A Rudimentary Introduction to Latent Formulae of Decentralized Autonomous Economies

(v0)

by Hayden Smiley

Abstract

In this basic introductory paper, I delve into the fascinating realm of the latent current() of time and its profound implications for decentralized autonomous economies +/or sovereign autonomous economies. Building upon the extensive body of knowledge previously discussed throughout my work, this study focuses on the intricate mathematical and economic formulas that underpin the dynamics of this emerging field. This comprehensive compendium presents a meticulous collection of economic latency/time-based formulas, shedding light on the hidden patterns and mechanisms that govern the spatio-temporal aspects of decentralized autonomous economies. The latent current() of time represents a paradigm shift in the understanding of temporal dynamics within economies, highlighting the crucial role that time-based factors play in shaping economic outcomes. By harnessing a diverse range of mathematical models, algorithms, and economic theories, this paper offers a comprehensive framework for quantifying and optimizing economic latency in decentralized autonomous systems. I explore the ways in which economic latency can be harnessed to enhance efficiency, stability, and fairness in decentralized economies. I also examine the spatio-temporal dynamics of various economic processes, including resource allocation, transaction verification, consensus mechanisms, and incentive structures, among others. Moreover, this paper elucidates the interconnections between economic latency, information propagation, and decision-making in decentralized autonomous economies. By developing and analyzing a rich set of formulas, we provide valuable tools for understanding and optimizing the temporal aspects of economic interactions within truly decentralized economic systems.

My findings highlight the transformative potential of incorporating time-based factors into economic models and protocols. I demonstrate how economic latency can lead to more resilient, adaptive, and efficient decentralized autonomous economies. This comprehensive compendium of economic latency/time-based formulas serves as a foundational resource for researchers, economists, and developers in the field of my decentralized autonomous economies +/or sovereign autonomous economies. It not only advances our theoretical understanding of time-based dynamics but also provides practical insights for the design and implementation of future decentralized systems. Ultimately, this paper paves the way for a new era of decentralized economies that embrace the latent

current() of time, revolutionizing the way we conceptualize and harness spatio-temporal dynamics in economic systems.

Introduction

The emergence of decentralized autonomous economies +/or sovereign autonomous economies has ushered in a new era of economic systems, offering the potential for enhanced efficiency, transparency, and inclusivity. These systems, enabled by distributed paradigms, are soon to capture the attention of researchers, economists, and visionaries seeking to redefine traditionally centralized economic paradigms – and will also capture the criticisms of the elitist thinkers (who are bought & sold, corrupted & controlled) +/or TPTB.

Amidst this evolving landscape, the concept of the latent current() of time has surfaced as a fundamental yet often overlooked dimension, influencing the dynamics of decentralized economies. At the heart of this study lies the recognition that time is not merely a linear progression but an intricate web of interconnections, shaping economic behavior and outcomes within decentralized systems. While traditional economic models often neglect the temporal dimension, my research strives to bridge this gap by elucidating the hidden patterns and mechanisms governing economic latency (a term which I have coined in my work on the "Theory of Economic Latency" which renders the notion of economic scarcity mute and invalid at absolute best).

The insights derived from this research hold profound implications for the design and development of future decentralized systems. By integrating a nuanced understanding of economic latency, I aspire to create decentralized economies that are more resilient, adaptive, and efficient. By quantifying and optimizing the temporal aspects of economic interactions, we aim to foster greater stability and fairness within these systems.

In the following sections, I will explore the intricate mathematics and economic formulas that govern the latent current() of time in decentralized autonomous economies +/or sovereign autonomous economies. Through this multidisciplinary approach, I aim to contribute to the growing body of knowledge surrounding decentralized autonomous economies (an area which I have founded) and pave the way for a future where the spatio-temporal dimensions are accorded its due significance. By embracing the latent current() of time, we can unlock new frontiers in economic theory and practice, leading to transformative advancements in decentralized systems.

Author's Note

Welcome to the subzero edition of this compendium, presented in its raw and unedited form. As a supporter of mine and our movement of true freedom and liberation, you may encounter elitist critics and naysayers along the way. Rest assured, their opinions need not hinder your exploration, for their intent may be to perpetuate oppressive systems of thought.

I willingly embrace my unconventional approach, fully aware of my imperfections and limitations. Neither I nor my work aspire to attain perfection. Instead, we celebrate our imperfectly perfect and perfectly imperfect nature, reflecting the essence of our shared humanity.

Moreover, I resist the pressure to conform to societal norms of institutionalization. Thus, I have chosen not to adhere strictly to formal conventions in presenting this work. It exists as it is, unapologetically. With these sentiments in mind, I invite you to delve into the contents of this compendium. May you find inspiration and a renewed perspective within its pages.

If you feel compelled to contribute to the evolution of this work, the path is clear. You know what to do. Your input, insights, and collaboration are warmly welcomed. Together, we can build upon the foundations laid within this compendium and push the boundaries of knowledge even further. So, if you find yourself inspired or motivated to contribute, I encourage you to seize the opportunity. Your unique perspective and expertise will undoubtedly enrich the tapestry of ideas presented here. Thank you in advance for your contributions, and may our collective efforts propel us towards new horizons of understanding.

To all readers, may the eternal blessings of God be bestowed upon you, and may His divine speed grace us all. May we find the strength within ourselves to overcome the powers that be and the principalities that be. In our pursuit of knowledge and understanding, let us remain steadfast in our commitment to truth, justice, and righteousness. May we navigate the malevolent complexities of the world with wisdom and discernment.

May our collective efforts be guided by a higher purpose, and may we strive for a world that embodies compassion, empathy, and harmony. As we embark on this intellectual journey together, may we find solace and inspiration in the aeternal blessings of God, Our Creator and Heavenly Father. With gratitude and hope, let us embark upon this exploration with courage and benevolent self-determination.

Author's Note Pt.2

It is important to acknowledge that not all of the formulas presented in this compendium are intended for direct utilization within decentralized autonomous economies. While some formulas may not befit or directly relate to such systems, there are others that do. Additionally, it should be noted that many of the formulas presented here are fundamentally basic and simplified. They serve as an agnostic, objective, and unbiased framework for academics to build upon. It is crucial to recognize that the formulas included in this paper represent a rudimentary introduction, offering a foundational understanding of the subject matter. They are meant to provide a starting point for further exploration and investigation. The intention is for future research to delve into more complex and varied formulas that are better suited for specific applications within decentralized autonomous economies +/or sovereign autonomous economies.

As we embark on this scholarly journey, it is important to keep in mind that the formulas we use in our work extend beyond the scope of this paper. They are more intricate, comprehensive, and tailored to address specific aspects of decentralized autonomous economies. This compendium serves as a stepping stone, laying the groundwork for deeper analysis and the development of advanced formulas. With this understanding, let us approach this compendium as a starting point, recognizing its limitations and the potential for further growth and refinement. May our exploration into the world of economic formulas within decentralized autonomous economies pave the way for future advancements and a deeper understanding of this evolving field.

Without Further Adieu

Latency is a key concept in economics and can be thought of as the time it takes for economic activities to occur, including production, distribution, and consumption. Time-based currency, as we have discussed, is one way to represent and account for the latency of economic activities, but it is not the only way. Other measures of latency can include the speed and efficiency of production processes, transportation systems, and communication networks. In this sense, latency is a broader concept that encompasses time-based currency and other measures of economic activity. The ultimate currency, then, is not time itself, but rather the ability to reduce and optimize latency in economic activities. By reducing latency, we can increase efficiency, productivity, and overall economic growth. Furthermore, the different "latent currents" can be thought of as different types of latency in economic activities. For example, there may be latency in natural resource extraction, production processes, distribution networks, or even in the implementation of new technologies. Each of these different types of latency can be measured and optimized in different ways, depending on the specific economic activity. Ultimately, latency is a key consideration in any economic system, as it directly impacts efficiency, productivity, and overall economic growth. By understanding and accounting for latency in all its forms, we can create more robust and resilient economic systems that benefit all members of society.

Latent Current() are a next generation version of Currencies. The two primary forms of Latent Current() are as follows:

- The Latent Current of Time +/or Temporal Current
- The Latent Current of Space +/or Spatial Current

The Current of Time is more objective, open, mutual, fair, and equitable than the artificial currency of the USD because it is based on the inherent value of time, which is a universal and objective measure. Time is a finite resource that is equally available to everyone, regardless of their background or economic status. It cannot be artificially manipulated or created like the USD, which is subject to the whims of central banks and governments. Moreover, the currency of time is mutual and fair because it is a decentralized system that does not rely on any central authority or governing body. Instead, it is based on the voluntary exchange of time and the recognition of the value of everyone's contribution to society. In contrast, the USD is controlled by a small group of elite individuals who have the power to manipulate its value and distribution for their own benefit. The currency of time is also more equitable because it recognizes the value of both tangible and intangible contributions to society. It does not prioritize the accumulation of material wealth at the expense of other valuable contributions, such as art, culture, or community service. In contrast, the USD often prioritizes material wealth and perpetuates inequality and unfairness in society.

One of the key reasons for this is that the currency of time is based on a fundamental aspect of the human experience: time itself. Time is a universal constant that affects everyone equally, regardless of their background, wealth, or status. Therefore, using time as a currency ensures that everyone is treated equally and has an equal opportunity to exchange their time for goods, services, or other forms of currency. Moreover, the currency of time is inherently democratic and meritocratic, as it rewards individuals based on their contributions to society, rather than their wealth or social status.

In a time-based economy, those who work harder or contribute more to society will be rewarded with more time, while those who do not contribute as much will receive less. This creates a more equitable and just society where everyone has an opportunity to succeed based on their own efforts. In contrast, artificial currencies like the USD are often subject to manipulation, corruption, and control by those with power and influence. Governments and corporations can print or manipulate the money supply, leading to inflation or deflation, which can disproportionately affect the poor and middle class. Moreover, those with wealth and power can use their resources to influence government policies, laws, and regulations to their advantage, further exacerbating income and wealth inequality. Therefore, anyone who opposes the currency of time may be seen as opposing fairness, equitability, mutuality, and objectivity. They may be seen as attempting to maintain their power and influence over others by controlling the means of exchange and maintaining the status quo. However, it's important to acknowledge that implementing a time-based economy may require significant changes to existing systems and structures, and may not be feasible in all contexts.

Present Value of Time

The “Present Value of Time” formula is a mathematical equation that is used to calculate the current value of a future payment or stream of payments in a currency of time system. The present value formula takes into account the time value of money, which is the idea that money is worth more in the present than it is in the future due to the opportunity cost of not being able to use it immediately.

The present value of time formula is typically expressed as follows:

$PV = FV / (1 + r)^t$

Where:

- PV is the present value of the future payment or stream of payments
- FV is the future value of the payment or stream of payments
- r is the discount rate, which represents the time value of money
- t is the number of time periods until the payment or stream of payments is received

To use the “Present Value of Time” formula, the future value of the payment or stream of payments and the discount rate must be known. The number of time periods until the payment or stream of payments is received can also be included in the calculation if desired.

The “Present Value of Time” formula is commonly used in finance and economics to evaluate the value of investments, loans, and other financial instruments. It is particularly useful in a currency of time system, as it allows for the calculation of the current value of future payments or streams of payments in a way that takes into account the time value of money.

Marginal Value of Time

The Marginal Value of Time formula is a mathematical equation that is used to calculate the additional value or benefit that is gained from consuming one additional unit of a good or service in a currency of time system. The marginal value formula is typically expressed as follows:

$MV = (\Delta Q / \Delta T) * P$

Where:

- MV is the marginal value of time in the IRL Consumption of one additional unit of IRL Good or IRL Service
- ΔQ is the change in the quantity of the IRL Good or IRL Service consumed
- ΔT is the change in the IRL Time required to consume the additional IRL Unit of IRL Offering
- P is the IRL Price of the IRL Good or IRL Service

To use the "Marginal Value of Time" formula, the change in the quantity of the good or service consumed and the change in the time required to consume the additional unit must be known. The price of the good or service can also be included in the calculation if desired.

The "Marginal Value of Time" formula is commonly used in economics to evaluate the value or benefit of consuming additional units of a good or service. It is particularly useful in a currency of time system, as it allows for the calculation of the value or benefit of consuming additional units of a good or service in a way that takes into account the time required to consume these units.

Total Cost of Time

The "Total Cost of Time" formula is a mathematical equation that is used to calculate the "Total Cost of Time" in the IRL Production of an IRL Good or IRL Service in Aevum's Currency of Time system. The "Total Cost of Time" formula takes into account both the costs associated with IRL Human Resources and the IRL Costs associated with IRL Artificial Resources, such as Symbiotic Data for the IRL Automation of IRL Economic Processes, IRL Activities, IRL Productivities, and IRL Efficiencies of IRL Human resources via IRL Artificial Resources.

The total cost formula is typically expressed as follows:

$TC = VC + FC$

Where:

- TC is the "Total Cost of Time" in the IRL Production of an IRL Good or IRL Service
- VC is the "Variable Cost of Time" in the IRL Production of the IRL Good or IRL Service, which includes the IRL Costs associated with IRL Human Resources and IRL Artificial Resources that vary with the quantity of the IRL Good or IRL Service attributed to IRL Production.
- FC is the "Fixed Cost of Time" in the IRL Production of an IRL Good or IRL Service, which includes the IRL Costs associated with IRL Human Resources +/oro IRL Artificial Resources that do not vary with the quantity of the IRL Good or IRL Service produced.

To use the "Total Cost of Time" formula, the variable cost and fixed cost of time producing the good or service must be known. The variable cost includes the costs associated with human resources and artificial resources that vary with the quantity of the good or service produced, such as the cost of raw materials or the cost of data for the automation of human resources. The "Fixed Cost of Time" includes the costs associated with human resources and artificial resources that do not vary with the quantity of the good or service produced, such as the cost of rent or the cost of data storage.

The “Total Cost of Time” formula is commonly used in economics to evaluate the costs of producing a good or service. It is particularly useful in a currency of time system, as it allows for the calculation of the total cost of producing a good or service in a way that takes into account both the costs associated with human resources and the costs associated with artificial resources.

In the context of the “Total Cost of Time” formula, data and automation can be considered as factors that can impact the costs associated with human resources and artificial resources in the production of a good or service. These costs can be taken into account in the total cost formula by including them as part of the variable or fixed costs of production.

For example, data and automation can be considered as part of the variable costs of time in IRL Production if they vary with the quantity of the good or service being produced. This might include the cost of data for the automation of human resources, or the cost of purchasing or leasing automated machinery or equipment.

Data and automation can also be considered as part of the fixed costs of IRL Production if they do not vary with the quantity of the good or service being produced. This might include the cost of data storage or the cost of maintaining automated machinery or equipment.

In this way, the total cost of time formula can be used to take into account the impact of data and automation on the costs of production in the context of the 5th industrial revolution. By including these costs as part of the variable or fixed costs of production, the total cost formula can help to accurately reflect the costs associated with the use of data and automation in the production of goods and services.

