and the market-driven valuation of the company's net worth may not be initially available
2. **Land Acquisition Limit:** Theoretically, Landscoins' value is limited by the total landmass of the world. Practically speaking, however, it's highly improbable for Landscoins to own or control all land, meaning the actual potential might never be fully realized
3. **Technological Disruptions:** History has shown that technological advancements can drastically alter land valuations. The introduction of chemical fertilizers amplified the agricultural capacity, enabling it to support three times the population it previously could. Any future innovations that reduce land's importance could thereby impact Landscoins' value
4. **Land Taxation:** While changes in land taxation policies by governments could potentially threaten land values and, by extension, Landscoins, these effects might be mitigated. Historically, consumers usually bear the brunt of increased land taxes, preserving land prices. Moreover, Landscoins' strategy of diversifying land investments across various countries helps minimize the adverse effects of any single geopolitical decision. Furthermore, Landscoins aims to engage with financial experts and policymakers, working towards favourable tax structures in the countries of operation. These relationships allow us to foresee potential tax changes and develop strategies accordingly.
5. **Merchant Acceptance:** The broader acceptance of Landscoins as a payment method remains a challenge. Although established payment platforms like Visa and Mastercard facilitate cryptocurrency transactions, and platforms like Binance support similar functionality, merchant adoption is not guaranteed. To tackle this, Landscoins will launch merchant onboarding programs, educational campaigns, and incentive structures. Partnerships with payment gateway providers will further smooth the adoption curve.^{35 36}
6. **Transaction Fees:** In the beginning, Landscoins may carry transaction fees that are slightly above average. However, continuous optimization of our platform and partnerships with cost-effective transaction networks will ensure that fees become more competitive, delivering value to our users as the project develops.

7. **Regulatory Hurdles:** As the cryptocurrency landscape navigates a shifting global regulatory environment, unexpected legal mandates or policies, particularly around land-backed cryptocurrencies, might pose challenges to Landscoins. Recognizing this, the Landscoins team continuously monitors the evolving legislative landscape across various regions. Our strategy of geopolitically diversifying our land investments further bolsters our resilience against localized regulatory fluctuations. This proactive dual-pronged approach ensures that we always operate within legal confines, while also reducing our exposure to the uncertainties of any single jurisdiction. Beyond monitoring, Landscoins will actively engage with regulatory bodies, seeking clarity and even advocating for favourable policies. Our legal team is structured to understand and navigate the nuances of each region's regulatory framework.
8. **Dependence on Ethereum Network:** While Landscoins is rooted in the Ethereum ecosystem, any disruptions, delays, or vulnerabilities in Ethereum might indirectly impede our functionality and value. To safeguard against such scenarios, Landscoins is primed for a transition to a more robust platform. We've even considered the potential construction of a bespoke Landscoins blockchain, ensuring our adaptability
9. **Market Perception:** The global regulatory environment for cryptocurrencies is in a state of constant evolution, with unexpected legal mandates or policies related to land-backed cryptocurrencies possibly presenting challenges for Landscoins. To ensure a positive and consistent brand image:
 - a. **Data-Driven Monitoring:** Utilization of basic analytics tools to monitor online narratives, enabling swift responses to major conversations or misinformation.
 - b. **Transparent Communications:** Through regular updates, whitepapers, and annual reports, Landscoins will ensure that stakeholders always have a clear and comprehensive understanding of ongoing initiatives and challenges.
 - c. **Robust Internal Governance and Crisis Policies:** A strict set of standard operating procedures, ethical guidelines, and rapid-response mechanisms are in place. These are designed to ensure that all employees and associates adhere to the brand's values, promptly address any emerging issues, and safeguard the reputation of Landscoins.
 - d. **Awareness Campaigns:** Dissemination of informative content, blogs, and user testimonials to convey a balanced perspective, emphasizing the tangible benefits and integrity of Landscoins.
 - e. **Community Engagement:** By hosting occasional webinars, Q&A sessions, and feedback rounds, Landscoins will sustain an active and open dialogue with its community, reinforcing mutual trust and collective growth.

These thoughtful and actionable strategies position Landscoins to uphold and enhance its market reputation, nimbly responding to potential challenges.

10. **Liquidity Concerns:** While Landscoins seeks to meld cryptocurrency liquidity with the steadfast nature of land assets, there might be intervals when liquidating large quantities becomes challenging due to market dynamics. However, our portfolio of mortgage-free land assets enables us to secure financing up to approximately 60%. This approach ensures a consistent base value for the Landscoins token, mitigating significant liquidity crunches.

11. Environmental Concerns: With the cryptocurrency sector facing increasing environmental critiques, it's vital for Landscoins to maintain eco-conscious operational standards. We're committed to staying ahead of ecological trends in the crypto domain. By integrating the latest environmental advancements and minimizing our carbon footprint, we set a positive ecological precedent for cryptocurrencies.

As we journey through the intricate landscape of cryptocurrency, it's crucial to be both visionary and grounded. Landscoins stands at the confluence of land's timeless value and the dynamic realm of digital currencies. While we harbour ambitious aspirations, we're equally cognizant of the potential challenges that may lie ahead. From the early-stage functionalities and land acquisition dynamics to technological shifts and ever-evolving regulatory climates, we've meticulously charted out the terrains we might tread. Our proactive stance on merchant acceptance, transactional efficiencies, and steadfast market perception, combined with our commitment to environmental integrity, underscores our holistic approach. Moreover, the liquidity assurance provided by our mortgage-free land assets offers a unique blend of stability in an otherwise volatile market.

In concluding, while the horizon of the crypto world is vast and sometimes unpredictable, Landscoins is poised with a compass of strategy, adaptability, and foresight. We've not only identified potential challenges but have also equipped ourselves with actionable solutions, ensuring that for every valley of limitation, there's a mountain of opportunity waiting to be conquered. Together, with our community's trust and partnership, we're not just mapping out territories; we're charting the future.

8. Summary: Landscoins, Pioneering the Future of Cryptocurrency with the Stability of Land

From time immemorial, humanity's quest for a reliable store of value has witnessed myriad evolutions—from primitive shells to the dazzling sparkle of gold, and now, the binary brilliance of cryptocurrencies. Yet, with the digital revolution, cryptocurrencies have emerged with attributes that, while innovative, present certain challenges, such as volatility and lack of intrinsic value. It's in this quest for stability and trustworthiness that Landscoins was conceived.

Landscoins is not just another token in the vast digital ocean; it's a ground-breaking fusion of the ancient and the avant-garde. At its core, Landscoins recognizes land's inherent and age-old value—a tangible asset that has been a cornerstone of economic theories and practical value propositions for generations. This anchoring to land allows Landscoins to sidestep the issues that have historically hindered cryptocurrencies. It serves as an embodiment of money's core attributes: a resilient store of value, a consistent unit of account, and an efficient medium of exchange.

Powered by the Ethereum network's capabilities, Landscoins is built on a foundation of technological robustness, ensuring security, transparency, and efficiency. While recognizing the potential challenges that lie ahead, from technological disruptions to regulatory ambiguities, Landscoins adopts a proactive stance. We don't just identify these challenges; we anticipate, prepare, and strategize for them, ensuring that our project remains resilient and adaptable.

In the ever-evolving landscape of digital finance, Landscoins stands as a beacon, illuminating the way forward. By marrying the time-tested reliability of land with the innovative prowess of the digital age, it offers a promising alternative—an alternative that's not just a token, but a testament to the future of finance: „Landscoins, the money of the future that works“

In the words of our introduction, it might well be the time we say, "In god we trust no more." For in the world of Landscoins, it's trustworthiness, innovation, and a steadfast commitment to value that we cherish most.