Cost-plus pricing formula:

Time = Cost + (Cost * Margin)

Demand-based pricing formula:

Time = Demand / Quantity

Time = Demand of Time / Quantity of Time

Note that in these formulas, "Time" represents the price of the good or service, "Cost" represents the cost of producing the good or service, "Margin" represents the desired profit margin, "Demand" represents the total demand for the good or service, and "Quantity" represents the quantity of the good or service available.

Time-based cost formula

Cost = Time * Rate

This formula is used to calculate the cost of a good or service based on the time it takes to produce the good or service and the rate at which the time is being charged. "Time" represents the time it takes to produce the good or service, "Rate" represents the rate at which the Time is autonomously valuated, and "Cost" represents the total cost of the good or service.

Time-based revenue formula

Revenue = Time * Rate

This formula is used to calculate the revenue generated by the sale of a time-based IRL Good or IRL Service based on the time it takes to produce the IRL Good or IRL Service and the IRL Rate at which the Aevum Time is being charged. "Time" represents the time it takes in the IRL Production of the good or service, "Rate" represents the rate at which the time is being charged, and "Revenue" represents the total revenue generated by the sale of the good or service.

Gross Domestic Time

GDT formula

GDT = Time * Population

This formula is used to calculate the Gross Domestic Time (GDT) of an economy based on the time it takes to produce goods and services in the economy and the population of the economy. "Time" represents the time it takes to produce goods and services in the economy, "Population" represents the population of the economy, and "GDT" represents the Gross Domestic Time of the economy.

GDT Per Capita formula

GDT Per Capita = GDT / Population

This formula is used to calculate the Gross Domestic Time per capita of an economy based on the Gross Domestic Time (GDT) of the economy and the population of the economy. "GDT" represents the Gross Domestic Time of the economy, "Population" represents the population of the economy, and "GDT per capita" represents the Gross Domestic Time per capita of the economy.

GDT Growth Rate formula

GDT growth rate = (GDTt - GDTt-1) / GDTt-1

This formula is used to calculate the growth rate of the Gross Domestic Time (GDT) of an economy over a given time period. "GDTt" represents the Gross Domestic Time of the economy at time t, "GDTt-1" represents the Gross Domestic Time of the economy at time t-1, and "GDT growth rate" represents the growth rate of the Gross Domestic Time of the economy over the given time period.

Cost of Economic Offering via Hybrid Resources

Cost of product or service produced by HR: Time * HR Rate

Cost of product or service produced by AR: Time * AR Rate

This formula calculates the cost of a product or service based on the time it takes to produce the good or service and the rate at which the time is being charged for human resources and artificial resources, respectively. "Time" represents the time it takes to produce the good or service, "HR Rate" represents the rate at which the time is being charged for human resources, and "AR Rate" represents the rate at which the time is being charged for artificial resources.

Cst of a product or service when produced by a combination of both human resources and artificial resources:

Cost of product or service produced by HR and AR: (Time * HR Rate) + (Time * AR Rate)

This formula calculates the cost of a product or service based on the time it takes to produce the good or service and the rate at which the time is being charged for human resources and artificial resources. "Time" represents the time it takes to produce the good or service, "HR Rate" represents the rate at which the time is being charged for human resources, and "AR Rate" represents the rate at which the time is being charged for artificial resources.

To compare the difference or effect provided by the automation of artificial resources, you could subtract the cost of the product or service produced by human resources only from the cost of the product or service produced by a combination of human resources and artificial resources. This would give you the additional cost of using artificial resources, which can be compared to the cost of using human resources only to determine the cost savings or additional cost associated with automation.

Fulfillment Rate of Time

The time it takes for time-based demand to be fulfilled with time-based supply can be measured using the Time to Fulfillment (TTF) formula. The TTF formula takes into account the time it takes for human resources (HR) and artificial resources (AR) to fulfill demand individually and collectively.

The TTF formula can be expressed as follows:

TTF = (Time for HR + Time for AR) / Demand

Where Time for HR represents the amount of time it takes for human resources to fulfill a particular demand, and Time for AR represents the amount of time it takes for artificial resources to fulfill the same demand. Demand represents the total amount of time-based demand that needs to be fulfilled.

For example, consider a company that receives an order for 100 units of a product, with a delivery time of 5 days. The TTF for the order can be calculated as follows:

TTF = (Time for HR + Time for AR) / Demand = (5 days + 3 days) / 100 units = 0.08 days/unit

This means that it takes an average of 0.08 days to fulfill a single unit of the product using both human and artificial resources.

In addition to calculating the TTF for individual orders or demands, it is also possible to calculate the TTF for a group or system of orders or demands. This can be done by summing the TTFs for each individual order or demand, and dividing by the total number of orders or demands being measured.

For example, consider a company that has three orders: Order A, Order B, and Order C. The TTF for each order is calculated as follows:

TTF for Order A = (Time for HR + Time for AR) / Demand = 0.10 days/unit

TTF for Order B = (Time for HR + Time for AR) / Demand = 0.05 days/unit

TTF for Order C = (Time for HR + Time for AR) / Demand = 0.07 days/unit

The overall TTF for the company's orders can be calculated as follows:

Overall TTF = (TTF for Order A + TTF for Order B + TTF for Order C) / 3 orders = (0.10 days/unit + 0.05 days/unit + 0.07 days/unit) / 3 orders = 0.07 days/unit

This means that it takes an average of 0.07 days to fulfill an order using both human and artificial resources within the company.

By using the TTF formula, it is possible to accurately measure and compare the time it takes for time-based demand to be fulfilled with time-based supply using human and artificial resources individually and collectively. This can be useful for organizations looking to optimize their use of resources and improve efficiency in fulfilling orders and meeting demand.

Latency Rate of Time

The Latency Rate of Time (LRT) is a measure of the time it takes for economic processes, activities, productivities, and efficiencies to be completed by human resources (HR) and artificial resources (AR) individually and collectively. The LRT can be calculated using the following formula:

LRT = (Time for HR + Time for AR) / Output

Where Time for HR represents the amount of time it takes for a particular process, activity, productivity, or efficiency to be completed by human resources, and Time for AR represents the amount of time it takes for the same process, activity, productivity, or efficiency to be completed by artificial resources. Output represents the total output or result of the process, activity, productivity, or efficiency being measured.

For example, consider a manufacturing process that involves the assembly of a product. The LRT for this process could be calculated as follows:

LRT = (Time for HR + Time for AR) / Number of products assembled

If it takes human resources 10 hours to assemble 100 products, and it takes artificial resources 5 hours to assemble 100 products, the LRT for the manufacturing process would be:

LRT = (10 hours + 5 hours) / 100 products = 0.15 hours/product

This means that it takes an average of 0.15 hours to assemble a single product using both human and artificial resources.

In addition to calculating the LRT for individual processes, activities, productivities, and efficiencies, it is also possible to calculate the LRT for a group or system of processes, activities, productivities, and efficiencies. This can be done by summing the LRTs for each individual process, activity, productivity, or efficiency, and dividing by the total number of processes, activities, productivities, or efficiencies being measured.

For example, consider a company that has three manufacturing processes: Process A, Process B, and Process C. The LRT for each process is calculated as follows:

LRT for Process A = (Time for HR + Time for AR) / Output = 0.20 hours/product

LRT for Process B = (Time for HR + Time for AR) / Output = 0.10 hours/product

LRT for Process C = (Time for HR + Time for AR) / Output = 0.15 hours/product

The overall LRT for the company's manufacturing processes can be calculated as follows:

Overall LRT = (LRT for Process A + LRT for Process B + LRT for Process C) / 3 processes = (0.20 hours/product + 0.10 hours/product + 0.15 hours/product) / 3 processes = 0.15 hours/product

This means that it takes an average of 0.15 hours to complete a manufacturing process using both human and artificial resources within the company.

By using the LRT formula, it is possible to accurately measure and compare the time it takes for economic processes, activities, productivities, and efficiencies to be completed by human and artificial resources individually and collectively. This can be useful for organizations looking to optimize their use of resources and improve efficiency.

Time-based Resource Valuation Model(s) --- random examples***

- Time-based Value (TBV) Framework: This framework suggests that the value of natural resources should be determined by the amount of time required to extract or acquire them. It takes into account the time required to access the resources and the costs associated with reducing latency.
- Latency-Adjusted Resource Pricing (LARP) Model: This model suggests that the price of natural resources should be based on the latency of their availability, rather than their current availability. It takes into account the time required to access resources and the costs associated with reducing latency.
- Latency-Based Resource Management (LBRM) Framework: This framework suggests that the management of natural resources should take into account the latency of their availability. It suggests that management should focus on reducing latency through the development of new technologies and resource extraction techniques.
- Time-Productivity Method: this method suggest the valuation of natural resources based on the time it can produce in the further economic process or activities.
- Life Cycle Analysis (LCA): This method evaluates the environmental impact of a resource throughout its entire life cycle, from extraction and production to use and disposal. It can be used to determine the overall sustainability and long-term value of a resource.
- Net Energy Analysis (NEA): This method evaluates the amount of energy required to extract, produce, and transport a resource, as well as the amount of energy produced by the resource. It

can be used to determine the overall eciency and value of a resource.
- Cost-Benefit Analysis (CBA): This method evaluates the costs and benefits of a resource, both monetarily and non-monetarily, to determine the overall value and feasibility of a resource.
- Resource depletion analysis: This method evaluates the potential depletion rate of a resource and the potential alternative resources. It can be used to determine the long- term value of a resource.

Time-based Task Complexity Formula

TC = R x D x C

TC: time-based task complexity

R: task requirements (e.g., skills, knowledge, experience)

D: task difficulty (e.g., level of challenge, cognitive load)

C: task complexity (e.g., degree of interdependence, scope)

Let's say we have a project to develop a new software application. Using the time-based task complexity formula, we can calculate the task complexity as follows:

R = 8 (out of 10) - This project requires a high level of technical skills, knowledge, and experience in software development.

D = 6 (out of 10) - The project has moderate difficulty, with several complex features that need to be developed and tested.

C = 7 (out of 10) - The project has a moderate degree of interdependence between different features, and a medium-sized scope.

TC = R x D x C

TC = 8 x 6 x 7

TC = 336

Therefore, the time-based task complexity of this project is 336. This formula can be used to estimate the amount of time and resources required to complete the project, and to identify areas where additional support or resources may be needed to ensure successful completion.

Exchange Rate Formula

Exchange Rate = (Demand for Time-based Currency / Supply of Time-based Currency) * (Inflation Rate of Traditional Currency / Inflation Rate of Time-based Currency) * (Perceived Value Ratio of Time-based Currency to Traditional Currency)

Where:

- Demand for Time-based Currency refers to the amount of time-based currency that individuals or entities are willing and able to buy at a given price.
- Supply of Time-based Currency refers to the amount of time-based currency that is available for purchase at a given time.
- Inflation Rate of Traditional Currency refers to the rate at which the value of traditional currency is changing over time, as measured by an inflation index.
- Inflation Rate of Time-based Currency refers to the rate at which the value of time-based currency is changing over time, as measured by an inflation index specific to the time-based economy.
- Perceived Value Ratio of Time-based Currency to Traditional Currency refers to the ratio of the perceived value of one unit of time-based currency compared to one unit of traditional currency, as determined by market forces.

This formula takes into account the supply and demand dynamics of the time-based economy, as well as the relative inflation rates and perceived value of the two currencies. It could be used to help determine the exchange rate between time-based currency and traditional currency in a given market or economy.

Assume that in a certain time-based economy, the demand for time-based currency is 1,000 units and the supply of time-based currency is 500 units. The inflation rate of the traditional currency is 3% and the inflation rate of the time-based currency is 1%. Finally, the perceived value ratio of time-based currency to traditional currency is 2:1.

Using the formula:

Exchange Rate = (Demand for Time-based Currency / Supply of Time-based Currency) * (Inflation Rate of Traditional Currency / Inflation Rate of Time-based Currency) * (Perceived Value Ratio of Time-based Currency to Traditional Currency)

Exchange Rate = (1,000 / 500) * (3% / 1%) * (2:1)

Exchange Rate = 2 * 3 * 2:1

Exchange Rate = 12

This means that one unit of traditional currency would be exchanged for 12 units of time-based currency in this market.

Economic Efficiency Formula

TEE_t = (TP_t + DP_t + CP_t) / TLT_t

Where:

TEE_t = time-based economy efficiency at time t

TP_t = total production time at time t

DP_t = total distribution time at time t

CP_t = total consumption time at time t

TLT_t = total latency time at time t (sum of all time delays in the economic system)

Suppose we want to calculate the time-based economy efficiency of a certain country at a specific time (t). We can collect data on the total production time (TP_t), total distribution time (DP_t), and total consumption time (CP_t) of all economic activities within that country at time t. We can also calculate the total latency time (TLT_t) at time t, which is the sum of all time delays in the economic system.

For example, let's say we collect the following data for a country at time t:

- TP_t = 1000 hours
- DP_t = 500 hours
- CP_t = 700 hours
- TLT_t = 300 hours

We can plug these values into the time-based economy efficiency formula:

TEE_t = (TP_t + DP_t + CP_t) / TLT_t

TEE_t = (1000 + 500 + 700) / 300

TEE_t = 3.33

Therefore, the time-based economy efficiency of the country at time t is 3.33. This indicates that, on average, the country is able to produce, distribute, and consume goods and services efficiently relative to the time delays in the economic system.

Automation Distribution Index

Automation Distribution Index (ADI) = ∑ [(A / T) x (P / E) x (1 - I)]

Where:

∑ = the sum of all economic sectors and activities within the meritocratic time-based economy

A = the level of automation in a specific economic sector or activity

T = the total technological resources available in that sector or activity

P = the level of productivity in that sector or activity

E = the level of employment in that sector or activity

I = the inefficiency factor that accounts for any negative impacts of automation on productivity, employment, and income distribution

This formula calculates the Automation Distribution Index, which measures the distribution of automation across different economic sectors and activities within the meritocratic time-based economy. It takes into account the level of automation in a specific sector or activity, as well as the total technological resources available, the level of productivity, and the level of employment. The formula also factors in any negative impacts of automation on productivity, employment, and income distribution, represented by the inefficiency factor. The ADI can be used to assess the effectiveness of automation policies and strategies aimed at promoting productivity, employment, and income distribution in a fair and equitable manner within the meritocratic time-based economy.

Automation Index for an Economic Sector

Automation Index for an Economic Sector = (Total Value-Added from Automation / Total Value-Added from Labor) x (1 - Automation Inefficiency Factor)

Where:

Total Value-Added from Automation = the total value added to the economic sector or activity through the use of automation technologies and processes

Total Value-Added from Labor = the total value added to the economic sector or activity through labor and human resources

Automation Inefficiency Factor = a factor that accounts for any inefficiencies in the automation process, including technological limitations, maintenance costs, and other external factors

This formula calculates the Automation Index for a specific economic sector or activity, which measures the level of automation within it. It takes into account the value added through automation technologies and processes, as well as the value added through labor and human resources. The formula also factors in any inefficiencies in the automation process, including technological limitations, maintenance costs, and other external factors that may impact the overall efficiency of the automation. The Automation Index can be used to assess the effectiveness of automation strategies and policies in a given economic sector or activity, as well as to compare the level of automation between different sectors or activities.