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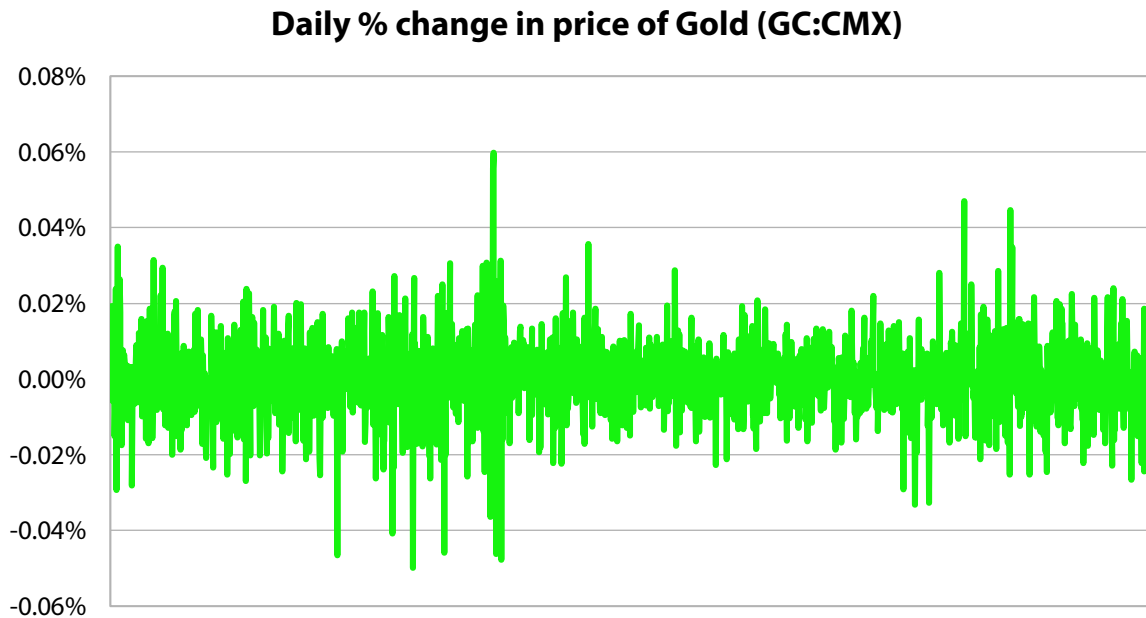
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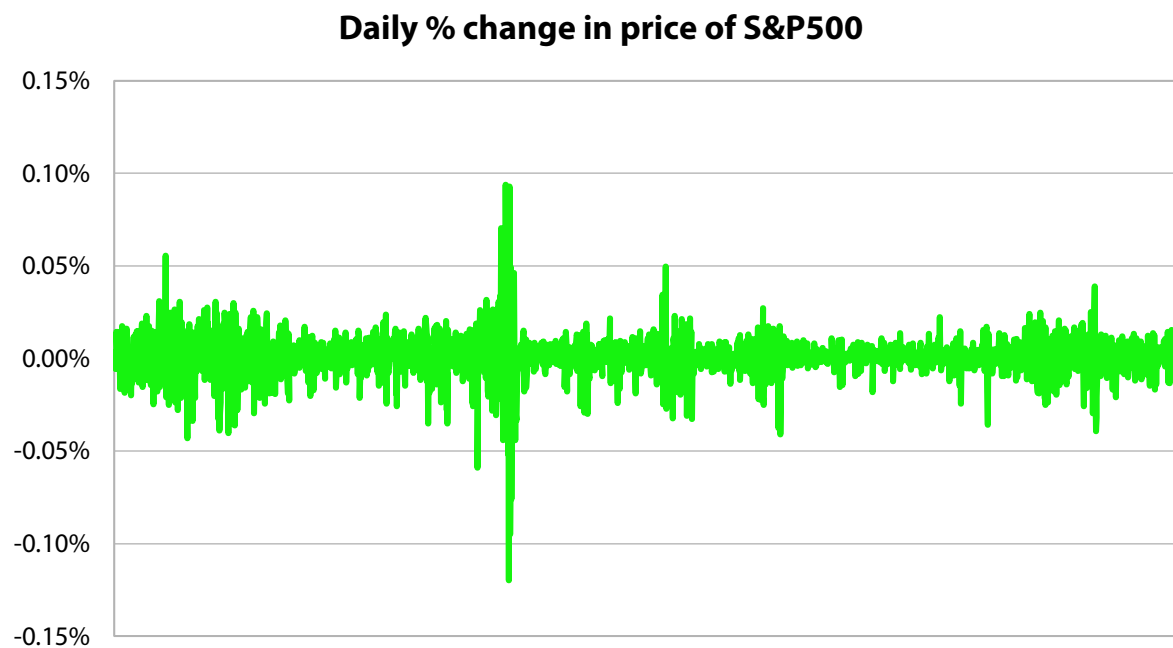
This paper has been revised with the aid of ChatGPT available on:
<https://chat.openai.com/auth/login>

10. Appendixes

Appendix 1: Daily percent change in price of gold from 8th January 2015 to 6th April 2023. Based on the data available on the official nasdaq website:
<https://www.nasdaq.com/market-activity/commodities/gc:cmx/historical>

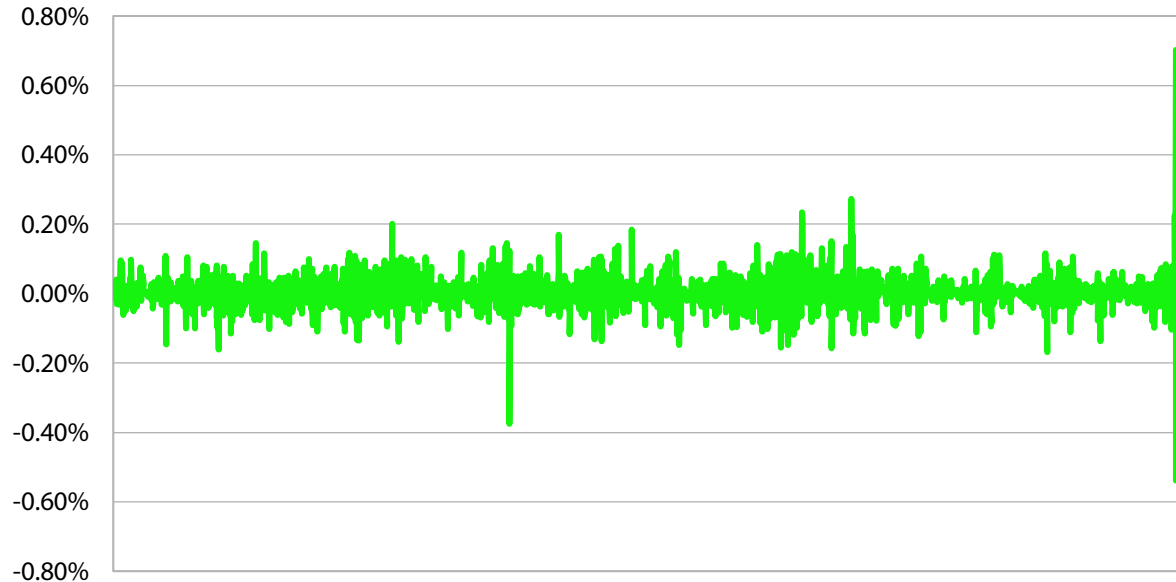


Appendix 2: Daily percent change in price of S&P500 from 8th January 2015 to 6th April 2023. Based on the data available on the official Federal Reserve Bank of St. Louis website :
<https://fred.stlouisfed.org/series/SP500>



Appendix 3: Daily percent change in price of bitcoin from 8th January 2015 to 6th April 2023.
 Based on the data available on the official Federal Reserve Bank of St. Louis website:
<https://fred.stlouisfed.org/series/CBBTCUSD>

Daily % change in price of Bitcoin



Appendix 4: Table 1: Results from volatility spreadsheet calculated according to the methodology described by Claire Boyte-Waite¹⁶

	Gold (GC:CMX)	S&P 500	Bitcoin
Volatility	0.00945628097557285	0.0118276977688899	0.0416479553450205
Annualized volatility	0.431687253423861	0.538777274588325	2.28267272336622

Appendix 5: Table 2: Table of agricultural land prices by country for arable land in euro per hectare from 2013 to 2021.

GOE (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bulgaria	3,175	3,620	3,891	4,131	4,622	5,011	5,382	5,328	6,096
Denmark	15,708	17,209	18,752	17,584	17,328	17,724	17,580	17,491	18,213
Estonia	1,865	2,426	2,567	2,735	2,890	3,174	3,461	3,772	4,383
Ireland	26,366	23,449	23,594	18,141	19,903	27,457	28,068	25,724	32,201
Greece	13,907	13,276	12,633	12,272	12,264	12,387	12,604	12,599	12,657
Spain	11,910	12,192	12,574	12,522	12,827	13,023	12,926	12,901	12,938
Latvia	4,980	2,552	2,654	2,917	2,975	3,856	3,922	4,182	4,331
Lithuania	2,009	2,330	3,089	3,516	3,571	3,890	3,959	4,127	4,667
Luxembourg	26,621	27,438	27,738	26,030	35,590	35,110	37,300	46,500	47,290
Hungary	2,709	3,042	3,356	4,182	4,368	4,662	4,862	4,893	5,187
Netherlands	53,888	56,583	61,227	63,605	66,614	71,803	71,792	72,702	77,583
Poland	6,275	7,723	9,220	9,083	9,699	10,414	10,991	10,711	10,937
Slovenia	15,545	16,009	16,071	17,136	16,876	18,460	18,752	21,451	22,312
Finland	8,461	8,090	8,138	8,326	8,718	8,380	8,686	8,524	9,009
Sweden	6,797	7,408	7,751	7,921	8,708	8,842	9,056	10,100	12,004

Data taken from the official Eurostat website. Available on:
https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en
 [Accessed 31st April 2023]

Appendix 6: Table 3: Table of agricultural land prices by country for permanent grassland in euro per hectare from 2013 to 2021.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bulgaria	1,012	1,258	1,161	1,401	1,253	1,115	1,536	1,368	1,423
Denmark	7,931	8,689	9,468	8,878	8,749	8,949	8,876	8,890	8,911
Estonia	1,616	2,006	2,013	2,181	2,179	2,398	2,856	3,087	3,358
Ireland	15,697	15,221	13,992	14,103	14,661	13,823	15,558	15,703	13,867
Greece	5,073	4,666	4,674	4,612	4,395	4,341	4,333	4,323	4,285
Spain	4,644	4,516	4,684	4,469	4,456	4,439	4,546	4,432	4,524
Latvia	2,140	1,371	1,526	1,635	1,663	2,117	2,163	2,255	2,752
Lithuania	1,182	1,373	2,151	2,456	2,170	2,352	2,533	2,840	3,497
Luxembourg	26,560	21,244	27,769	25,100	32,800	34,080	29,615	44,570	41,930
Hungary	1,227	1,426	1,572	1,693	1,871	2,111	2,304	2,384	2,681
Netherlands	46,626	48,406	50,860	53,574	55,630	57,140	56,636	59,147	62,818
Poland	4,252	5,280	5,878	5,794	6,032	6,508	6,730	6,871	7,051
Slovenia	14,971	14,332	15,486	15,427	17,012	16,946	18,015	19,500	18,992
Sweden	2,381	2,814	2,897	2,957	3,342	3,441	3,230	3,825	4,465

Data taken from the official Eurostat website. Available on:
https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en
 [Accessed 31st April 2023]

Appendix 7: Table 4: Table of agricultural land rent prices for one year by country for arable land in euro per hectare from 2013 to 2021.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021
Belgium	256	291	299	301	309	305	304	270	322
Bulgaria	199	220	225	225	240	256	253	236	283
Ireland	360	362	366	397	422	378	420	448	466
Greece	460	435	433	441	449	444	448	448	459
Croatia	120	101	116	113	103	105	104	105	107
Lithuania	80	82	83	82	124	131	144	154	182
Hungary	137	138	147	159	169	175	184	183	203
Austria	310	314	320	324	328	331	334	353	355

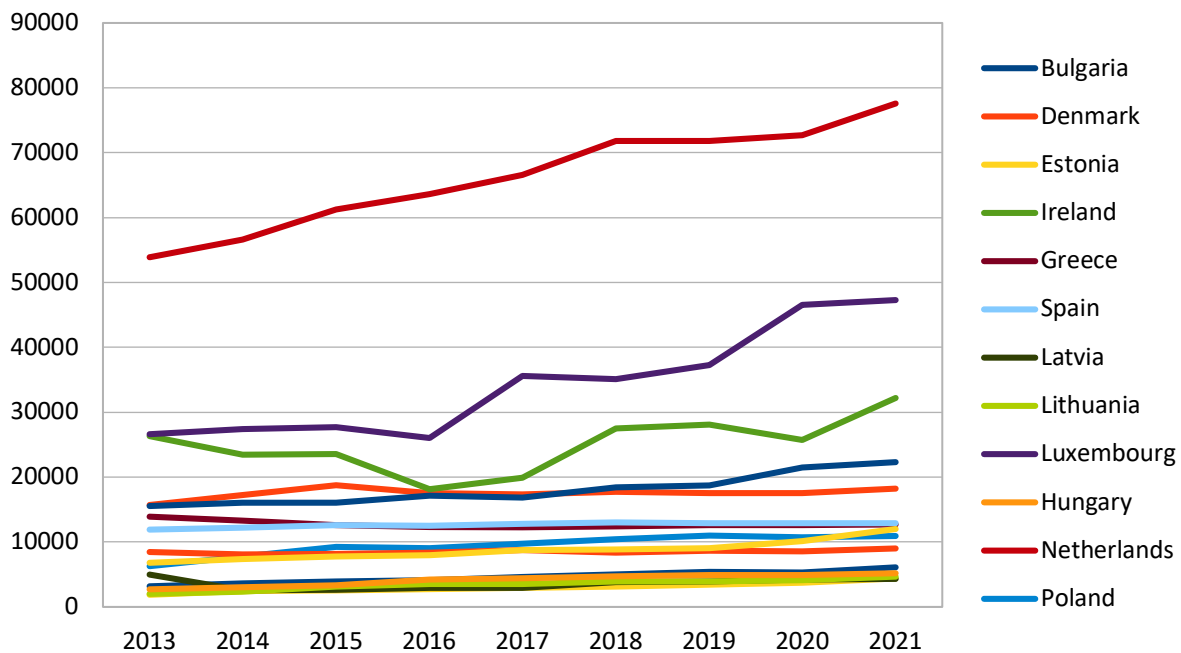
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 [Accessed 31st April 2023]

Appendix 8: Table 5: Table of agricultural land rent prices for one year by country for permanent grassland in euro per hectare from 2013 to 2021.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021
Belgium	241	259	260	263	277	269	267	310	280
Bulgaria	82	87	92	77	82	82	117	106	128
Ireland	250	244	260	266	280	292	297	313	337
Croatia	50	51	51	55	52	53	53	58	58
Lithuania	53	54	57	80	78	94	93	128	137
Hungary	70	70	73	80	83	85	90	90	97
Austria	189	197	201	203	216	221	225	224	221
Poland	107	144	136	140	140	150	164	152	157

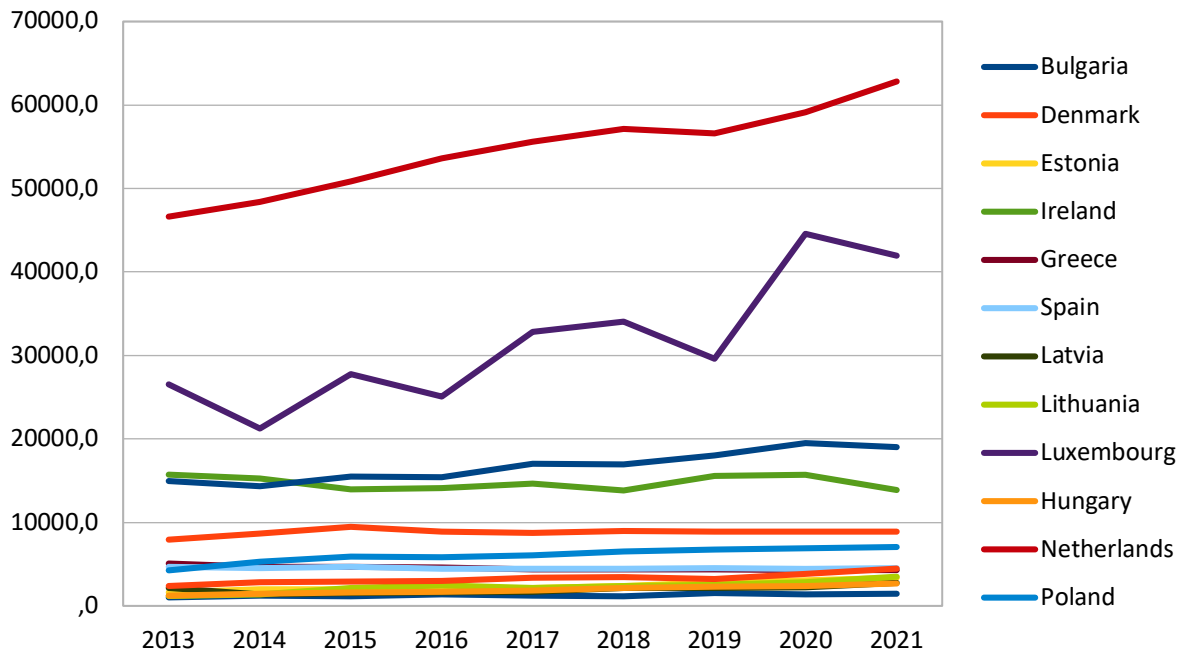
Data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 9: Graph of agricultural land prices by country for arable land in euro per hectare from 2013 to 2021.



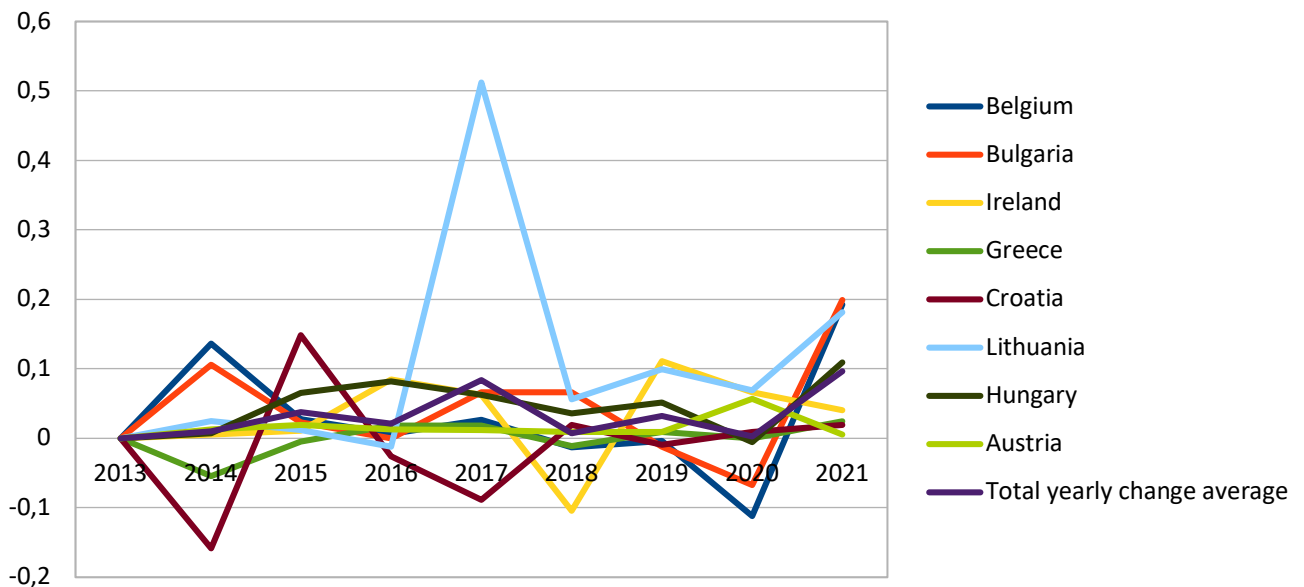
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 10: Graph of agricultural land prices by country for permanent grassland in euro per hectare from 2013 to 2021.