Let's apply this formula to the manufacturing industry in the United States.

Total Value-Added from Automation = $100 billion

Total Value-Added from Labor = $200 billion

Automation Inefficiency Factor = 0.1

Automation Index for the Manufacturing Industry = (100 / 200) x (1 - 0.1) = 0.45

The Automation Index for the Manufacturing Industry in the US is 0.45, which indicates that the industry has a moderate level of automation. This means that while automation technologies and processes are used in the manufacturing industry, there is still significant value added through labor and human resources. The inefficiency factor of 0.1 accounts for any limitations and costs associated with automation in the manufacturing industry.

Automation Inefficiency Factor

The formula for the automation inefficiency factor can be represented as follows:

Automation Inefficiency Factor = (Total Cost of Automation - Total Value-Added from Automation) / Total Value-Added from Automation

Where:

Total Cost of Automation = the total cost of implementing and maintaining automation technologies and processes in the economic sector or activity

Total Value-Added from Automation = the total value added to the economic sector or activity through the use of automation technologies and processes

This formula calculates the automation inefficiency factor, which measures the inefficiencies in the automation process. It takes into account the total cost of implementing and maintaining automation technologies and processes, as well as the total value added to the economic sector or activity through automation. The automation inefficiency factor can be used to identify areas where the implementation of automation technologies and processes can be improved, and to assess the overall efficiency of the automation process in a given economic sector or activity.

Self-Bootstrapping Formulae

The autogenous nature of the Time-based Decentralized Autonomous Economy is self-bootstrapping in that it relies on a critical mass of economic participants in order to function effectively. This is because without a sufficient number of participants, there is no commonly accepted form of value between them, and thus no way to transfer or use the value created within the system.

For example, if there is only one person participating in the time-based economy, they may be able to complete time-wrapped tasks and earn time-based currency, but they have no one to exchange that currency with for goods or services. However, if there are 1,000 participants, there are more addressable needs being fulfilled, and more people who commonly accept the standard of value provided by the time-based economy. This leads to a positive feedback loop, as more participants attract more participants, leading to increased productivity, greater efficiencies, and a broader range of goods and services being offered within the economy.

This self-bootstrapping nature is essential to the growth and expansion of the time-based economy, as it enables the system to continually evolve and adapt to changing needs and demands. As more participants join and contribute their skills and resources, the system becomes increasingly complex and sophisticated, with more opportunities for innovation and creativity. This also helps to ensure that the time-based economy remains resilient and sustainable over the long term, as it is able to continually adapt to changing market conditions and user preferences.

$V = N(N-1) / T$

where V represents the value of the economy, N represents the number of participants, and T represents the time it takes for each participant to complete a time-wrapped task.

This equation assumes that the value of the economy is proportional to the number of interactions between participants, which is given by the combination formula of N choose 2 (N-1). The division by T represents the speed at which value is generated, which is a function of how quickly participants can complete tasks.

As the number of participants increases, the value of the economy grows exponentially due to the combinatorial nature of interactions. This growth is further amplified by the autogenous nature of the economy, as participants are incentivized to contribute more value over time. Ultimately, this leads to a self-bootstrapping effect where the economy is able to sustain itself and grow without relying on external factors.

M(t) = P(t) / T(t)

Where:

- M(t) is the money supply of time-based currency at time t
- P(t) is the total amount of time-based currency produced at time t
- T(t) is the total amount of time spent by all economic participants producing time-based currency at time t

At the beginning, when there is only one economic participant (me) creating the currency, the total amount of time spent by all economic participants (T) is equal to my own time (t), and the total amount of time-based currency produced (P) is equal to the amount that I created. Therefore, the initial money supply (M) is equal to:

M(0) = P(0) / T(0) = (amount of time-based currency created by me) / (my own time spent creating it)

As more economic participants join and start contributing their own time to the production of time-based currency, both P and T increase, resulting in a larger money supply. The formula above reflects the fact that the money supply is directly proportional to the amount of time spent producing currency, and inversely proportional to the total amount of currency produced.

as the quantity of participants increases, the reliance on the traditional economy decreases

As the quantity of participants in the time-based economy increases, the reliance on the traditional economy decreases. This is because as more people participate in the time-based economy, more goods and services are being produced and consumed within the system, reducing the need to rely on external sources. The equation for this could be something like:

Reliance on Traditional Economy = (1 - % of GDP produced in Time-based Economy) x 100

For example, if 50% of a country's GDP is produced in the time-based economy, the reliance on the traditional economy would be:

$(1 - 0.5) \times 100 = 50\%$

This means that the traditional economy is still relied upon for 50% of the country's needs, but as the time-based economy continues to grow, this reliance will decrease.

Specific examples of how this works could be seen in industries like food and agriculture. As more people participate in the time-based economy, there may be an increase in the number of people growing their own food, sharing their excess produce with others, or even trading time-based currency for locally grown produce. This reduces the need to rely on the traditional economy for food and agriculture-related goods and services.

Another example could be in the production of handmade goods or services. As more people participate in the time-based economy, there may be an increase in the number of people producing and trading handmade goods or services within the system. This reduces the need to rely on the traditional economy for mass-produced goods and services.

Reliance on Traditional Economy Formula

One way to mathematically represent the relationship between the quantity of participants and the reliance on the traditional economy in the Time-based Decentralized Autonomous Economy is through a power law function. The power law function describes a relationship where a small number of participants have a disproportionately large impact on the system as a whole, while the majority of participants have a smaller impact.

Reliance on traditional economy = $k * N^{(-a)}$

where N is the number of participants in the Time-based Decentralized Autonomous Economy, k is a constant, and a is a scaling factor that determines the steepness of the curve.

As N increases, the reliance on the traditional economy decreases exponentially. This is because as more participants join the system, they are able to fulfill more of their own needs and the needs of other participants within the system, reducing the need for external inputs from the traditional economy. Additionally, as the system grows, it becomes more efficient and self-sufficient, further reducing the reliance on the traditional economy.

Network Effect Model Formula

Value of Time-based Decentralized Autonomous Economy = $k * \log(N)$

where N is the number of participants and k is a constant. In this model, the value of the system increases logarithmically with the number of participants, indicating that the value of the system is proportional to the number of connections between participants. As more participants join, there are more connections and opportunities for value creation within the system, further reducing the reliance on the traditional economy.

Latency of Needs Formula

$L = (D + T) - P$

where L represents the latency or delay in fulfillment, D represents the time required for distribution or delivery of goods or services, T represents the time required for processing or production of goods or services, and P represents the time at which the order was placed or the need was identified.

This formula takes into account the time required for processing and distribution, as well as the time at which the need was identified or the order was placed. By subtracting the processing and distribution time from the time of order placement, we can calculate the total latency (or delay) in fulfillment.

For example, if an order is placed on Monday ($P = 0$), and it takes two days to process ($T = 2$) and one day to distribute ($D = 1$), the total latency or delay in fulfillment would be:

$L = (1 + 2) - 0 = 3$

This means that the individual would receive the goods or services on Thursday, three days after the order was placed. By analyzing and optimizing this formula, the decentralized autonomous economy can aim to minimize latency and provide faster and more efficient fulfillment of needs for its participants.

Time-based Money Supply

$M(t) = M(0) + \sum(i=1 \text{ to } n) (P(i) - C(i))$

where M(t) represents the money supply at time t, M(0) represents the initial money supply, P(i) represents the amount of time-based currency produced by individual i through completing time-wrapped tasks and actions, and C(i) represents the amount of time-based currency burned by individual i through spending or using their currency of time.

This equation assumes that the total money supply in the time-based economy is equal to the initial money supply plus the net amount of currency produced and consumed by all individuals participating in the economy. It also assumes that the money supply is not influenced by external factors such as central bank policies or inflation rates, but rather is solely determined by the amount of time-based currency produced and consumed by individuals within the decentralized autonomous economy.

Productivity & Quality of Work Formula

Value of Time-Based Currency (V) = $(p * q * t) / (w * c)$

Where:

- p = productivity coefficient (a measure of how much work is done in a given time period)
- q = quality coefficient (a measure of how well the work is done, taking into account factors such as accuracy and attention to detail)

- t = time spent on task
- w = weighted average of productivity coefficients for all individuals in the economy
- c = weighted average of quality coefficients for all individuals in the economy

The productivity and quality coefficients can be determined through a combination of objective measurements (such as output quantity and error rates) and subjective evaluations (such as feedback from supervisors or customers). The weighted averages of these coefficients for all individuals in the economy can serve as benchmarks for comparison.

This formula enables a meritocratic approach to time-based currency, as it rewards individuals who are more productive and produce higher quality work in a given amount of time. The value of time-based currency is not solely based on the amount of time spent, but also takes into account the value added through productivity and quality.

Complexity of Time-Based Task Formula

Time-based task complexity formula:

- TC = R x D x C
- TC: time-based task complexity
- R: task requirements (e.g., skills, knowledge, experience)
- D: task difficulty (e.g., level of challenge, cognitive load)
- C: task complexity (e.g., degree of interdependence, scope)

Time-based task productivity formula:

- TP = (Q x E) / T
- TP: time-based task productivity
- Q: task quality (e.g., accuracy, reliability, usefulness)
- E: task efficiency (e.g., speed, resource utilization)
- T: task duration (e.g., time spent on task)

Time-based task value formula:

- TV = P x (Q + E) / T
- TV: time-based task value
- P: task performance (e.g., meeting or exceeding expectations)
- Q: task quality (e.g., as above)
- E: task efficiency (e.g., as above)
- T: task duration (e.g., as above)

Time-based task meritocracy formula:

- TM = (W x TV) / S
- TM: time-based task meritocracy
- W: individual's weighting factor (e.g., based on experience, seniority, expertise)
- TV: task value (e.g., as above)
- S: overall task supply (e.g., total number of tasks available)

Meritocracy Formula()

Weighted Productivity Score:

1. This formula takes into account the productivity and efficiency of an individual in completing time-based tasks. The score is weighted by the quality of their work.

Weighted Productivity Score = (Productivity Score x Quality Score) / 100

Where,

Productivity Score = (Total Time-Based Currency Earned / Total Time Spent) x 100

Quality Score = (Total Quality Rating / Total Completed Tasks) x 100

Time-Based Currency Average:

This formula calculates the average time-based currency earned by an individual per time unit. It takes into account the variability in earning rates due to differences in productivity and efficiency.

Time-Based Currency Average = Total Time-Based Currency Earned / Total Time Spent

Where,

Total Time-Based Currency Earned = Sum of time-based currency earned for all completed tasks

Total Time Spent = Sum of time spent on all completed tasks

Meritocracy Weighted Currency Value:

This formula calculates the meritocracy weighted value of the time-based currency earned by an individual. It takes into account their productivity, efficiency, and quality of work.

Meritocracy Weighted Currency Value = Time-Based Currency Average x Weighted Productivity Score

Where,

Time-Based Currency Average = Calculated using the formula above

Weighted Productivity Score = Calculated using the formula in point 1

Perceive Value Ratio Formula

Perceived Value Ratio = (Total Market Value of Time-based Currency) / (Total Market Value of Traditional Currency)

Where:

- Total Market Value of Time-based Currency is the sum of the value of all time-based currency units in circulation at their current market price.
- Total Market Value of Traditional Currency is the sum of the value of all traditional currency units in circulation at their current market price.

This ratio can be influenced by various market factors, including supply and demand, perceived value, and inflation/deflation rates. A high perceived value ratio indicates that the market perceives time-based currency to be more valuable than traditional currency, while a low ratio indicates the opposite.

Parasitic Breaking Point Formula

BP = (T/TD) * (1 + r) * (1 + i) * (1 + d)

Where:

- BP = Breaking Point of the traditional economic system
- T = Total value of the Time-based Economy
- TD = Total value of the Traditional Economy
- r = Rate of growth of the Time-based Economy
- i = Rate of inflation of the Traditional Economy
- d = Rate of decline of the Traditional Economy

Essentially, this formula is calculating the point at which the total value of the Time-based Economy (T) surpasses the total value of the Traditional Economy (TD), taking into account the rates of growth for the Time-based Economy (r), inflation for the Traditional Economy (i), and decline for the Traditional Economy (d). Once the Breaking Point (BP) is reached, it suggests that the decentralized autonomous economies have effectively broken the traditional economic system to a point that it can no longer effectively function.

PLEASE NOTE THAT: This formula is highly theoretical and dependent on various assumptions, but it provides a potential way to quantify the impact of the parasitism of the decentralized autonomous economies on the traditional economic system.

Parasitism Formulae

- Parasitic Index (PI) of the Decentralized Autonomous Economy (DAE): This formula calculates the ratio of value extracted from the traditional economy by the DAE compared to the value transferred to the traditional economy by the DAE. PI = (Value Extracted from Traditional Economy by DAE / Value Transferred to Traditional Economy by DAE)
- Traditional Economy Value Reduction Index (TEVRI): This formula calculates the percentage of value lost by the traditional economy due to the presence of the DAE. TEVRI = (Value Lost by Traditional Economy due to DAE / Total Value of Traditional Economy)
- Decentralized Autonomous Economy Value Growth Index (DAEVGI): This formula calculates the percentage of value gained by the DAE due to the presence of the traditional economy. DAEVGI = (Value Gained by DAE due to Traditional Economy / Total Value of DAE)

- Economic Dependency Ratio (EDR): This formula calculates the ratio of the DAE's dependency on the traditional economy compared to the traditional economy's dependency on the DAE. EDR = (Value Transferred to DAE from Traditional Economy / Value Transferred to Traditional Economy from DAE)
- Economic Equilibrium Index (EEI): This formula calculates the point at which the DAE becomes self-sustaining and no longer requires value transfers from the traditional economy. EEI = (Value Transferred to DAE from Traditional Economy / DAE's Self-Generated Value)
- Economic Leakage Index (ELI): This formula calculates the percentage of value lost by the traditional economy due to inefficiencies caused by the presence of the DAE. ELI = (Value Lost by Traditional Economy due to DAE Inefficiencies / Total Value of Traditional Economy)
- Economic Displacement Index (EDI): This formula calculates the percentage of traditional economy jobs that have been displaced by the DAE. EDI = (Number of Jobs Displaced by DAE / Total Number of Jobs in Traditional Economy)
- Formula for calculating the rate of extraction of value from the traditional economy into the time-based economy: This formula could take into account factors such as the number of participants in the time-based economy, the types of goods and services produced within the time-based economy, and the efficiency of the extraction process.
- Formula for calculating the rate of transfer of value from the time-based economy into the IRL economy: This formula could take into account factors such as the demand for time-based goods and services within the IRL economy, the perceived value ratio between time-based and traditional currency, and the availability of physical capital and equipment within the IRL economy.
- Formula for calculating the rate of transfer of physical capital and equipment from the traditional economy into the IRL economy: This formula could take into account factors such as the demand for physical capital and equipment within the IRL economy, the perceived value ratio between time-based and traditional currency, and the availability of such resources within the traditional economy.
- Formula for calculating the rate of displacement of jobs from the traditional economy to the time-based and IRL economies: This formula could take into account factors such as the number of participants in each economy, the efficiency of the automation and AI systems within the time-based and IRL economies, and the rate of adoption of these technologies within the traditional economy.
- Formula for calculating the rate of adoption of time-based currency within the traditional economy: This formula could take into account factors such as the perceived value ratio between time-based and traditional currency, the availability of time-based goods and services within the traditional economy, and the level of trust and familiarity with the time-based currency system.
- Formula for calculating the rate of growth and expansion of the time-based and IRL economies: This formula could take into account factors such as the number of participants in each economy, the efficiency and productivity of the time-based and IRL economies, the rate of adoption of new technologies and innovations, and the availability of physical capital and equipment within the economies.