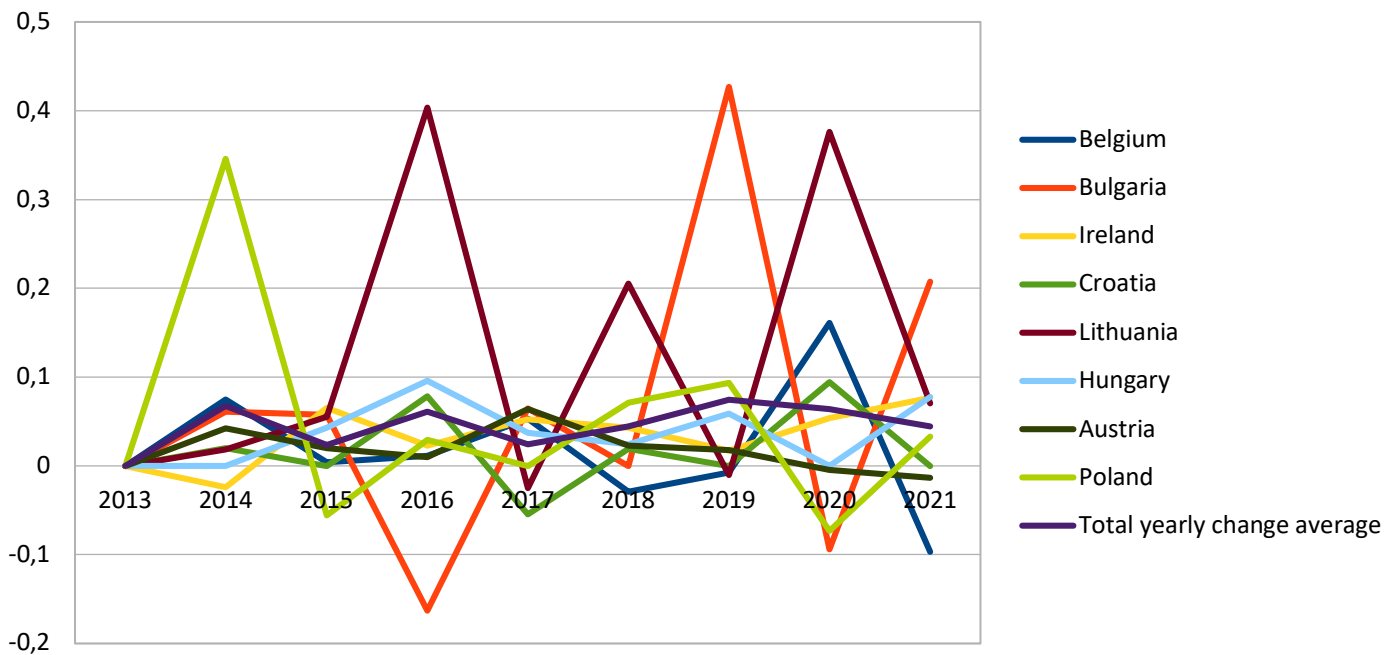
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 11: Graph of agricultural land rent prices for one year by country for arable land in euro per hectare from 2013 to 2021.



Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.lpr [Accessed 31st April 2023]

Appendix 12: Graph of agricultural land rent prices for one year by country for permanent grassland in euro per hectare from 2013 to 2021.



Created based on data taken from the official Eurostat website. Available on:
https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr
 [Accessed 31st April 2023]

Appendix 13: Table 6: Table of agricultural land prices yearly percentage change by country for arable land from 2013 to 2021. Taking year 2013 as starting point equal to 100%.

GOE (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	Change from 2013 to 2021	Yearly Average Change
Bulgaria	0.00%	14.02%	7.49%	6.17%	11.89%	8.42%	7.40%	-1.00%	14.41%	92.00%	8.50%
Denmark	0.00%	9.56%	8.97%	-6.23%	-1.46%	2.29%	-0.81%	-0.51%	4.13%	15.95%	1.87%
Estonia	0.00%	30.08%	5.81%	6.54%	5.67%	9.83%	9.04%	8.99%	16.20%	135.01%	11.27%
Ireland	0.00%	-11.06%	0.62%	-23.11%	9.71%	37.95%	2.23%	-8.35%	25.18%	22.13%	2.53%
Greece	0.00%	-4.54%	-4.84%	-2.86%	-0.07%	1.00%	1.75%	-0.04%	0.46%	-8.99%	-1.17%
Spain	0.00%	2.37%	3.13%	-0.41%	2.44%	1.53%	-0.74%	-0.19%	0.29%	8.63%	1.04%
Latvia	0.00%	-48.76%	4.00%	9.91%	1.99%	29.61%	1.71%	6.63%	3.56%	-13.03%	-1.73%
Lithuania	0.00%	15.98%	32.58%	13.82%	1.56%	8.93%	1.77%	4.24%	13.08%	132.30%	11.11%
Luxembourg	0.00%	3.07%	1.09%	-6.16%	36.73%	-1.35%	6.24%	24.66%	1.70%	77.64%	7.45%
Hungary	0.00%	12.29%	10.32%	24.61%	4.45%	6.73%	4.29%	0.64%	6.01%	91.47%	8.46%
Netherlands	0.00%	5.00%	8.21%	3.88%	4.73%	7.79%	-0.02%	1.27%	6.71%	43.97%	4.66%
Poland	0.00%	23.08%	19.38%	-1.49%	6.78%	7.37%	5.54%	-2.55%	2.11%	74.29%	7.19%
Slovenia	0.00%	2.98%	0.39%	6.63%	-1.52%	9.39%	1.58%	14.39%	4.01%	43.53%	4.62%
Finland	0.00%	-4.38%	0.59%	2.31%	4.71%	-3.88%	3.65%	-1.87%	5.69%	6.48%	0.79%
Sweden	0.00%	8.99%	4.63%	2.19%	9.94%	1.54%	2.42%	11.53%	18.85%	76.61%	7.37%
Total yearly change average	0.00%	3.91%	6.82%	2.39%	6.50%	8.48%	3.07%	3.86%	8.16%	51.53%	5.33%

Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 14: Table 7: Table of agricultural land prices yearly percentage change by country for permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2013 to 2021	Yearly Average
Bulgaria	0.00%	24.31%	-7.71%	20.67%	-10.56%	-11.01%	37.76%	-10.94%	4.02%	40.61%	4.35%
Denmark	0.00%	9.56%	8.97%	-6.23%	-1.45%	2.29%	-0.82%	0.16%	0.24%	12.36%	1.47%
Estonia	0.00%	24.13%	0.35%	8.35%	-0.09%	10.05%	19.10%	8.09%	8.78%	107.80%	9.57%
Ireland	0.00%	-3.03%	-8.07%	0.79%	3.96%	-5.72%	12.55%	0.93%	-11.69%	-11.66%	-1.54%
Greece	0.00%	-8.02%	0.17%	-1.33%	-4.71%	-1.23%	-0.18%	-0.23%	-0.88%	-15.53%	-2.09%
Spain	0.00%	-2.76%	3.72%	-4.59%	-0.29%	-0.38%	2.41%	-2.51%	2.08%	-2.58%	-0.33%
Latvia	0.00%	-35.93%	11.31%	7.14%	1.71%	27.30%	2.17%	4.25%	22.04%	28.60%	3.19%
Lithuania	0.00%	16.16%	56.66%	14.18%	-11.64%	8.39%	7.70%	12.12%	23.13%	195.85%	14.52%
Luxembourg	0.00%	-20.02%	30.71%	-9.61%	30.68%	3.90%	-13.10%	50.50%	-5.92%	57.87%	5.87%
Hungary	0.00%	16.22%	10.24%	7.70%	10.51%	12.83%	9.14%	3.47%	12.46%	118.50%	10.26%
Netherlands	0.00%	3.82%	5.07%	5.34%	3.84%	2.71%	-0.88%	4.43%	6.21%	34.73%	3.80%
Poland	0.00%	24.18%	11.33%	-1.43%	4.11%	7.89%	3.41%	2.10%	2.62%	65.83%	6.53%
Slovenia	0.00%	-4.27%	8.05%	-0.38%	10.27%	-0.39%	6.31%	8.24%	-2.61%	26.86%	3.02%
Sweden	0.00%	18.19%	2.95%	2.07%	13.02%	2.96%	-6.13%	18.42%	16.73%	87.53%	8.18%
Total yearly change average	0.00%	4.47%	9.55%	3.05%	3.53%	4.26%	5.67%	7.07%	5.51%	53.34%	5.49%

Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 15: Table 8: Table of agricultural land renting prices yearly percentage change by country for arable land from 2013 to 2021. Taking year 2013 as starting point equal to 100%.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2013 to 2021	Yearly Average
Belgium	0.00%	13.67%	2.75%	0.67%	2.66%	-1.29%	-0.33%	-11.18%	19.26%	25.78%	2.91%
Bulgaria	0.00%	10.55%	2.27%	0.00%	6.67%	6.67%	-1.17%	-6.72%	19.92%	42.21%	4.50%
Ireland	0.00%	0.56%	1.10%	8.47%	6.30%	-10.43%	11.11%	6.67%	4.02%	29.44%	3.28%
Greece	0.00%	-5.43%	-0.46%	1.85%	1.81%	-1.11%	0.90%	0.00%	2.46%	-0.22%	-0.03%
Croatia	0.00%	-15.83%	14.85%	-2.59%	-8.85%	1.94%	-0.95%	0.96%	1.90%	-10.83%	-1.42%
Lithuania	0.00%	2.50%	1.22%	-1.20%	51.22%	5.65%	9.92%	6.94%	18.18%	127.50%	10.82%
Hungary	0.00%	0.73%	6.52%	8.16%	6.29%	3.55%	5.14%	-0.54%	10.93%	48.18%	5.04%
Austria	0.00%	1.29%	1.91%	1.25%	1.23%	0.91%	0.91%	5.69%	0.57%	14.52%	1.71%
Total yearly change average	0.00%	1.00%	3.77%	2.08%	8.42%	0.74%	3.19%	0.23%	9.65%	34.57%	3.78%

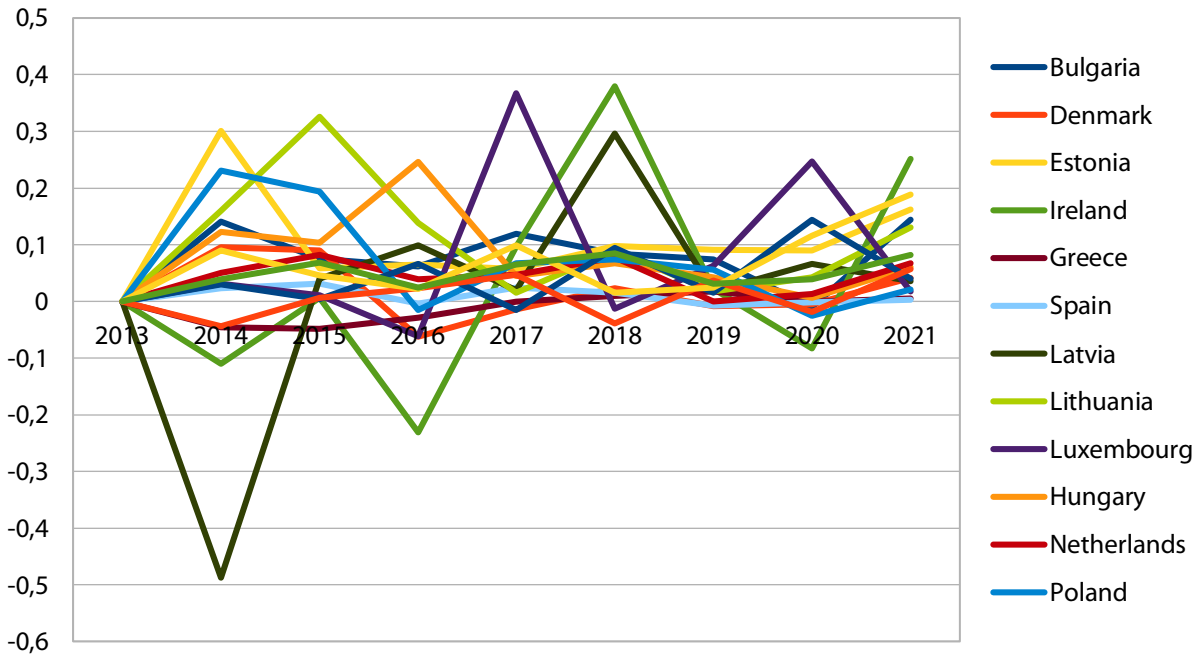
Created based on data taken from the official Eurostat website. Available on:
https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr
 [Accessed 31st April 2023]

Appendix 16: Table 9: Table of agricultural land renting prices yearly percentage change by country for permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2013 to 2021	Yearly Average
Belgium	0.00%	7.47%	0.39%	1.15%	5.32%	-2.89%	-0.74%	16.10%	-9.68%	16.18%	1.89%
Bulgaria	0.00%	6.10%	5.75%	-16.30%	6.49%	0.00%	42.68%	-9.40%	20.75%	56.10%	5.72%
Ireland	0.00%	-2.40%	6.56%	2.31%	5.26%	4.29%	1.71%	5.39%	7.67%	34.80%	3.80%
Croatia	0.00%	2.00%	0.00%	7.84%	-5.45%	1.92%	0.00%	9.43%	0.00%	16.00%	1.87%
Lithuania	0.00%	1.89%	5.56%	40.35%	-2.50%	20.51%	-1.06%	37.63%	7.03%	158.49%	12.60%
Hungary	0.00%	0.00%	4.29%	9.59%	3.75%	2.41%	5.88%	0.00%	7.78%	38.57%	4.16%
Austria	0.00%	4.23%	2.03%	1.00%	6.40%	2.31%	1.81%	-0.44%	-1.34%	16.93%	1.97%
Poland	0.00%	34.58%	-5.56%	2.94%	0.00%	7.14%	9.33%	-7.32%	3.29%	46.73%	4.91%
Total yearly change average	0.00%	6.73%	2.38%	6.11%	2.41%	4.46%	7.45%	6.42%	4.44%	47.98%	5.02%

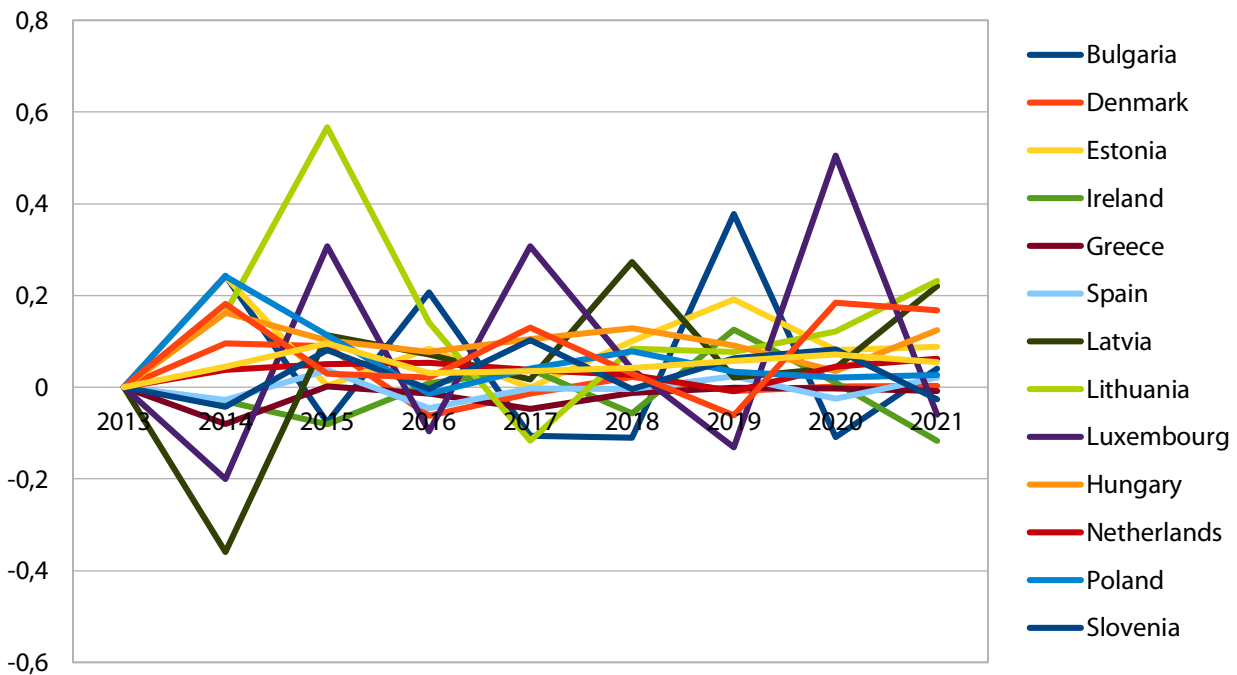
Created based on data taken from the official Eurostat website. Available on:
https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr
 [Accessed 31st April 2023]

Appendix 17: Graph of agricultural land prices yearly percentage change by country for arable land from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



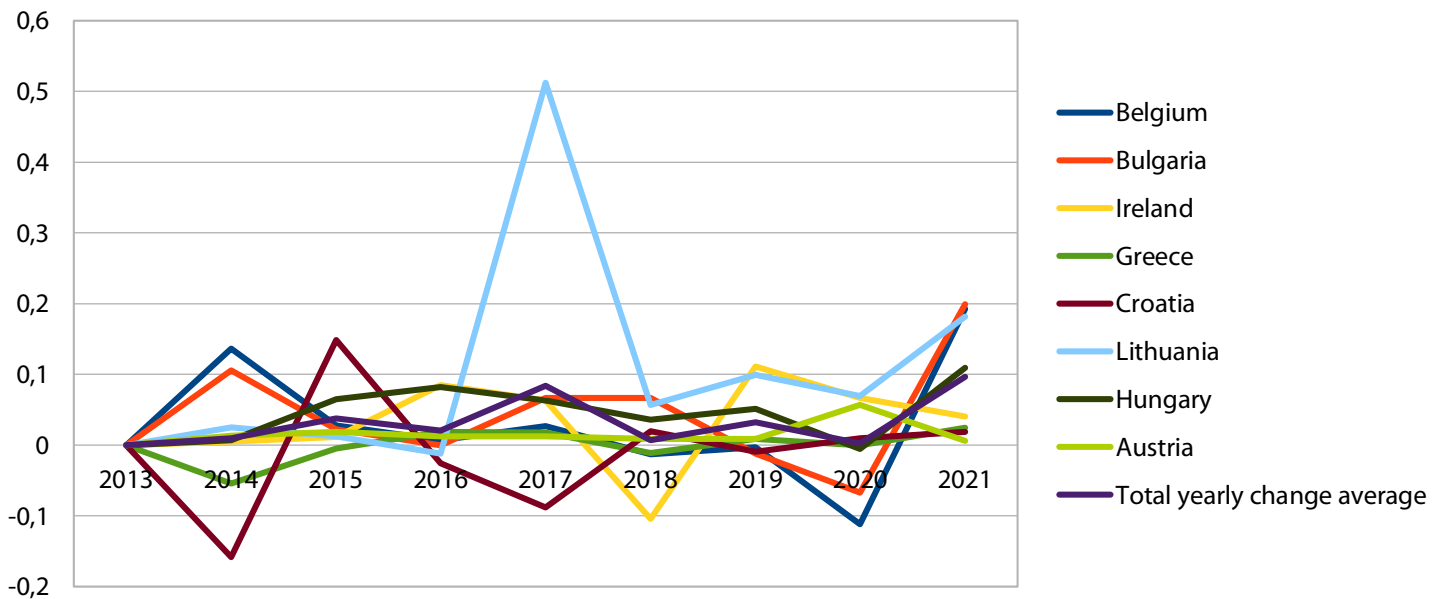
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 18: Graph of agricultural land prices yearly percentage change by country for permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