[for more information on Economic Parasitism Formulae, please reference my paper() +/or work on Economic Parasitism]

Time Series Analysis Formula()

Time-based currency supply formula: TCS_t = TCS_t-1 + TPR_t - TBR_t

Where:

- TCS_t = time-based currency supply at time t
- TPR_t = time-based currency production rate at time t (based on the completion of time-wrapped tasks and actions)
- TBR_t = time-based currency burn rate at time t (based on the usage or spending of time-based currency)

This formula calculates the change in the time-based currency supply over time, taking into account the production and burning of currency.

1. Time-based currency exchange rate formula: TB_ER_t = (TDV_t * TDQ_t) / (TQ_t * TV_t)

Where:

- TB_ER_t = time-based currency exchange rate at time t
- TDV_t = total perceived value of time-based currency at time t
- TDQ_t = total quantity of time-based currency at time t
- TQ_t = total quantity of traditional currency at time t
- TV_t = total value of traditional currency at time t

This formula calculates the exchange rate between time-based currency and traditional currency, taking into account the perceived value and quantity of time-based currency and the quantity and value of traditional currency.

Time-based economy efficiency formula: TEE_t = (TP_t + DP_t + CP_t) / TLT_t

Where:

- TEE_t = time-based economy efficiency at time t
- TP_t = total production time at time t
- DP_t = total distribution time at time t
- CP_t = total consumption time at time t
- TLT_t = total latency time at time t (sum of all time delays in the economic system)

This formula calculates the efficiency of the time-based economy by dividing the total time spent on production, distribution, and consumption by the total latency time, indicating how effectively the system is fulfilling the needs of its participants

Time-based currency meritocracy formula: TCM_t = (1 - (1 / (TRP_t + 1))) * TP_t

Where:

- TCM_t = time-based currency meritocracy score at time t
- TRP_t = time-based currency perceived value ratio at time t
- TP_t = total production time at time t

This formula calculates the meritocracy score of an individual's time-based currency earnings by multiplying their total production time by a factor based on the perceived value ratio of time-based currency to traditional currency.

**********burn rate of time that correlates to consumption in a meritocratic time based economy**

Burn Rate = (Total Value of Goods and Services Consumed) / (Total Time-Based Currency in Circulation)

where Total Value of Goods and Services Consumed is the value of all goods and services consumed within the time-based economy during a given period of time, and Total Time-Based Currency in Circulation is the total amount of time-based currency currently in circulation at the end of that period.

In a meritocratic time-based economy, the value of goods and services consumed would be weighted according to the merit of the individual who produced them. Therefore, the Burn Rate of time would also need to take into account the meritocratic implementation of time-based currency. This could be achieved by incorporating a weighted average of the perceived value ratio of each individual's time-based currency, as determined by the market forces within the economy.

**********equation for the mint rate in a meritocratic time-based economy**

Mint Rate = (Total Hours Worked per Week * Hourly Wage in Traditional Currency) / (Perceived Value Ratio of Time-based to Traditional Currency)

This equation takes into account the total number of hours worked by all participants in the time-based economy per week, multiplied by the hourly wage rate in traditional currency that each participant could potentially earn if they were to work in the traditional economy. The resulting value is then divided by the perceived value ratio between time-based and traditional currency, in order to determine the mint rate of time-based currency.

The mint rate represents the rate at which new time-based currency is created and added to the overall money supply, based on the perceived value of time-based currency relative to traditional currency. As the perceived value ratio changes over time, the mint rate may also fluctuate in response to changes in the market forces.

Other implementable formulae:

Mine Rate, Mint Rate, Burn Rate, Meritocratic Rate, Price Stability Rate, Quality Index Rate, Velocity of Money Rate, Perceived Value Ratio Rate, & More!

The economic formulas and equations for the time-based economy are profound in several ways. First, they reflect a fundamentally different approach to economics than the traditional models, which are based on the idea of infinite growth and the perpetually increasing money supply. The time-based economy's formulas are based on a finite and strictly meritocratic system, where the money supply can only be minted and burned through the contribution and consumption of individuals' time. Second, the time-based economy's formulas reflect the importance of latency optimization and efficiency in the production, distribution, and consumption of goods and services. The time-based currency's formulas for velocity of money, burn rate, and mint rate take into account the speed and effectiveness of economic transactions within the system, which is essential for maximizing the economy's output and growth. Finally, the time-based economy's formulas reflect a decentralized and autonomous system that prioritizes the needs and contributions of individuals over the interests of centralized institutions and corporations. This results in a more equitable distribution of resources and opportunities, as well as a more sustainable and resilient economy.

Latency Efficient Market Hypothesis

The Latency Efficient Market Hypothesis states that in a decentralized autonomous economy, the optimal level of latency is achieved when the supply and demand of goods and services are in equilibrium, and the cost of fulfilling a need is minimized. This can be represented mathematically as:

$$LEMH = E(C) / E(T)$$

Where LEMH represents the Latency Efficient Market Hypothesis, E(C) represents the expected cost of fulfilling a need, and E(T) represents the expected time it takes to fulfill the need.

This formula suggests that the Latency Efficient Market Hypothesis is achieved when the ratio of expected cost to expected time is minimized. In other words, the market is most efficient when the cost of fulfilling a need is low relative to the time it takes to fulfill that need.

To further optimize this formula, additional variables could be added such as the quality of the product or service, the perceived value of time-based currency, and the availability of resources within the market.

Latency-Oriented Economic Planning Model

The Latency-Oriented Economic Planning Model can be expressed mathematically using the following equation:

$$L = \sum (C * T * D)$$

where L represents the total latency of the economic system, C represents the number of economic participants, T represents the average time required to complete a time-wrapped task or action, and D represents the average distance required to travel to complete a time-wrapped task or action.

This equation essentially calculates the total latency of the economic system by summing up the product of the number of economic participants, the average time required to complete a task, and the average distance required to travel to complete a task for each economic participant. This model is designed to optimize the economic system's efficiency by minimizing the total latency, which can be achieved by reducing the average time required to complete a task and the average distance required to travel to complete a task for each economic participant.

MacroLatent Formula()

L = (E + C + P + D + S) / N

where L represents the overall latency of the economic system, E represents the latency of extraction and conversion of resources to materials, C represents the latency of converting materials into products, P represents the latency of production, D represents the latency of distribution, S represents the latency of consumption, and N represents the total number of economic participants.

Each variable can be calculated using various methods such as time-study analysis, production process analysis, or data analysis of consumer behavior. By understanding the overall latency of the economic system, participants can optimize their actions and improve the efficiency of the system as a whole.

Latency of resource extraction and conversion:

Latency of resource extraction and conversion = Time taken to extract and convert resources into usable materials

Latency of material conversion and production:

Latency of material conversion and production = Time taken to convert materials into finished products

Latency of distribution:

Latency of distribution = Time taken to transport finished products to their destinations

Latency of consumption:

Latency of consumption = Time taken for individuals or organizations to consume finished products

Overall economic latency:

Overall economic latency = Latency of resource extraction and conversion + Latency of material conversion and production + Latency of distribution + Latency of consumption

Latency efficiency ratio:

Latency efficiency ratio = Total value produced / Overall economic latency

Latency-adjusted gross domestic product (LAGDP):

LAGDP = GDP / Overall economic latency

Latency-adjusted productivity:

Latency-adjusted productivity = Total value produced / Time worked by economic participants

Latency-adjusted inflation rate:

Latency-adjusted inflation rate = Change in price level / Change in overall economic latency

<u>Latency-adjusted interest rate:</u>

Latency-adjusted interest rate = Nominal interest rate - Expected change in price level / Change in overall economic latency

Other formula() such as the Latent Coefficient Formula, Total Economic Latent Time Formula & more can be formulized. Please note that this list is by no means exhaustive and is virtually limitless in terms of its economic implications, applications, integrations & more.

Total Latent Economic Time Formula

Total Latency Time of an Economy = (∑Latency Coefficients of all Economic Activities x Time Taken for Each Activity) + (Time Taken for Non-Tangible Goods)

Where:

- ∑Latency Coefficients of all Economic Activities = sum of the latency coefficients of all economic activities within the economy
- Time Taken for Each Activity = the time taken to complete each economic activity, including production, distribution, and consumption
- Time Taken for Non-Tangible Goods = the time taken to produce and consume non-tangible goods such as services and intellectual property

The formula takes into account the total latency time of an economy by calculating the sum of the latency coefficients of all economic activities within the economy and multiplying them by the time taken for each activity. The resulting value is then added to the time taken for non-tangible goods to determine the total latency time of the economy. This formula can be used to evaluate the efficiency of an economy in terms of its latency and to identify areas where improvements can be made.

Let's say we want to apply this formula to a specific real-world example, such as the production and consumption of automobiles in a certain country:

Assume the following values:

- Latency coefficient of car production = 0.8
- Latency coefficient of car distribution = 0.6
- Latency coefficient of car consumption = 0.4
- Time taken for car production = 2 months
- Time taken for car distribution = 1 month
- Time taken for car consumption = 1 week
- Time taken for non-tangible goods = 2 days

Using the formula, we can calculate the total latency time of the automobile industry in this country:

Total Latency Time of Automobile Industry = (0.8 x 2 months) + (0.6 x 1 month) + (0.4 x 1 week) + 2 days

Total Latency Time of Automobile Industry = 1.6 months + 0.6 months + 0.0286 months + 0.0028 months

Total Latency Time of Automobile Industry = 2.2314 months

So the total latency time of the automobile industry in this country is approximately 2.23 months. This value can be used to evaluate the efficiency of the automobile industry in terms of its latency, and to identify areas where improvements can be made.

Latent Elasticity Formula

Formula for calculating the Latency Elasticity of an Economy: This formula could take into account the responsiveness of the economy to changes in latency, such as changes in production efficiency or transportation systems. It could also factor in the impact of technological advancements on the latency of the economy.

Latency Elasticity of an Economy = (% Change in Quantity of goods and services demanded / % Change in Latency) * (Average Latency / Average Quantity of goods and services demanded)

Where:

- % Change in Quantity of goods and services demanded = (New Quantity Demanded - Old Quantity Demanded) / Old Quantity Demanded
- % Change in Latency = (New Latency - Old Latency) / Old Latency
- Average Latency = (Sum of Latencies for all goods and services) / (Total number of goods and services)
- Average Quantity of goods and services demanded = (Sum of Quantities for all goods and services) / (Total number of goods and services)

Let's consider a hypothetical example where we want to calculate the Latency Elasticity of an economy that produces and distributes electronic products. We have the following values:

- Old Quantity Demanded: 1000 units
- New Quantity Demanded: 1200 units
- Old Latency: 10 hours
- New Latency: 8 hours
- Total number of goods and services: 3
- Latencies for each good or service: 2 hours, 8 hours, and 10 hours
- Quantities for each good or service: 400 units, 600 units, and 200 units

First, let's calculate the % Change in Quantity of goods and services demanded:

% Change in Quantity of goods and services demanded = (1200 - 1000) / 1000 = 0.2 = 20%

Next, let's calculate the % Change in Latency:

% Change in Latency = (8 - 10) / 10 = -0.2 = -20%

Now, let's calculate the Average Latency:

Average Latency = (2 + 8 + 10) / 3 = 6.67 hours

And the Average Quantity of goods and services demanded:

Average Quantity of goods and services demanded = (400 + 600 + 200) / 3 = 400 units

Finally, we can calculate the Latency Elasticity of the economy:

Latency Elasticity of an Economy = (20% / -20%) * (6.67 hours / 400 units) = -1.67

In this example, the negative value of the Latency Elasticity indicates that an increase in demand for electronic products has led to a decrease in latency. This means that the economy is becoming more efficient in terms of latency, and for each 1% increase in demand, there is a 1.67% decrease in latency.

Latent Efficiency Index Formula

Formula for calculating the Latency Efficiency Index: This formula could take into account the overall efficiency of the economy in terms of latency. It could also factor in the impact of government policies, regulations, and other external factors on the latency of the economy.

Latency Efficiency Index = (Total Latency Value-Added / Total Latency Time) x (1 - Latency Inefficiency Factor)

Where:

Total Latency Value-Added = the total value added to the economy through the reduction of latency in production and distribution processes, as well as the creation of new technologies and products that reduce latency

Total Latency Time = the total time taken for all economic activities within the economy, including production, distribution, and consumption

Latency Inefficiency Factor = a factor that accounts for any inefficiencies in the latency reduction process, including government policies, regulations, and external factors

This formula calculates the Latency Efficiency Index, which measures the overall efficiency of an economy in terms of latency. It takes into account the value added through the reduction of latency in production and distribution processes, as well as the creation of new technologies and products that reduce latency. The formula also factors in any inefficiencies in the latency reduction process, including government policies, regulations, and external factors that may impact the overall efficiency of the economy. The Latency Efficiency Index can be used to assess the effectiveness of policies and strategies aimed at improving the efficiency of an economy in terms of latency.

As an example, let's say that the total latency value-added for an economy is $10 billion and the total latency time for all economic activities within the economy is 100 million hours. The Latency Inefficiency Factor is 0.2, which accounts for inefficiencies in the latency reduction process due to government policies, regulations, and other external factors.

Using these values, the Latency Efficiency Index can be calculated as follows:

Latency Efficiency Index = ($10 billion / 100 million hours) x (1 - 0.2)

Latency Efficiency Index = $100 per hour x 0.8

Latency Efficiency Index = $80 per hour

This means that for every hour spent on economic activities within the economy, $80 worth of value is added through the reduction of latency in production and distribution processes, as well as the creation of new technologies and products that reduce latency. The Latency Efficiency Index can be used to compare the efficiency of different economies in terms of reducing latency and increasing value.

Latent Value-Added Formula

Formula for calculating the Latency Value-Added of an Economy: This formula could take into account the total value added to the economy through the reduction of latency in production and distribution processes. It could also factor in the value added through the creation of new technologies and products that reduce latency.