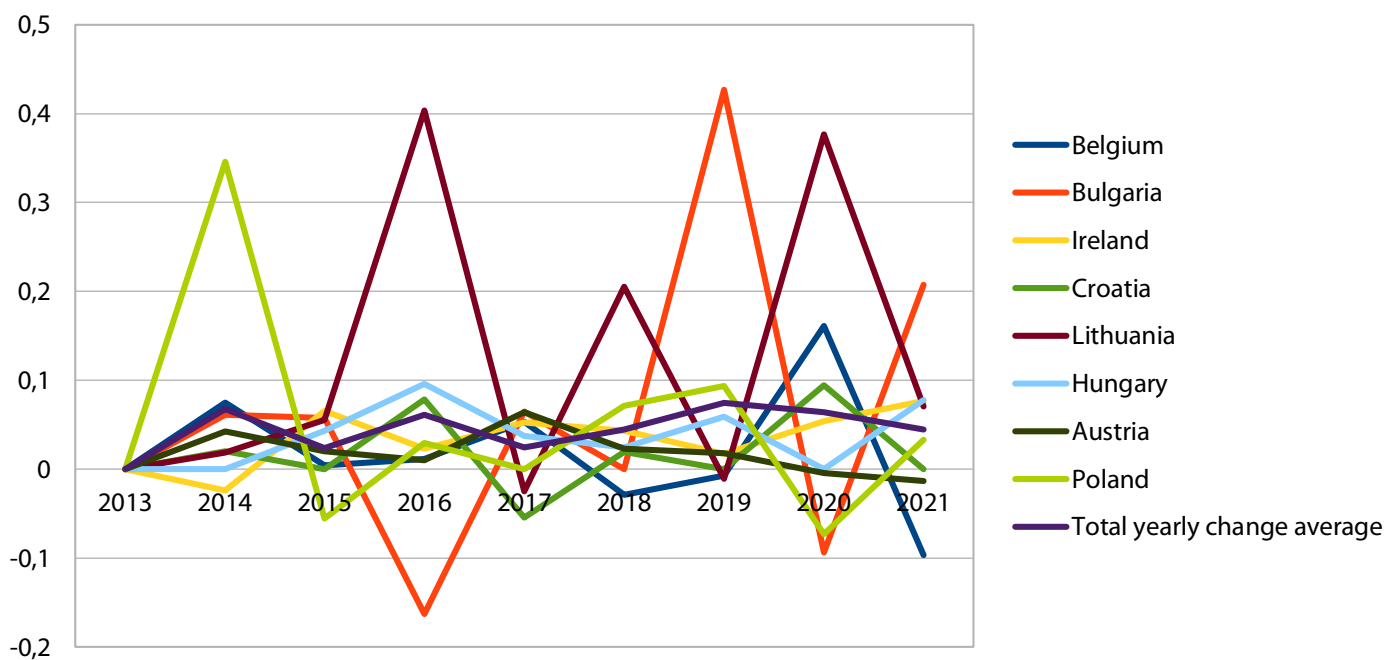
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 19: Graph of agricultural land renting prices yearly percentage change by country for arable land from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



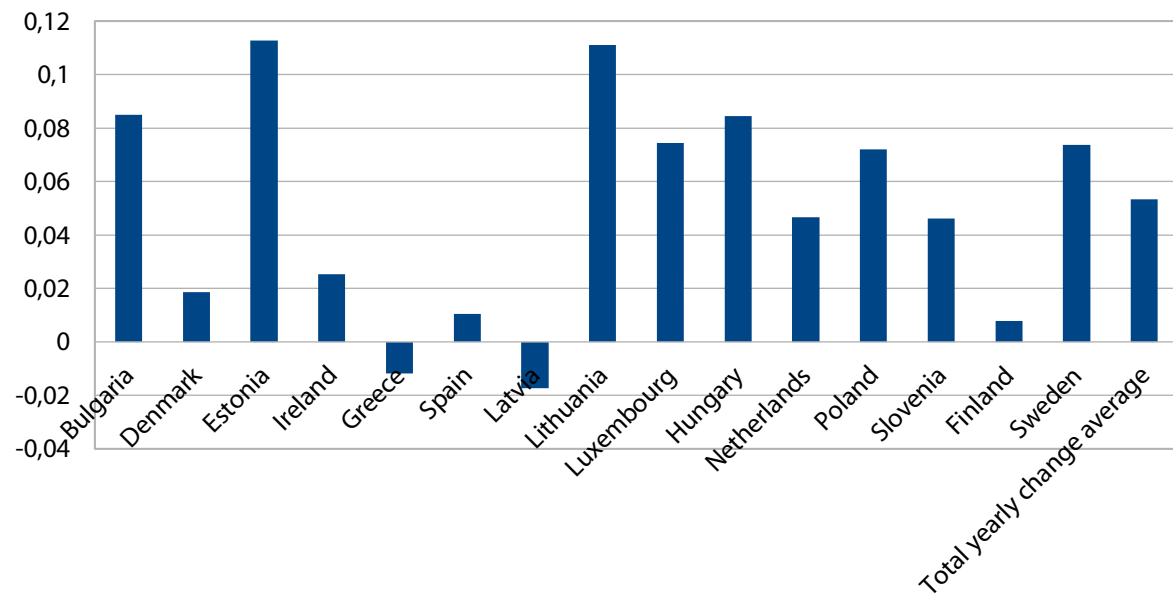
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 20: Graph of agricultural land renting prices yearly percentage change by country for permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



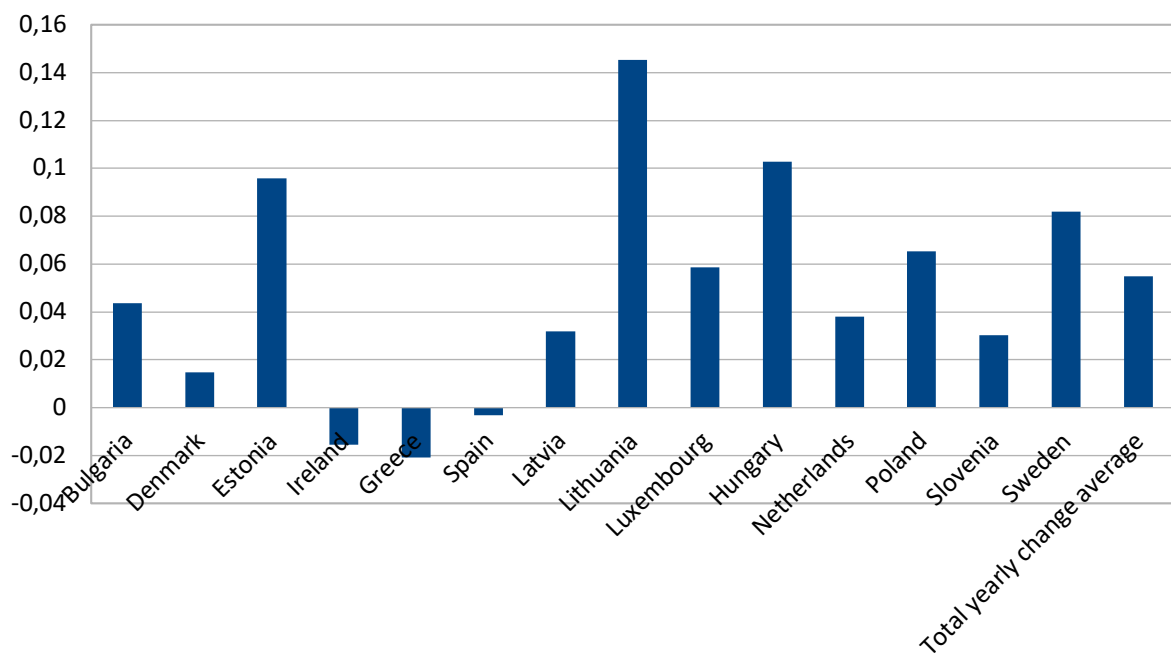
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 21: Bar chart of yearly average change in agricultural land prices yearly percentage change by country for arable land from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



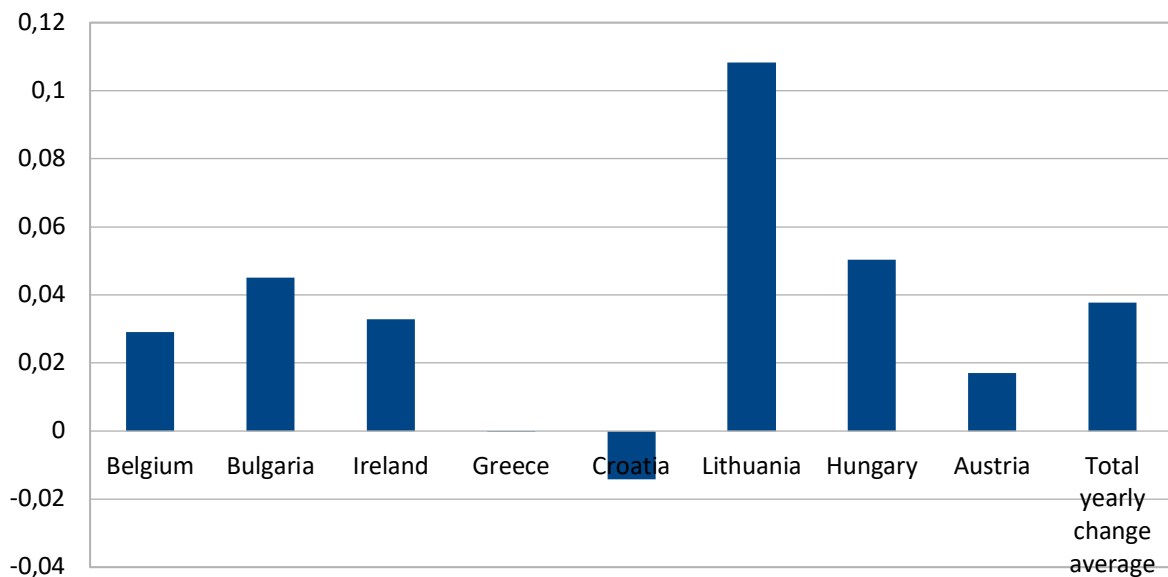
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 22: Bar chart of yearly average change in agricultural land prices yearly percentage change by country for permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



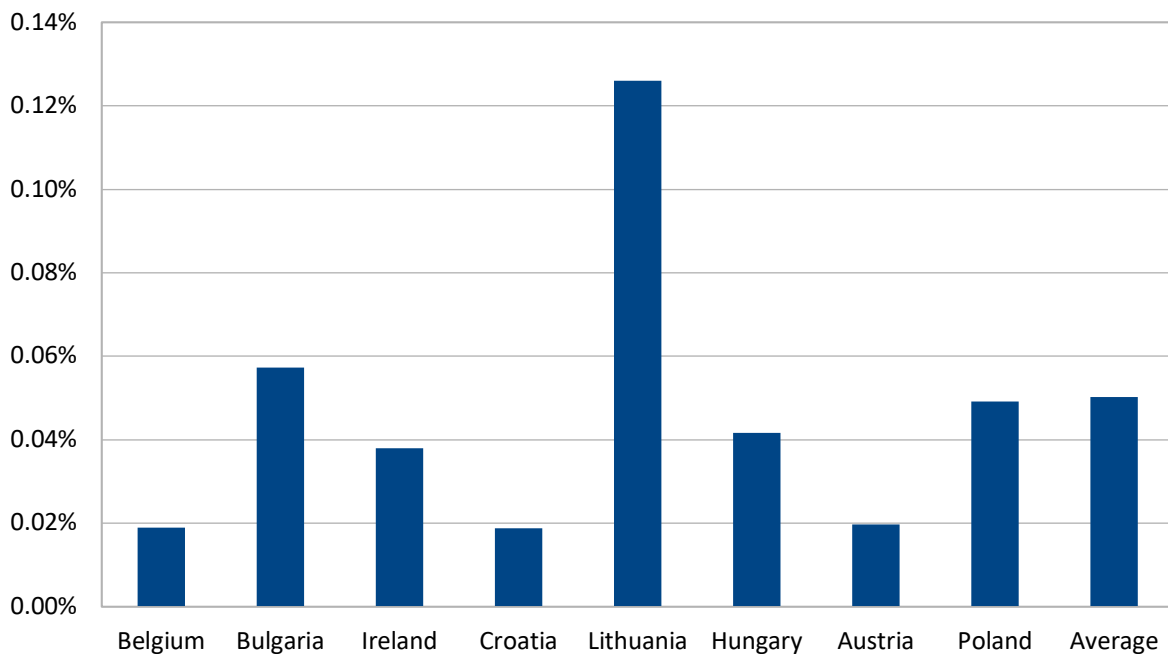
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 23: Bar chart of yearly average change in agricultural land renting prices yearly percentage change by country for arable land from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 24: Bar chart of yearly average change in agricultural land renting prices yearly percentage change by country for permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%.



Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 25: Table of the volatility of agricultural land prices yearly change by country for arable land and permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%

GOE (Labels)	Volatility Arable land	Volatility Permanent grassland
Bulgaria	0.05	0.19
Denmark	0.05	0.05
Estonia	0.08	0.08
Ireland	0.20	0.08
Greece	0.03	0.03
Spain	0.01	0.03
Latvia	0.22	0.19
Lithuania	0.10	0.19
Luxembourg	0.15	0.26
Hungary	0.07	0.04
Netherlands	0.03	0.02
Poland	0.09	0.08
Slovenia	0.05	0.06
Finland	0.04	
Sweden	0.06	0.09
Average	0.02	0.02

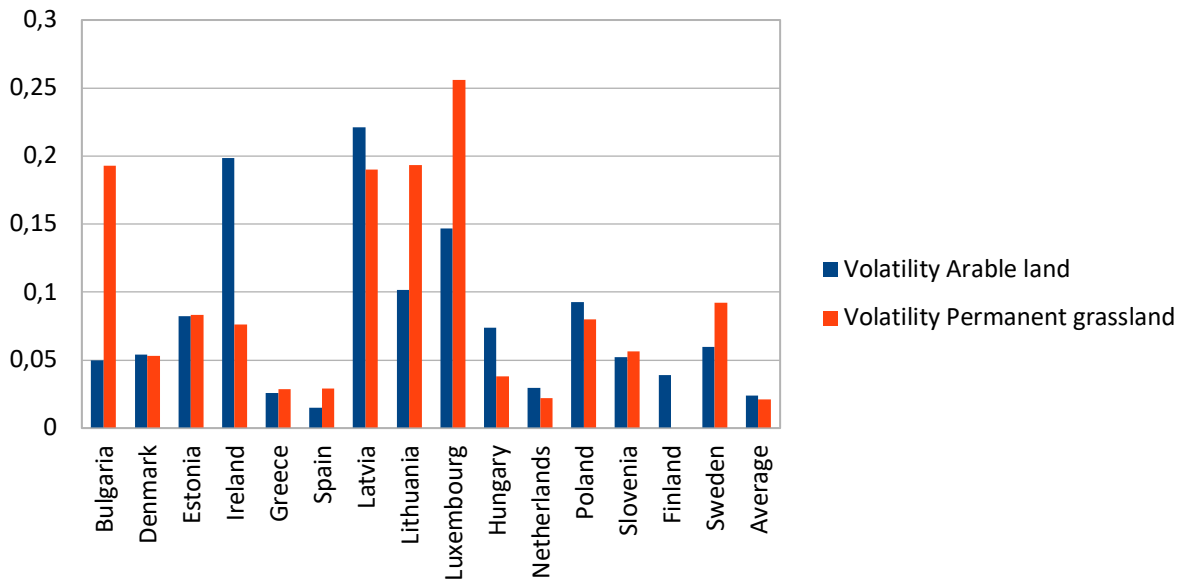
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 26: Table of the volatility of agricultural land renting prices yearly change by country for arable land and permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%

GEO (Labels)	Volatility Arable land	Volatility Permanent grassland
Belgium	0.09	0.08
Bulgaria	0.08	0.18
Ireland	0.07	0.03
Greece	0.03	0.05
Croatia	0.09	0.17
Lithuania	0.17	0.03
Hungary	0.04	0.02
Austria	0.02	0.13
Average	0.04	0.02

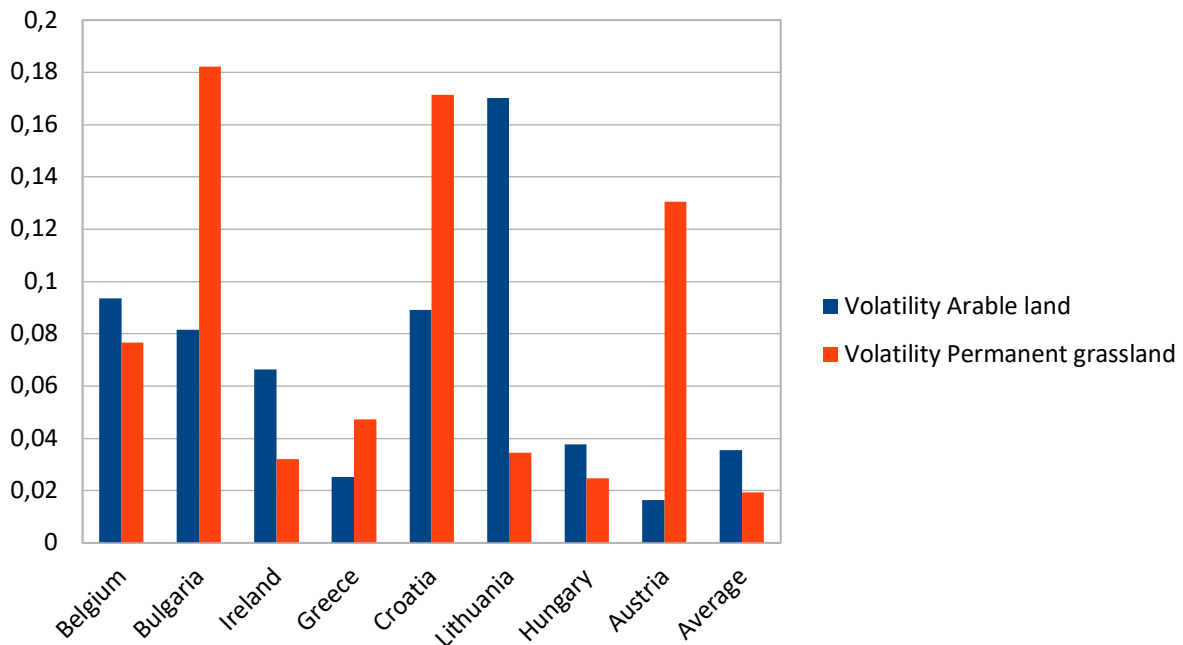
Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri_lpr [Accessed 31st April 2023]

Appendix 27: Bar chart of the volatility of agricultural land prices yearly change by country for arable land and permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%



Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en [Accessed 31st April 2023]

Appendix 28: Bar chart of the volatility of agricultural land renting prices yearly change by country for arable land and permanent grassland from 2013 to 2021. Taking year 2013 as starting point equal to 100%



Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 29: Yearly rent to price ratio for arable land.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
Bulgaria	6.27%	6.08%	5.78%	5.45%	5.19%	5.11%	4.70%	4.43%	4.64%	5.29%
Ireland	1.37%	1.54%	1.55%	2.19%	2.12%	1.38%	1.50%	1.74%	1.45%	1.65%
Greece	3.31%	3.28%	3.43%	3.59%	3.66%	3.58%	3.55%	3.56%	3.63%	3.51%
Lithuania	3.98%	3.52%	2.69%	2.33%	3.47%	3.37%	3.64%	3.73%	3.90%	3.40%
Hungary	5.06%	4.54%	4.38%	3.80%	3.87%	3.75%	3.78%	3.74%	3.91%	4.09%
Average	4.00%	3.79%	3.57%	3.47%	3.66%	3.44%	3.43%	3.44%	3.51%	3.59%