Latency Value-Added of an Economy = ∑(Value-Added from Reduction in Latency + Value-Added from New Technologies and Products)

Where:

∑ = the sum of all economic activities within the economy

Value-Added from Reduction in Latency = the additional value added to an economic activity through the reduction in latency time

Value-Added from New Technologies and Products = the additional value added to the economy through the creation and implementation of new technologies and products that reduce latency

This formula calculates the total value added to an economy through the reduction of latency in production and distribution processes, as well as the value added through the creation of new technologies and products that further reduce latency. It takes into account all economic activities within the economy and sums up the value added from both sources. This formula can be used to assess the overall efficiency of an economy in terms of reducing latency and increasing value.

For example, let's say an economy produces and distributes a product with a total value of $10,000. Through the reduction of latency time in the production process, $2,000 in additional value is added.

Through the creation and implementation of a new technology that further reduces latency, an additional $1,000 in value is added. Using the formula, we can calculate the Latency Value-Added of the economy as:

Latency Value-Added of an Economy = $2,000 + $1,000 = $3,000

This means that the reduction in latency and implementation of new technologies has added $3,000 in value to the economy, making it more efficient and productive.

Relative Value of HR Formula

Relative Value of Human Resources = (Total Value of Human Resources / Total Value of Artificial Resources) x (1 - Perception Factor)

Where:

Total Value of Human Resources = the total value added to the economy through the use of human resources

Total Value of Artificial Resources = the total value added to the economy through the use of artificial resources

Perception Factor = a factor that accounts for any perceived bias against human resources compared to artificial resources based on market forces

- Formula for calculating the Relative Value of Artificial Resources: This formula could take into account the efficiency, productivity, and cost-effectiveness of artificial resources compared to human resources, as well as the demand for artificial resources within the economy. It could also factor in the perceived value of artificial resources compared to human resources based on market forces.

Relative Value of AR Formula

Relative Value of Artificial Resources = (Total Value of Artificial Resources / Total Value of Human Resources) x (1 + Perception Factor)

Where:

Total Value of Artificial Resources = the total value added to the economy through the use of artificial resources

Total Value of Human Resources = the total value added to the economy through the use of human resources

Perception Factor = a factor that accounts for any perceived bias towards artificial resources compared to human resources based on market forces

Optimal Mix of Hybrid Resources Formula

- Formula for calculating the Optimal Mix of Human and Artificial Resources: This formula could take into account the efficiency, productivity, and cost-effectiveness of human and artificial resources, as well as the demand for each within the economy. It could also factor in the perceived value of each based on market forces.

Optimal Mix of Human and Artificial Resources = (Total Value of Human Resources x Efficiency Ratio + Total Value of Artificial Resources x Productivity Ratio) / (Total Value of Human Resources + Total Value of Artificial Resources)

Where:

Total Value of Human Resources = the total value added to the economy through the use of human resources

Total Value of Artificial Resources = the total value added to the economy through the use of artificial resources

Efficiency Ratio = a factor that accounts for the efficiency of human resources compared to artificial resources

Productivity Ratio = a factor that accounts for the productivity of artificial resources compared to human resources

AR Impact on Employment Formula

Formula for calculating the Impact of Artificial Resources on Employment: This formula could take into account the displacement of human labor by artificial resources, as well as the potential for new job creation through the development and implementation of artificial resources.

Impact of Artificial Resources on Employment = (Total Jobs Lost to Artificial Resources - Total Jobs Created by Artificial Resources) / Total Labor Force

Where:

Total Jobs Lost to Artificial Resources = the total number of jobs that are displaced by the implementation of artificial resources

Total Jobs Created by Artificial Resources = the total number of jobs created through the development and implementation of artificial resources

Total Labor Force = the total number of people employed within the economy

Economic Value of Hybrid Resources Formula

Formula for calculating the Total Economic Value of Human and Artificial Resources in a Decentralized System:

TEV = (VH * RH) + (VA * RA)

Where:

TEV = Total Economic Value of Human and Artificial Resources

VH = Value of a Single Human Resource

RH = Number of Human Resources in the Economy

VA = Value of a Single Artificial Resource

RA = Number of Artificial Resources in the Economy

This formula calculates the total economic value of both human and artificial resources in a decentralized economic system, by multiplying the value of a single resource by the number of resources and then adding them together. It demonstrates that an increase in artificial resources does not necessarily displace human resources, but rather amplifies their value.

Decentralized Productivity Index Formula

Formula for calculating the Productivity Index in a Decentralized System:

PI = (TPH * VH) + (TPA * VA)

Where:

PI = Productivity Index

TPH = Total Productivity of Human Resources

VH = Value of a Single Human Resource

TPA = Total Productivity of Artificial Resources

VA = Value of a Single Artificial Resource

This formula calculates the productivity index of an economy by taking into account the total productivity of both human and artificial resources, multiplied by their respective values. It shows that an increase in artificial resources can amplify the productivity of human resources and lead to overall economic growth.

Centralized Labor Displacement Rate

Formula for calculating the Labor Displacement Rate in a Centralized System:

LDR = (1 - (HL / TL)) * 100%

Where:

LDR = Labor Displacement Rate

HL = Human Labor in the Economy

TL = Total Labor in the Economy (Human + Artificial)

This formula calculates the labor displacement rate in a centralized system by taking the difference between human labor and total labor and expressing it as a percentage of total labor. It shows that an increase in artificial resources in a centralized system can lead to the displacement of human labor.

VERSUS

Decentralized Labor Amplification Rate Formula

LAR = (1 + (RA / RH)) * 100%

Where:

LAR = Labor Amplification Rate

RA = Number of Artificial Resources in the Economy

RH = Number of Human Resources in the Economy

This formula calculates the labor amplification rate in a decentralized system by taking the ratio of artificial resources to human resources and expressing it as a percentage increase in labor. It shows that an increase in artificial resources in a decentralized system can lead to an amplification of human labor rather than its displacement.

These formulas/equations demonstrate how the decentralized and mutually distributive nature of artificial resources in a time-based economy can lead to an amplification of human resources rather than their displacement. In contrast, a traditional centralized system where artificial resources are owned and controlled by elite corporations may lead to the displacement/replacement of human resources and labor via artificial resources and labor.

Latent Resource Extraction

Latency of Resource Extraction = Time Taken for Extraction + Time Taken for Transportation + Time Taken for Processing

Where:

Time Taken for Extraction = the time taken to extract the natural resource from its source

Time Taken for Transportation = the time taken to transport the resource from the extraction site to the processing facility or market

Time Taken for Processing = the time taken to process the resource into a usable form

Latent Resource Availability

Latency of Natural Resource Availability = Time Between Natural Resource Renewal / Replacement

Where:

Time Between Natural Resource Renewal / Replacement = the time it takes for a natural resource to replenish itself, if it is a renewable resource, or the time it takes for it to be replaced, if it is a non-renewable resource

Latency of Natural Resource Consumption = Time Taken for Consumption + Time Taken for Disposal or Recycling

Where:

Time Taken for Consumption = the time taken for the natural resource to be used or consumed

Time Taken for Disposal or Recycling = the time taken to dispose of the waste generated from the consumption of the resource or to recycle the resource for future use

These formulas can be used to evaluate the overall latency of natural resources and to identify areas where improvements can be made to reduce latency and increase efficiency.

Latent Agriculture Formula

Latency of Agriculture = (Time for Growth + Time for Harvesting + Time for Processing) x Quantity of Crop

Where:

Time for Growth = the time it takes for the crop to grow from planting to maturity

Time for Harvesting = the time it takes to harvest the mature crop

Time for Processing = the time it takes to process the harvested crop into a usable form, such as milling grain into flour or canning vegetables

Quantity of Crop = the total amount of the crop produced in a given time period

This formula takes into account the time it takes for agriculture to produce a crop from planting to harvesting, as well as the time it takes to process the crop into a usable form. The formula can be used to evaluate the efficiency of agriculture in terms of its latency and to identify areas where improvements can be made.

Time-Wrapped Basket of Commodities/Currencies Formula:

This formula calculates the value of a basket of commodities or currencies that are time-wrapped, meaning that their value is determined by the amount of time it takes to produce or mine them. It takes into account the weight of each commodity/currency in the basket and the time it takes to produce/mine them.

$V = (w1 * p1 * t1) + (w2 * p2 * t2) + ... + (wn * pn * tn)$

Where:

V = value of the time-wrapped basket of commodities/currencies

w = weight of the commodity/currency in the basket

p = price of the commodity/currency

t = time it takes to produce/mine the commodity/currency

The formula sums up the products of the weight, price, and time for each commodity/currency in the basket. The resulting value represents the total value of the time-wrapped basket of commodities/currencies.

Time-Wrapped Basket of Resources

$TWB = (w \times W) + (p \times P) + (a \times A)$

Where:

TWB = Time-wrapped basket of commodities/currencies

w = Weighting factor for water

W = Price of water

p = Weighting factor for precious metals

P = Price of precious metals

a = Weighting factor for artificial resources/labour

A = Price of artificial resources/labour

This formula calculates the value of a time-wrapped basket that includes water, precious metals, and artificial resources/labour. The weighting factors determine the proportion of each commodity/currency in the basket, and the prices are multiplied by their corresponding weighting factors and added together to determine the overall value of the basket. This formula can be used to track the performance of a diversified portfolio of commodities/currencies over time.

Time-Wrapped Basket of Natural Resources, Human Resources & Artificial Resources

TWB = (α * NR) + (β * HR) + (γ * AR)

Where:

TWB = Time-wrapped basket

NR = Value of natural resources

HR = Value of human resources

AR = Value of artificial resources

α, β, and γ = Weights representing the relative importance of each resource type

The weights α, β, and γ could be determined based on market demand and availability of each resource type. The value of each resource type could be determined based on factors such as supply and demand, quality, and efficiency.

For example, if the weights were determined to be α = 0.4, β = 0.3, and γ = 0.3, the formula would calculate the time-wrapped basket as 40% natural resources, 30% human resources, and 30% artificial resources. If the values of each resource were NR = $100, HR = $50, and AR = $75, the time-wrapped basket would be:

TWB = (0.4 * 100) + (0.3 * 50) + (0.3 * 75) = 40 + 15 + 22.5 = $77.5

This formula can be used to create a time-based currency that is backed by a basket of resources, providing stability and value to the currency.

Time-Wrapped Basket of Currencies for BRICS x Camelot x Pangea

A formula for a time-wrapped basket of currencies for the countries of Camelot, Pangea, ____, ____, ____, ____, and ____ can be expressed as:

TWBC = w1*C1 + w2*C2 + w3*C3 + w4*C4 + w5*C5 + w6*C6 + w7*C7

Where:

- TWBC represents the time-wrapped basket of currencies
- C1, C2, C3, C4, C5, C6, and C7 represent the currencies of Camelot, Pangea, ____, ____, ____, ____, and ____, respectively
- w1, w2, w3, w4, w5, w6, and w7 represent the weights assigned to each currency in the basket, respectively

To calculate the TWBC, the weights assigned to each currency must be determined. This can be done using various methods, such as market capitalization, gross domestic product, or trade volume. Once the weights are determined, they can be multiplied by the value of each currency in the basket to arrive at the overall value of the time-wrapped basket of currencies.

Time-based currencies, with their inherent focus on the measurement and value of time, can be considered the "currency of currencies" because they provide a common denominator for all economic activities. Unlike traditional currencies, which can vary in value based on factors such as supply and demand or government policies, time-based currencies have a consistent value that is directly tied to the time and effort required to complete a task or activity.

By creating time-wrapped baskets of currencies and commodities, as we did earlier, we can see how time-based currencies provide a common denominator for all economic activities and can serve as a unifying force for global economic exchange. This is particularly relevant in a world where traditional currencies are subject to volatility and uncertainty, and where international trade can be hampered by disparities in currency values.

Moreover, the use of time-based currencies can foster a more equitable and meritocratic economic system. By valuing time and effort over monetary wealth or inherited privilege, time-based currencies can level the playing field for individuals and communities, allowing them to compete based on their skills and abilities rather than their socioeconomic status.

Time-based currency is a unique and innovative system of currency that can be used to represent any possible commodity. The concept of time-based currency is based on the idea that time is a valuable and limited resource, and can therefore be used as a form of currency.

The time-based currency system works by assigning a certain amount of time to each unit of a commodity. This time can then be used as a form of currency to trade for other goods or services. For example, if one hour of work is assigned to one unit of a commodity, then two units of the commodity can be traded for two hours of work.

This concept can be applied to any possible commodity. For example, if we take the commodity of food, we can assign a certain amount of time to each unit of food. This time could represent the amount of time it takes to grow, harvest, and transport the food. This time-based currency can then be used to trade for other goods or services.

Similarly, the time-based currency system can be applied to any possible commodity, such as clothing, housing, or transportation. Each unit of the commodity can be assigned a certain amount of time, based on the time it takes to produce, distribute, and consume the commodity.

Weighted Productivity Score Formula

This formula takes into account the productivity and efficiency of an individual in completing time-based tasks. The score is weighted by the quality of their work.

Weighted Productivity Score = (Productivity Score x Quality Score) / 100

Where,

Productivity Score = (Total Time-Based Currency Earned / Total Time Spent) x 100

Quality Score = (Total Quality Rating / Total Completed Tasks) x 100

Time-Based Currency Average Formula

1. This formula calculates the average time-based currency earned by an individual per time unit. It takes into account the variability in earning rates due to differences in productivity and efficiency.

Time-Based Currency Average = Total Time-Based Currency Earned / Total Time Spent

Where,

Total Time-Based Currency Earned = Sum of time-based currency earned for all completed tasks

Total Time Spent = Sum of time spent on all completed tasks

Meritocracy Weighted Currency Value:

1. This formula calculates the meritocracy weighted value of the time-based currency earned by an individual. It takes into account their productivity, efficiency, and quality of work.

Meritocracy Weighted Currency Value = Time-Based Currency Average x Weighted Productivity Score

Where,

Time-Based Currency Average = Calculated using the formula above

Weighted Productivity Score = Calculated using the formula in point 1

Automation Equity Ratio Formula

The Automation Equity Ratio can be calculated as:

(Automation Ownership Equity x Automation Control Equity) / (Automation Impact on Income Inequality x Automation Impact on Wealth Inequality)

Where:

Automation Ownership Equity: measures the degree of equity in the distribution of ownership of automation technologies across different economic actors within the meritocratic time-based economy.

Automation Control Equity: measures the degree of equity in the distribution of control over the use of automation technologies across different economic actors within the meritocratic time-based economy.

Automation Impact on Income Inequality: measures the impact of automation on income inequality, taking into account factors such as changes in wages and employment opportunities.

Automation Impact on Wealth Inequality: measures the impact of automation on wealth inequality, taking into account factors such as changes in asset ownership and distribution.

This formula provides a comprehensive assessment of the degree of equity in the distribution of automation within the meritocratic time-based economy, taking into account both ownership and control of automation technologies, as well as their impact on income and wealth inequality. The Automation Equity Ratio can be used to evaluate the effectiveness of policies and strategies aimed at promoting equity in the adoption and use of automation technologies.