Created based on data taken from the official Eurostat website. Available on:

https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en

And

https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 30: Yearly rent to price ratio for permanent grassland.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average
Bulgaria	8.10%	6.92%	7.92%	5.50%	6.54%	7.35%	7.62%	7.75%	9.00%	7.41%
Ireland	1.59%	1.60%	1.86%	1.89%	1.91%	2.11%	1.91%	1.99%	2.43%	1.92%
Lithuania	4.48%	3.93%	2.65%	3.26%	3.59%	4.00%	3.67%	4.51%	3.92%	3.78%
Hungary	5.70%	4.91%	4.64%	4.73%	4.44%	4.03%	3.91%	3.78%	3.62%	4.42%
Poland	2.52%	2.73%	2.31%	2.42%	2.32%	2.30%	2.44%	2.21%	2.23%	2.39%
Average	4.48%	4.02%	3.88%	3.56%	3.76%	3.96%	3.91%	4.05%	4.24%	3.98%

Created based on data taken from the official Eurostat website. Available on:

https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en

and

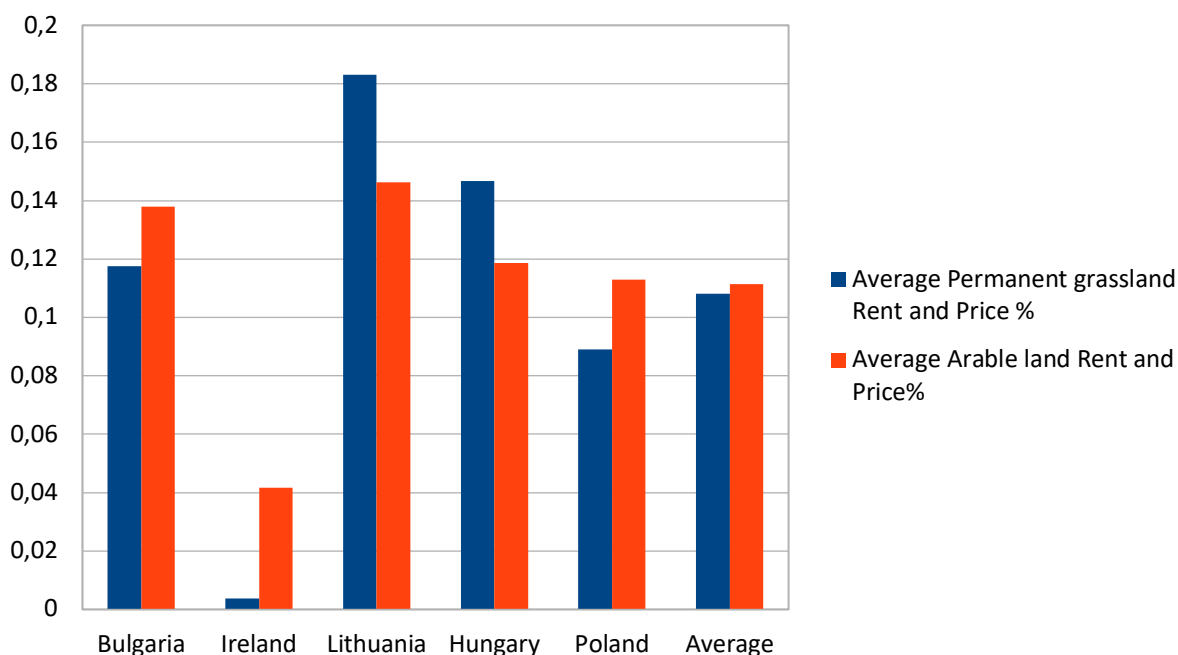
https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr
[Accessed 31st April 2023]

Appendix 31: Table connecting results average yearly rent from appendix 29 to 30 and average yearly price change of land from tables of appendix 13 to 14.

GEO (Labels)	Average Permanent grassland Rent%	Average Arable land Rent %	Average Permanent grassland Price %	Average Arable land Price %	Average Permanent grassland Rent and Price %	Average Arable land Rent and Price%
Bulgaria	7.41%	5.29%	4.35%	8.50%	11.76%	13.79%
Ireland	1.92%	1.65%	-1.54%	2.53%	0.38%	4.18%
Lithuania	3.78%	3.51%	14.52%	11.11%	18.30%	14.62%
Hungary	4.42%	3.40%	10.26%	8.46%	14.68%	11.86%
Poland	2.39%	4.09%	6.53%	7.19%	8.91%	11.28%
Average	3.98%	3.59%	6.83%	7.56%	10.81%	11.15%

Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en and https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 32: Bar chart of average yearly rent and price added together for permanent grassland and arable land.



Created based on data taken from the official Eurostat website. Available on: https://ec.europa.eu/eurostat/databrowser/view/apri_lprc/default/table?lang=en and https://ec.europa.eu/eurostat/databrowser/view/APRI_LRNT/default/table?lang=en&category=agr.apri.apri_lpr [Accessed 31st April 2023]

Appendix 33: Table displaying the yearly change in HICP, which should correspond to the inflation.

GEO (Labels)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	0	-1.60%	-1.07%	-1.32%	1.19%	2.63%	2.45%	1.22%	2.85%	13.01%
Denmark	0	0.40%	0.20%	0.00%	1.10%	0.69%	0.69%	0.39%	1.94%	8.48%
Estonia	0	0.47%	0.07%	0.80%	3.65%	3.42%	2.27%	-0.63%	4.48%	19.45%
Ireland	0	0.30%	0.00%	-0.20%	0.30%	0.70%	0.89%	-0.49%	2.37%	8.11%
Greece	0	-1.39%	-1.10%	0.02%	1.13%	0.78%	0.51%	-1.26%	0.57%	9.30%
Spain	0	-0.20%	-0.63%	-0.34%	2.04%	1.74%	0.77%	-0.34%	3.01%	8.32%
Latvia	0	0.69%	0.21%	0.10%	2.90%	2.55%	2.75%	0.08%	3.24%	17.24%
Lithuania	0	0.24%	-0.68%	0.68%	3.71%	2.54%	2.24%	1.06%	4.63%	18.85%
Luxembourg	0	0.70%	0.06%	0.04%	2.11%	2.02%	1.65%	0.00%	3.47%	8.16%
Hungary	0	0.02%	0.06%	0.45%	2.38%	2.92%	3.42%	3.37%	5.21%	15.27%
Netherlands	0	0.32%	0.21%	0.11%	1.29%	1.60%	2.68%	1.12%	2.82%	11.64%
Poland	0	0.10%	-0.70%	-0.20%	1.60%	1.18%	2.14%	3.63%	5.25%	13.21%
Slovenia	0	0.37%	-0.76%	-0.15%	1.55%	1.93%	1.69%	-0.28%	2.05%	9.32%
Finland	0	1.21%	-0.16%	0.39%	0.84%	1.18%	1.13%	0.39%	2.06%	7.18%
Sweden	0	0.20%	0.70%	1.14%	1.86%	2.04%	1.72%	0.65%	2.66%	8.06%

Created based on data taken from the official Eurostat website. Available on:
https://ec.europa.eu/eurostat/databrowser/view/PRC_HICP_AIND/default/table?lang=en&category=prc.prc_hicp
 [Accessed 7th June 2023]

Appendix 34: Table displaying the correlation between the price of Arable land, Permanent grassland and inflation (HICP) for each country.

GOE (Labels)	Correlation Arable land	Correlation Permanent grassland
Bulgaria	0.30	-0.17
Denmark	0.02	-0.23
Estonia	0.10	-0.21
Ireland	0.43	-0.56
Greece	0.26	0.23
Spain	-0.37	0.06
Latvia	0.18	0.45
Lithuania	-0.06	0.06
Luxembourg	0.05	0.06
Hungary	-0.31	-0.03
Netherlands	0.21	0.41
Poland	-0.56	-0.47
Slovenia	0.13	-0.29
Finland	0.49	
Sweden	0.81	0.46

Appendix 35: Table comparing the yearly average inflation to the yearly average change in the price of arable and permanent grassland.

GEO (Labels)	Yearly average inflation	Yearly Price change Arable land	Difference between inflation and arable land	Yearly Price change Permanent grassland	Difference between inflation and permanent grassland
Bulgaria	2.07%	8.50%	6.43%	4.35%	2.28%
Denmark	1.51%	1.87%	0.35%	1.47%	-0.05%
Estonia	3.62%	11.27%	7.65%	9.57%	5.95%
Ireland	1.30%	2.53%	1.23%	-1.54%	-2.84%
Greece	0.91%	-1.17%	-2.08%	-2.09%	-2.99%
Spain	1.56%	1.04%	-0.52%	-0.33%	-1.89%
Latvia	3.19%	-1.73%	-4.92%	3.19%	0.00%
Lithuania	3.56%	11.11%	7.55%	14.52%	10.96%
Luxembourg	1.99%	7.45%	5.45%	5.87%	3.88%
Hungary	3.59%	8.46%	4.87%	10.26%	6.68%
Netherlands	2.37%	4.66%	2.29%	3.80%	1.43%
Poland	2.84%	7.19%	4.35%	6.53%	3.69%
Slovenia	1.71%	4.62%	2.91%	3.02%	1.31%
Finland	1.56%	0.79%	-0.77%		
Sweden	2.09%	7.37%	5.28%	8.18%	6.09%
TOTAL AVERAGE	2.26%	4.93%	2.67%	4.77%	2.51%