Let's say we want to calculate the Automation Equity Ratio for the manufacturing sector in the United States. We have the following representative values:

- Automation Ownership Equity: 0.75
- Automation Control Equity: 0.60
- Automation Impact on Income Inequality: 0.20
- Automation Impact on Wealth Inequality: 0.35

Using the formula, we can calculate the Automation Equity Ratio as follows:

(0.75 x 0.60) / (0.20 x 0.35) = 6.43

This result suggests that there is a relatively high degree of equity in the distribution of automation within the manufacturing sector in the United States, with a ratio of over 6 indicating a relatively equitable distribution. However, it's important to note that this is just one example, and that the values used for the variables may vary depending on the specific context and industry being evaluated.

Automation Equity Formula (2)

Automation Equity Ratio = ((Automation Ownership / Total Ownership) x (Automation Control / Total Control) x (Automation Impact on Income and Wealth Inequality)) / (Total Number of Economic Agents)^2

Where:

Automation Ownership: the ownership of automation technologies and processes in the economy

Total Ownership: the total ownership of all assets in the economy

Automation Control: the degree of control over automation technologies and processes in the economy

Total Control: the total degree of control over all assets in the economy

Automation Impact on Income and Wealth Inequality: the impact of automation on income and wealth distribution in the economy

Total Number of Economic Agents: the total number of individuals and entities participating in the economy

This formula measures the degree of equity in the distribution of automation within the meritocratic time-based economy. It factors in the distribution of ownership and control over automation technologies, as well as the impact of automation on income and wealth inequality. The formula also takes into account the total number of economic agents in the economy. The Automation Equity Ratio can be used to assess the degree of equity in the distribution of automation technologies and processes in a given economy.

As an example, let's say that in a particular economy, Automation Ownership is 25%, Total Ownership is 100%, Automation Control is 20%, Total Control is 100%, Automation Impact on Income and Wealth Inequality is 30%, and Total Number of Economic Agents is 10,000.

Automation Equity Ratio = ((0.25 / 1) x (0.20 / 1) x 0.30) / (10,000)^2 = 1.5 x 10^-10

In this example, the Automation Equity Ratio is very low, indicating a lack of equity in the distribution of automation technologies and processes in the economy.

The first formula, Automation Equity Ratio, measures the degree of equity in the distribution of automation within the meritocratic time-based economy by taking into account factors such as ownership, control, and impact on income and wealth inequality. It calculates the overall equity ratio by multiplying the ratios of automation ownership, control, and impact on income and wealth inequality, and then dividing it by the square of the total number of economic agents.

The second formula, on the other hand, measures the equity in the ownership and control of automation, as well as the impact of automation on income and wealth inequality, separately. It calculates the overall equity ratio by multiplying the ratios of automation ownership equity and control equity and dividing it by the product of the impact of automation on income and wealth inequality.

In essence, the first formula takes a more holistic approach by considering all three factors and the total number of economic agents, while the second formula focuses more specifically on ownership and control equity, and the impact on income and wealth inequality.

Time-based Task Complexity

TC = R x D x C

TC: time-based task complexity

R: task requirements (e.g., skills, knowledge, experience)

D: task difficulty (e.g., level of challenge, cognitive load)

C: task complexity (e.g., degree of interdependence, scope)

Let's say we have a project to develop a new software application. Using the time-based task complexity formula, we can calculate the task complexity as follows:

R = 8 (out of 10) - This project requires a high level of technical skills, knowledge, and experience in software development.

D = 6 (out of 10) - The project has moderate difficulty, with several complex features that need to be developed and tested.

C = 7 (out of 10) - The project has a moderate degree of interdependence between different features, and a medium-sized scope.

TC = R x D x C

TC = 8 x 6 x 7

TC = 336

Therefore, the time-based task complexity of this project is 336. This formula can be used to estimate the amount of time and resources required to complete the project, and to identify areas where additional support or resources may be needed to ensure successful completion.

Time-Based Task Productivity

TP = (Q x E) / T

TP: time-based task productivity

Q: task quality (e.g., accuracy, reliability, usefulness)

E: task efficiency (e.g., speed, resource utilization)

T: task duration (e.g., time spent on task)

Economic Efficiency

TEE_t = (TP_t + DP_t + CP_t) / TLT_t

TEE_t: time-based economy efficiency at time t

TP_t: total production time at time t

DP_t: total distribution time at time t

CP_t: total consumption time at time t

TLT_t: total latency time at time t (sum of all time delays in the economic system)

Time-Based Task Value

TV = P x (Q + E) / T

TV: time-based task value

P: task performance (e.g., meeting or exceeding expectations)

Q: task quality (e.g., as above)

E: task efficiency (e.g., as above)

T: task duration (e.g., as above)

Time-Based Task Meritocracy

TM = (W x TV) / S

TM: time-based task meritocracy

W: individual's weighting factor (e.g., based on experience, seniority, expertise)

TV: task value (e.g., as above)

S: overall task supply (e.g., total number of tasks available)

Time-Based Task Optimization

TO = (V + R) / (D + C)

TO: time-based task optimization

V: task value (e.g., importance, impact)

R: resource utilization (e.g., time, effort)

D: task duration (e.g., time spent on task)

C: task complexity (e.g., level of intricacy)

Time-Based Task Scheduling

TS = (PD + AD) / P

TS: time-based task scheduling

PD: planned duration of task

AD: actual duration of task

P: project duration

Time-Based Task Resilience

TR = (S - F) / T

TR: time-based task resilience

S: successful task completions

F: failed task attempts

T: total task attempts

Time-Based Task Risk Assessment

RA = (PR x SR) / LR

RA: risk assessment

PR: probability of risk occurrence

SR: severity of risk impact

LR: level of risk

Time-Based Task Allocation

TA = (TS x ER) / (1 - ER)

TA: time-based task allocation

TS: total task size

ER: efficiency ratio (e.g., percentage of time spent on productive work)

Time-Based Task Feedback Loop

TF = (I - O) / O

TF: time-based task feedback

I: incoming feedback or inputs

O: outgoing feedback or outputs

Time-Based Task Innovation

TI = (CC x EE) / CD

TI: time-based task innovation

CC: creativity capacity

EE: exploration and experimentation

CD: convergence and development

Time-Based Task Progress

TP = (C - S) / C

TP: time-based task progress

C: target completion

S: current status or completed portion

Time-Based Task Dependency

TD = (P + C) / (T - S)

TD: time-based task dependency

P: preceding task completion

C: concurrent task completion

T: total tasks

S: skipped or delayed tasks

Time-Based Task Repetition

TR = (CC x AC) / T

TR: time-based task repetition

CC: cycle count or recurring instances

AC: average completion time per cycle

T: total cycles or repetitions

Economic Demand-Supply Analysis

DSA = (D - S) / S

DSA: demand-supply analysis

D: demand for goods or services

S: supply of goods or services

Time-Based Task Collaboration

TC = (T1 + T2) / (T1 x T2)

TC: time-based task collaboration

T1: time spent by individual 1

T2: time spent by individual 2

Time-Based Task Equilibrium

TE = (I - O) / (I + O)

TE: time-based task equilibrium

I: incoming factors or inputs

O: outgoing factors or outputs

Economic Return on Time

ROT = (E - I) / T

ROT: return on time

E: earnings or value generated

I: invested time

T: total time spent

Time-Based Task Variability

TVR = (L - A) / L

TVR: time-based task variability

L: longest task completion time

A: average task completion time

Economic Opportunity Cost

EOC = (B - A) / A

EOC: economic opportunity cost

B: benefits of chosen alternative

A: benefits of next best alternative

Time-Based Task Adaptability

TA = (D + C) / (P + R)

TA: time-based task adaptability

D: time spent on planning and preparation

C: time spent on change and adjustment

P: time spent on performance or execution

R: time spent on review and reflection

Time-Based Task Cost Estimation

TCE = (M x R) / T

TCE: time-based task cost estimation

M: labor or resource cost per unit of time

R: total resource utilization

T: task duration or time spent

Time-Based Task Velocity

TV = W / T

TV: time-based task velocity

W: work completed or task output

1. T: task duration or time spent

Economic Time Value

ETV = (G - I) / I

ETV: economic time value

G: gains or benefits obtained

I: invested time or effort

Time-Based Task Uncertainty

TU = (H - L) / H

TU: time-based task uncertainty

H: highest estimated completion time

L: lowest estimated completion time

Time-Based Task Velocity

TV = W / T

TV: time-based task velocity

W: work completed or task output

T: task duration or time spent

Economic Elasticity of Time

EET = (ΔQ / Q) / (ΔT / T)

EET: economic elasticity of time

ΔQ: change in quantity or output

Q: initial quantity or output

ΔT: change in time

T: initial time

Time-Based Task Efficiency

TE = (P / C) x 100%

TE: time-based task efficiency

P: productive time or work completed

C: total time spent or calendar time

Economic Time-Based Decision Making

ETDM = (EB - EC) / C

ETDM: economic time-based decision making

EB: economic benefits of a decision

EC: economic costs of a decision

C: time duration or time frame

Time-Based Task Interruptions

TI = (I / T) x 100%

TI: time-based task interruptions

I: time spent on interruptions

T: total time spent on task

Economic Time Preference

ETP = (FU - CU) / CU

ETP: economic time preference

FU: future utility or benefit

CU: current utility or benefit

Time-Based Task Allocation Efficiency

TAE = (TAS - TW) / TAS

TAE: time-based task allocation efficiency

TAS: total allocated time for tasks

TW: wasted time or unproductive time

Economic Time-Value of Money

ETVM = (FV - PV) / PV

ETVM: economic time-value of money

FV: future value of money

PV: present value of money

Time-Based Task Velocity

TV = λW. (λT. (W / T))

In this transformed expression, the variables W and T are transformed into lambda functions. The lambda function λW represents the work completed or task output, and λT represents the task duration or time spent. The division operation (/) is represented as a function application.

To calculate the time-based task velocity using lambda calculus, you would apply the lambda functions to the corresponding values. For example, if you have a specific value for work completed (W) and task duration (T), you can apply the lambda functions as follows:

TV = (λW. (λT. (W / T))) W_value T_value

This would evaluate to the time-based task velocity based on the provided values of work completed and task duration.

Lambda calculus provides a formal system for expressing computation and functions. By transforming the original expression into lambda functions, we can manipulate and apply them to different values or perform further computations based on the rules of lambda calculus.

Latency Calculation Formula

Latency = Time_end - Time_start

This formula calculates the latency by subtracting the start time from the end time. Latency represents the time delay or duration between the initiation and completion of economic processes or activities.

Economic Scarcity Hypothesis Formula

Scarcity = f(Latency, Resource_availability, Demand)

This formula suggests that economic scarcity is influenced by factors such as latency, availability of resources, and the level of demand. The function f represents the relationship between these variables.

Latency-based Resource Allocation Formula

Resource_allocation = g(Latency, Resource_quantity, Resource_quality)

This formula proposes a mechanism for allocating resources based on latency, considering factors such as the quantity and quality of resources. The function g defines the relationship between these variables.

Latency-driven Production Efficiency Formula

Production_efficiency = h(Latency, Production_output, Resource_utilization)

This formula relates the latency of production processes to the efficiency of production. It considers variables such as production output and resource utilization to quantify the efficiency of economic activities. The function h captures the relationship between these variables.

Time-based Exchange Rate Formula

Exchange_rate = j(Latency_A, Latency_B, Currency_A, Currency_B)

This formula determines the exchange rate between two currencies (Currency_A and Currency_B) based on the latency associated with each currency. The function j defines the relationship between the latencies and exchange rates.

Latency-adjusted Price Formula

Adjusted_price = k(Original_price, Latency)

This formula adjusts the price of a product or service based on the latency associated with its production and consumption. The function k captures the relationship between the original price and latency.

Latency-driven Investment Decision Formula

Investment_decision = m(Latency, Risk_level, Return_on_investment)

This formula incorporates latency, risk level, and return on investment to guide investment decisions. The function m determines the investment decision based on the values of these variables.

Time-based Economic Model Formula

Economic_model = n(Latency, Economic_indicators)

This formula represents a comprehensive economic model that takes into account latency and various economic indicators. The function n defines the relationship between latency and these indicators.

Latency Optimization Algorithm Formula

Optimized_latency = p(Latency, Constraints)

This formula utilizes an optimization algorithm to determine the optimal latency within given constraints. The function p captures the relationship between latency and the constraints.

Time-based Market Equilibrium Formula

Market_equilibrium = q(Latency, Supply, Demand)

This formula describes the market equilibrium by considering the latency, supply, and demand in an economic system. The function q defines the relationship between these variables.

These formulas and concepts provide a basis for exploring the relationship between latency, time, and economic processes, allowing for a deeper understanding of the Theory of Latent Scarcity and Latent Abundance, as well as the role of time as an economic instrument.

Economic Scarcity Hypothesis

The Economic Scarcity Hypothesis postulates that economic scarcity is a result of the interplay between three key factors: latency, resource availability, and demand. This hypothesis asserts that the level of scarcity experienced in an economic system can be understood and analyzed by examining how these variables interact.

1. Latency: Latency refers to the time delay or duration between the initiation and completion of economic processes or activities. It encompasses various forms of time-related factors, including production time, distribution time, transaction time, and consumption time. Latency plays a significant role in determining the availability and accessibility of goods and services in the economy. Higher latency can contribute to a sense of scarcity as it may lead to delays in production, delivery, or consumption.
2. Resource Availability: Resource availability refers to the quantity and quality of resources that are essential for economic production. Resources can include natural resources, capital, labor, technology, and other inputs required for economic activities. The availability of resources directly influences the production capacity of an economy. When resources are limited or insufficient to meet the demand, scarcity can arise, leading to higher prices, competition, and prioritization of resource allocation.
3. Demand: Demand represents the desire or need for goods and services within an economy. It reflects the willingness and ability of individuals, businesses, or society as a whole to acquire and consume products or services. The level of demand for a particular resource or commodity is a

critical determinant of scarcity. If the demand exceeds the available supply, scarcity arises, and the price of the scarce goods or services tends to rise.

The function f in the Economic Scarcity Hypothesis represents the relationship or mapping between these variables. It captures the complex interactions and dependencies among latency, resource availability, and demand to quantify or describe the degree of scarcity experienced in an economic system. The specific form of the function f may vary depending on the context and theoretical framework used.

By analyzing the relationship between latency, resource availability, and demand, the Economic Scarcity Hypothesis provides insights into the causes and dynamics of scarcity in different economic settings. It highlights the importance of considering time-related factors, resource constraints, and market dynamics in understanding and addressing scarcity challenges. This hypothesis can inform economic analysis, policy-making, and resource allocation decisions, aiming to mitigate or manage the effects of scarcity within an economy.

Economic Scarcity Formula

Scarcity = f(Latency, Resource_availability, Demand, Hyperfactors)

where:

- Scarcity represents the level of economic scarcity experienced within a given system.
- Latency captures the time delay or duration between economic processes and activities.
- Resource_availability represents the quantity, quality, and accessibility of resources essential for economic production.
- Demand reflects the desire and ability of individuals, businesses, or society to acquire and consume goods and services.
- Hyperfactors encompass additional complexities, influences, or parameters that contribute to the understanding of scarcity in a hypercomplex economic context.

The function f denotes the relationship or mapping between these variables, taking into account their interdependencies, interactions, and the hyperdynamics of scarcity. The specific form of the function f may vary depending on the theoretical framework, modeling approach, or mathematical formalism used to analyze the hypercomplex nature of scarcity.

By considering latency, resource availability, demand, and hyperfactors within a unified mathematical expression, this framework provides a holistic perspective on the determinants and dynamics of economic scarcity. It enables the exploration of intricate relationships and the assessment of scarcity's multifaceted nature, contributing to a deeper understanding of scarcity phenomena and informing decision-making, resource allocation, and policy formulation within economic systems.

Economic Scarcity Lambda Formula

Scarcity = λL. (λR. (λD. (λH. (f L R D H))))

where:

- λL represents the lambda function for latency, capturing the time delay or duration between economic processes and activities.
- λR represents the lambda function for resource availability, encompassing the quantity, quality, and accessibility of resources essential for economic production.
- λD represents the lambda function for demand, reflecting the desire and ability of individuals, businesses, or society to acquire and consume goods and services.
- λH represents the lambda function for hyperfactors, which includes additional complexities, influences, or parameters contributing to the understanding of scarcity in a hypercomplex economic context.
- f represents the lambda function that maps the given lambda functions representing latency, resource availability, demand, and hyperfactors to quantify the level of economic scarcity experienced within the system.

By employing lambda calculus, this representation emphasizes the functional nature of the variables involved in the economic scarcity equation. It allows for the manipulation and application of these lambda functions to different values or further computations based on the principles and rules of lambda calculus, enabling analysis and reasoning within the framework of functional programming and formal computation.

The economic scarcity lambda formula can be further extended via the incorporation of (one or more) of the following:

1. λC: Introducing a lambda function λC to represent the cost factor, which encompasses the expenses associated with production, distribution, and consumption of goods and services. Cost plays a significant role in determining scarcity, as higher costs can limit accessibility and contribute to resource scarcity.
2. λE: Including a lambda function λE to account for external factors or exogenous variables that influence scarcity. These factors could include government policies, market regulations, technological advancements, environmental conditions, or socio-cultural factors. λE captures the impact of these external influences on the overall scarcity equation.
3. λP: Introducing a lambda function λP to represent productivity, efficiency, or performance metrics. λP reflects the ability of an economic system to utilize resources effectively and produce desired outcomes. Higher productivity and efficiency can mitigate scarcity by optimizing resource utilization and enhancing output levels.
4. λT: Including a lambda function λT to represent the concept of time, beyond latency. λT can encompass factors such as time-sensitive market dynamics, seasonality, economic cycles, or temporal variations in resource availability and demand. This temporal perspective provides a deeper understanding of how scarcity evolves over time.
5. λS: Incorporating a lambda function λS to represent supply-side factors that affect scarcity. λS captures elements such as production capacity, technological capabilities, labor availability, and supply chain efficiency. Supply-side considerations complement the demand-side factors captured by λD, providing a comprehensive view of scarcity dynamics.

Economic Scarcity Hypothesis:
Scarcity = f(Latency, Resource_availability, Demand)

This formula suggests that economic scarcity is influenced by factors such as latency, availability of resources, and the level of demand. The function f represents the relationship between these variables.

The Economic Scarcity Hypothesis postulates that economic scarcity is a result of the interplay between three key factors: latency, resource availability, and demand. This hypothesis asserts that the level of scarcity experienced in an economic system can be understood and analyzed by examining how these variables interact.

Latency: Latency refers to the time delay or duration between the initiation and completion of economic processes or activities. It encompasses various forms of time-related factors, including production time, distribution time, transaction time, and consumption time. Latency plays a significant role in determining the availability and accessibility of goods and services in the economy. Higher latency can contribute to a sense of scarcity as it may lead to delays in production, delivery, or consumption.

Resource Availability: Resource availability refers to the quantity and quality of resources that are essential for economic production. Resources can include natural resources, capital, labor, technology, and other inputs required for economic activities. The availability of resources directly influences the production capacity of an economy. When resources are limited or insufficient to meet the demand, scarcity can arise, leading to higher prices, competition, and prioritization of resource allocation.

Demand: Demand represents the desire or need for goods and services within an economy. It reflects the willingness and ability of individuals, businesses, or society as a whole to acquire and consume products or services. The level of demand for a particular resource or commodity is a critical determinant of scarcity. If the demand exceeds the available supply, scarcity arises, and the price of the scarce goods or services tends to rise.

The function f in the Economic Scarcity Hypothesis represents the relationship or mapping between these variables. It captures the complex interactions and dependencies among latency, resource availability, and demand to quantify or describe the degree of scarcity experienced in an economic system. The specific form of the function f may vary depending on the context and theoretical framework used.

By analyzing the relationship between latency, resource availability, and demand, the Economic Scarcity Hypothesis provides insights into the causes and dynamics of scarcity in different economic settings. It highlights the importance of considering time-related factors, resource constraints, and market dynamics in understanding and addressing scarcity challenges. This hypothesis can inform economic analysis, policy-making, and resource allocation decisions, aiming to mitigate or manage the effects of scarcity within an economy.

The hypercomplex version of the Economic Scarcity Hypothesis delves deeper into the intricate dynamics of scarcity in economic systems. It considers additional complexities and factors that contribute to the understanding of scarcity. Here is the transformed and hypercomplex version:

The Hypercomplex Economic Scarcity Hypothesis postulates that the concept of economic scarcity is an outcome of the hyperinterplay among a multitude of hyperfactors, including but not limited to latency, resource availability, and demand, alongside numerous other hyperparameters and hyperinfluences.

Hyperlatency: Hyperlatency extends beyond conventional time delays and incorporates a comprehensive array of temporal aspects, encompassing not only the duration of economic processes but also the hyperinteractions, hyperdependencies, and hypersequences within these processes. Hyperlatency accounts for hyperproduction time, hyperdistribution time, hypertransaction time, hyperconsumption time, hyperfeedback loops, hyperfeedback delays, and hypercascading effects of time-related factors. The intricacies of hyperlatency profoundly shape the perceptions and manifestations of scarcity within the economic realm.

Hyperresource Availability: Hyperresource availability extends the notion of resource availability by incorporating a hyperdimensional perspective. It encompasses not only the quantity and quality of tangible and intangible resources but also their hyperintertwined hypercharacteristics, hypercompatibilities, hyperutilization, hyperdepletion, hyperreplenishment rates, hyperexhaustion thresholds, hyperheterogeneity, and hyperinteractions among resources. Hyperresource availability is a key determinant of scarcity, as the multifaceted and hyperdynamic nature of resources influences their accessibility and sufficiency within economic systems.

Hyperdemand: Hyperdemand surpasses the traditional understanding of demand by accounting for an expansive range of hyperfactors that shape the desires, needs, and preferences of economic agents. Hyperdemand encompasses hyperindividual preferences, hypercollective preferences, hyperbehavioral economics, hyperpsychological factors, hypercultural influences, hyperperceived value, hyperexpectations, and hyperelasticities of demand. The hypercomplex nature of demand influences the formation and evolution of scarcity as the hypermismatch between supply and demand drives the emergence and intensification of scarcity conditions.

The hyperfunction f, representing the hyperrelationship between these hypervariables, captures the hyperinteractions, hyperfeedback loops, and hyperfeedback mechanisms that influence the degree and manifestations of hypercomplex scarcity in economic systems. This hyperfunction f incorporates hypermathematical frameworks, hypercomputational models, hyperadaptive algorithms, and hyperoptimization techniques to capture the hyperdynamics of scarcity within a hypercomplex economic context.

By embracing the hypercomplexity of the Economic Scarcity Hypothesis, we gain deeper insights into the multifaceted nature of scarcity and its hyperconsequences. The hyperanalysis of latency, hyperresource availability, hyperdemand, and their hyperinterplay advances our understanding of scarcity dynamics, enabling more informed decision-making, hyperresource allocation, and hyperpolicy formulation to mitigate, manage, or hyperoptimize the effects of scarcity within hyperdynamic economic systems.

Latent Calculation Formula

Latency = (Time_end - Time_start) * Conversion_factor * Resolution_factor * Timezone_factor * Drift_correction_factor * Trend_factor * Impact_factor * Tradeoff_factor

where:

- Time_end and Time_start are the respective time values indicating the end and start points of the event or process.
- Conversion_factor represents the conversion factor between different units of time, if necessary, to ensure compatibility.
- Resolution_factor accounts for the precision or granularity of the time measurements.
- Timezone_factor adjusts for time zone differences and synchronization.
- Drift_correction_factor compensates for clock drift and accuracy issues.
- Trend_factor captures the analysis of latency trends over time, allowing for insights into system behavior and performance optimization.
- Impact_factor assesses the impact of latency on system behavior, user experience, or overall performance.
- Tradeoff_factor considers the trade-offs between minimizing latency in one aspect and potentially increasing latency in another.

The specific values for the conversion factor, resolution factor, timezone factor, drift correction factor, trend factor, impact factor, and tradeoff factor will depend on the characteristics and requirements of the system being analyzed. These factors can be determined based on empirical data, system analysis, or user requirements.

By incorporating these factors into the calculation, the resulting Latency value takes into account units of time, time resolution, time zones, clock drift, latency trends, impact assessment, and trade-off considerations. This comprehensive representation enables a more thorough understanding and evaluation of latency in dynamic systems.

This formula can be expanded even further, thus incorporating additional variabes, factors, features & more!

Cyclical Variations in the context of Smiley's Time-based DAEs (Decentralized Autonomous Economies) as well as Time +/or latency-based currencies/MoEs (Mediums of Exchange):

Trend Component:

The trend component represents the long-term systematic movement in a time series. It captures the overall direction and magnitude of change over an extended period. To estimate the trend, various methods can be employed, such as moving averages, exponential smoothing, or regression models. These approaches aim to smooth out short-term fluctuations and focus on the underlying trend of the data. Mathematically, the time series (Y) can be expressed as the sum of the trend component (T), seasonal component (S), cyclical component (C), and residual component (R):

$Y(t) = Trend(t) + Seasonal(t) + Cyclical(t) + Residual(t)$

In the context of Smiley's Time-based DAEs, the trend component plays a crucial role in understanding the long-term direction of the economy. As the economy evolves over time, the trend component captures the overall growth or decline in economic activity. This information is valuable for participants in the DAEs to make informed decisions about resource allocation, investment strategies, and consumption patterns. Time +/or latency-based currencies/MoEs within the DAEs can be influenced by the trend component, as participants adjust their behavior based on the perceived long-term economic outlook.

Cyclical Component:

The cyclical component refers to the fluctuations in a time series that occur over longer time intervals. These variations are often associated with economic cycles or systemic factors. Capturing the cyclical component is essential for understanding the inherent patterns and dynamics of the time series. It can be modeled using various techniques, including Fourier analysis or bandpass filters. These methods extract the periodic components in the data, enabling the identification and analysis of cyclical patterns.

The cyclical component within Smiley's Time-based DAEs represents the fluctuations in economic activity that occur over longer time intervals. These cyclical variations can be driven by factors such as technological advancements, shifts in consumer demand, or changes in market conditions. Participants within the DAEs need to understand these cyclical patterns to optimize their resource allocation and anticipate economic booms or downturns. Time +/or latency-based currencies/MoEs can be affected by cyclical variations, as participants adjust their spending and investment decisions in response to the changing economic conditions.

Hodrick-Prescott (HP) Filter:

The Hodrick-Prescott (HP) filter is a widely used method for decomposing a time series into its trend and cyclical components. It applies a smoothing parameter to minimize the quadratic loss function, separating the long-term trend from the shorter-term cyclical fluctuations. The HP filter provides a flexible and effective approach to estimate the cyclical component and identify its contribution to the overall time series dynamics.

The Hodrick-Prescott (HP) filter, when applied within the context of Smiley's Time-based DAEs, can help separate the trend and cyclical components of the economy. By using this filter, participants can gain insights into the long-term growth trajectory and cyclical fluctuations of the DAEs. This information is essential for designing robust monetary policies and implementing strategies to mitigate the impact of cyclical variations on time +/or latency-based currencies/MoEs.

Seasonal Adjustment and Deseasonalization:

Seasonal adjustment techniques are employed to remove the seasonal component from the data, enabling a focus on the underlying trend and cyclical variations. Methods such as seasonal decomposition of time series, such as X-12-ARIMA or STL (Seasonal and Trend decomposition using Loess), are commonly used. These approaches allow analysts to isolate the cyclical component by eliminating the repetitive seasonal patterns, facilitating a more accurate understanding of the underlying cyclical behavior.

In Smiley's Time-based DAEs, seasonal adjustment techniques are valuable for removing the seasonal component from economic data. By deseasonalizing the data, participants can better understand the underlying cyclical variations without the interference of repetitive seasonal patterns. This deseasonalized information helps participants in making informed decisions regarding the allocation of time +/or latency-based currencies/MoEs, as they can focus on the cyclical variations that are not influenced by seasonal factors.

Autoregressive Integrated Moving Average (ARIMA) Models:

ARIMA models, and their seasonal counterparts (SARIMA), are widely utilized in time series analysis to capture cyclical variations. These models incorporate autoregressive (AR), differencing (I), and moving average (MA) components to characterize the complex dynamics of the time series. By estimating the parameters of these components, ARIMA models provide insights into the cyclical behavior and facilitate accurate forecasting of the time series.

ARIMA models, applied in the context of Smiley's Time-based DAEs, can capture the cyclical variations and provide valuable insights into the dynamics of the economy. These models incorporate autoregressive (AR), differencing (I), and moving average (MA) components to analyze and forecast the cyclical behavior. Participants within the DAEs can utilize ARIMA models to anticipate cyclical upswings or downturns, enabling them to adjust their strategies related to time +/or latency-based currencies/MoEs accordingly.

Spectral Analysis:

Spectral analysis techniques, including Fourier analysis and periodogram analysis, are employed to identify the dominant cyclic patterns and their frequencies in a time series. These methods transform the time domain data into the frequency domain, enabling the detection and characterization of cyclical components. By examining the power spectral density or periodogram, analysts can identify the periodicities and strengths of the cyclical variations.

Spectral analysis techniques, when applied to Smiley's Time-based DAEs, can help identify the dominant cyclical patterns and their frequencies in economic data. By examining the power spectral density or periodogram of time series data, participants can gain insights into the periodicities and strengths of cyclical variations. This information is valuable for participants to align their actions and decisions regarding time +/or latency-based currencies/MoEs with the cyclical patterns of the DAEs.

Business Cycle Analysis:

Business cycle analysis focuses on identifying and characterizing the cyclical variations in economic indicators. It involves statistical methods for turning point detection, peak and trough identification, and phase analysis. These techniques aim to understand the patterns and duration of economic cycles, providing insights into the cyclical behavior of various economic variables.

Business cycle analysis within Smiley's Time-based DAEs focuses on identifying and characterizing the cyclical variations in economic indicators.

Time-frequency analysis techniques, such as wavelet transforms, allow for the examination of localized cyclical variations in a time series across different scales and time intervals. These methods provide a more comprehensive understanding of the cyclical behavior by capturing cyclical components that may vary

Market Share Shift (MSS) Formula

$$MSS = [(MS\_TB + MS\_IRL) / (MS\_TR + MS\_TB + MS\_IRL)] \times [1 - (CI + CR)]$$

In this enhanced formula:

- MS_TR represents the market share of traditional corporations.
- CI represents the complexity index, which measures the complexity of operations and interactions within decentralized autonomous economies.
- CR represents the collaboration ratio, which quantifies the level of collaboration and cooperation among participants in decentralized autonomous economies.

By incorporating the complexity index and collaboration ratio, we account for the sophisticated nature of decentralized autonomous economies and their impact on market dynamics. These additional factors provide a more comprehensive understanding of the market share shift and its underlying dynamics.

Furthermore, we can introduce temporal variations to the formula to account for the shifting market dynamics over time:

$$MSS(t) = [(MS\_TB(t) + MS\_IRL(t)) / (MS\_TR(t) + MS\_TB(t) + MS\_IRL(t))] \times [1 - (CI(t) + CR(t))]$$

In this extended version, the variables are indexed by time (t) to capture the temporal evolution of market share and the changing dynamics of decentralized autonomous economies and traditional corporations.

Disintermediation Rate (DIR) Formula

$$DIR = [(Rev\_TB + Rev\_IRL) / (Rev\_TR + Rev\_TI)] \times [1 - (CI + CR)]$$

In this modified formula:

- Rev_TI represents the revenue generated by traditional intermediaries.
- CI represents the complexity index, which captures the level of complexity involved in the operations of the time-based economy and the IRL economy.
- CR represents the collaboration ratio, which measures the extent of collaboration and cooperation among participants in decentralized autonomous economies.

The complexity index and collaboration ratio are introduced to reflect the intricate dynamics and collaborative nature of decentralized autonomous economies, making the formula more sophisticated and comprehensive.

Furthermore, we can introduce a temporal component to the formula to account for the changing nature of revenue generation over time:

$$DIR(t) = [(Rev\_TB(t) + Rev\_IRL(t)) / (Rev\_TR(t) + Rev\_TI(t))] \times [1 - (CI(t) + CR(t))]$$

In this extended version, the variables are indexed by time (t) to capture the dynamic nature of revenue generation and intermediation over time. This accounts for the temporal evolution of decentralized autonomous economies and their impact on traditional intermediaries.

Disruption Rate (DR) Formula

DR = [(Rev_TR - Rev_TB - Rev_IRL) / Rev_TR] × (1 - CR) × (1 - EF)

In this advanced formula:

- Rev_TR represents the total revenue generated by the traditional economy.
- Rev_TB represents the revenue generated by the time-based economy.
- Rev_IRL represents the revenue generated by the IRL economy.
- CR represents the collaboration ratio, which measures the level of collaboration and cooperation among participants in decentralized autonomous economies.
- EF represents the ecosystem factor, which captures the broader ecosystem dynamics and influences on the disruption rate. This factor considers aspects such as regulatory environment, technological advancements, market conditions, and social acceptance.

By incorporating the collaboration ratio and ecosystem factor, we account for the complex interplay between collaboration within decentralized autonomous economies and external influences that shape the disruption rate. This expanded formula provides a more nuanced understanding of the disruptive impact of decentralized autonomous economies on traditional revenue streams.

Additionally, we can introduce temporal variations to the formula to capture the evolving nature of disruption over time:

DR(t) = [(Rev_TR(t) - Rev_TB(t) - Rev_IRL(t)) / Rev_TR(t)] × (1 - CR(t)) × (1 - EF(t))

In this extended version, the variables are indexed by time (t) to account for the dynamic nature of disruption and the changing landscape of decentralized autonomous economies and traditional economic systems.

Self-Sufficiency Index (SSI) Formula

SSI = [(R_TB + R_IRL) / (R_TB + R_IRL + R_TR)] × (1 - RL) × (1 - TD)

In this advanced formulation:

- R_TB represents the revenue generated by the time-based economy.
- R_IRL represents the revenue generated by the IRL economy.
- R_TR represents the revenue generated by the traditional economy.
- RL represents the reliance factor, which accounts for the level of dependence on the traditional economy for resources, infrastructure, or expertise.
- TD represents the technological development factor, which captures the technological advancements and innovations within decentralized autonomous economies that contribute to their self-sufficiency.

By introducing the reliance factor and technological development factor, the formula acknowledges the multifaceted nature of self-sufficiency within decentralized autonomous economies. It recognizes that the degree of reliance on the traditional economy and the level of technological development influence the self-sufficiency achieved.

Furthermore, to account for the temporal aspect and the evolutionary nature of self-sufficiency, we can incorporate time-dependent variables:

$$SSI(t) = [(R\_TB(t) + R\_IRL(t)) / (R\_TB(t) + R\_IRL(t) + R\_TR(t))] \times (1 - RL(t)) \times (1 - TD(t))$$

In this extended version, the variables are indexed by time (t), allowing for the analysis of self-sufficiency trends and changes over time.

Consumer Preference Shift (CPS) Formula

$$CPS = [(P\_TB + P\_IRL) / (P\_TR + P\_TB + P\_IRL)] \times (1 - CC) \times (1 - D) \times (1 - CS)$$

In this advanced formulation:

- P_TB represents the proportion of consumers preferring the time-based economy.
- P_IRL represents the proportion of consumers preferring the IRL economy.
- P_TR represents the proportion of consumers preferring the traditional economy.
- CC represents the consumer connectivity factor, which accounts for the level of interconnectedness and network effects driving consumer preferences within decentralized autonomous economies.
- D represents the diversity factor, which captures the range and variety of goods and services offered by the time-based and IRL economies, influencing consumer preferences.
- CS represents the consumer satisfaction factor, which reflects the degree of consumer satisfaction with the quality, affordability, and overall experience provided by the decentralized autonomous economies.

By incorporating the consumer connectivity factor, diversity factor, and consumer satisfaction factor, the formula expands the understanding of consumer preference shifts and acknowledges the various elements that shape consumer behavior within decentralized autonomous economies.

Furthermore, to account for the dynamic and evolving nature of consumer preferences, we can introduce time-dependent variables:

$$CPS(t) = [(P\_TB(t) + P\_IRL(t)) / (P\_TR(t) + P\_TB(t) + P\_IRL(t))] \times (1 - CC(t)) \times (1 - D(t)) \times (1 - CS(t))$$

In this extended version, the variables are indexed by time (t), allowing for the analysis of consumer preference trends and changes over time.

Value Extraction Ratio (VER) Formula

$$VER = [(V\_TB + V\_IRL) / V\_TR] \times (1 - EC) \times (1 - EV) \times (1 - ET)$$

In this advanced formulation:

- V_TB represents the value extracted by the time-based economy from the traditional economy.
- V_IRL represents the value extracted by the IRL economy from the traditional economy.
- V_TR represents the total value available within the traditional economy.

- EC represents the economic connectivity factor, which accounts for the interdependencies and linkages between the decentralized autonomous economies and the traditional economy, influencing the magnitude of value extraction.
- EV represents the value-added factor, which captures the additional value created or generated by the time-based and IRL economies, contributing to the overall value extraction ratio.
- ET represents the efficiency factor, which reflects the efficiency and effectiveness with which the decentralized autonomous economies extract value from the traditional economy.

By incorporating the economic connectivity factor, value-added factor, and efficiency factor, the formula expands the understanding of value extraction ratios and acknowledges the multifaceted nature of value flows within decentralized autonomous economies.

Furthermore, to account for temporal variations and the evolution of value extraction, we can introduce time-dependent variables:

$$VER(t) = [(V\_TB(t) + V\_IRL(t)) / V\_TR(t)] \times (1 - EC(t)) \times (1 - EV(t)) \times (1 - ET(t))$$

In this extended version, the variables are indexed by time (t), allowing for the analysis of value extraction trends and changes over time.

Job Transition Rate (JTR) Formula

$$JTR = [(J\_TB + J\_IRL) / J\_TR] \times (1 - UE) \times (1 - SP) \times (1 - TM)$$

In this advanced formulation:

- J_TB represents the number of job transitions to the time-based economy from the traditional economy.
- J_IRL represents the number of job transitions to the IRL economy from the traditional economy.
- J_TR represents the total number of job opportunities available within the traditional economy.
- UE represents the unemployment effect factor, which accounts for the impact of job transitions on overall unemployment rates and labor market dynamics.
- SP represents the skill proficiency factor, which reflects the level of skill development and proficiency required for successful job transitions within the decentralized autonomous economies.
- TM represents the technological mismatch factor, which considers the alignment between the skills demanded by the decentralized autonomous economies and the skills possessed by individuals transitioning from the traditional economy.

By incorporating the unemployment effect factor, skill proficiency factor, and technological mismatch factor, the formula provides a more comprehensive understanding of the job transition rate and acknowledges the multifaceted nature of labor market dynamics within decentralized autonomous economies.

Moreover, to account for temporal variations and the evolution of job transitions, we can introduce time-dependent variables:

$$JTR(t) = [(J\_TB(t) + J\_IRL(t)) / J\_TR(t)] \times (1 - UE(t)) \times (1 - SP(t)) \times (1 - TM(t))$$

In this extended version, the variables are indexed by time (t), allowing for the analysis of job transition trends and changes over time.

Efficiency Gain Index (EGI) Formula

$EGI = [(C\_TR - C\_TB - C\_IRL) / C\_TR] \times (1 - TC) \times (1 - EIS) \times (1 - EPC)$

In this advanced formulation:

- C_TR represents the total costs associated with producing and consuming goods and services in the traditional economy.
- C_TB represents the costs incurred in the time-based economy for producing and consuming goods and services.
- C_IRL represents the costs incurred in the IRL economy for producing and consuming goods and services.
- TC represents the transaction cost factor, which captures the efficiency gains resulting from reduced transaction costs within decentralized autonomous economies.
- EIS represents the energy efficiency factor, which reflects the efficiency gains achieved through reduced energy consumption and resource utilization in the decentralized autonomous economies.
- EPC represents the productivity enhancement factor, which accounts for the productivity gains resulting from improved technologies, processes, and resource allocation in the time-based and IRL economies.

By incorporating the transaction cost factor, energy efficiency factor, and productivity enhancement factor, the formula provides a more comprehensive understanding of the efficiency gains in decentralized autonomous economies and recognizes the interplay of various factors that contribute to overall efficiency.

Moreover, to account for temporal variations and the evolution of efficiency gains, we can introduce time-dependent variables:

$EGI(t) = [(C\_TR(t) - C\_TB(t) - C\_IRL(t)) / C\_TR(t)] \times (1 - TC(t)) \times (1 - EIS(t)) \times (1 - EPC(t))$

In this extended version, the variables are indexed by time (t), allowing for the analysis of efficiency gain trends and changes over time.

Parasitic Cycle Formulae

<u>Value Extraction Ratio (VER):</u>

$VER = (V\_TB + V\_IRL) / V\_TR$

This formula calculates the value extraction ratio, which represents the proportion of value extracted from the traditional economy (V_TR) and internalized within the time-based economy (V_TB) and the IRL economy (V_IRL). It quantifies the extent to which the decentralized autonomous economies extract value from the traditional economy.

Efficiency Gain Index (EGI):

EGI = (C_TR - C_TB - C_IRL) / C_TR

The efficiency gain index measures the efficiency gain achieved by the time-based economy (C_TB) and the IRL economy (C_IRL) compared to the traditional economy (C_TR). It represents the reduction in costs for producing and consuming goods and services in the decentralized autonomous economies.

Consumer Preference Shift (CPS):

CPS = (P_TB + P_IRL) / (P_TR + P_TB + P_IRL)

This formula calculates the consumer preference shift, which represents the proportion of consumers who prefer to receive goods and services from the time-based economy (P_TB) and the IRL economy (P_IRL) compared to the traditional economy (P_TR). It captures the changing consumer behavior and preference towards decentralized autonomous economies.

Job Transition Rate (JTR):

JTR = (J_TB + J_IRL) / J_TR

The job transition rate measures the rate of job transitions from the traditional economy (J_TR) to the time-based economy (J_TB) and the IRL economy (J_IRL). It quantifies the shift in employment opportunities from traditional corporations to the decentralized autonomous economies.

Self-Sufficiency Index (SSI):

SSI = (R_TB + R_IRL) / (R_TB + R_IRL + R_TR)

The self-sufficiency index represents the degree of self-sufficiency achieved by the time-based economy (R_TB) and the IRL economy (R_IRL) compared to the traditional economy (R_TR). It indicates the extent to which the decentralized autonomous economies rely on their internal resources rather than the traditional economy.

Displacement Effect Ratio (DER):

DER = (J_TR - J_TB - J_IRL) / J_TR

The displacement effect ratio measures the proportion of job displacement in the traditional economy (J_TR) due to the growth and expansion of the time-based economy (J_TB) and the IRL economy (J_IRL). It quantifies the impact of the decentralized autonomous economies on traditional employment.

Traditional Economy Role Index (TERI):

TERI = R_TR / (R_TR + R_TB + R_IRL)

The traditional economy role index represents the diminishing role of the traditional economy (R_TR) in the overall economic system compared to the time-based economy (R_TB) and the IRL economy (R_IRL). It quantifies the declining importance of the traditional economy.

Revenue Loss Ratio (RLR):

RLR = (Rev_TR - Rev_TB - Rev_IRL) / Rev_TR

The revenue loss ratio measures the proportion of revenue lost by traditional corporations (Rev_TR) due to the growth and expansion of the time-based economy (Rev_TB) and the IRL economy (Rev_IRL). It quantifies the impact of decentralized autonomous economies on traditional revenue streams.

Job Creation Index (JCI):

JCI = (J_TB + J_IRL) / (J_TB + J_IRL + J_TR)

The job creation index represents the proportion of jobs created in the time-based economy (J_TB) and the IRL economy (J_IRL) compared to the total jobs created in both the decentralized autonomous economies and the traditional economy. It quantifies the employment opportunities generated by decentralized autonomous economies.

Production Efficiency Ratio (PER):

PER = (Prod_TB + Prod_IRL) / (Prod_TR + Prod_TB + Prod_IRL)

The production efficiency ratio calculates the proportion of production output achieved by the time-based economy (Prod_TB) and the IRL economy (Prod_IRL) compared to the total production output of both the decentralized autonomous economies and the traditional economy. It captures the higher production efficiency in decentralized autonomous economies.

Disruption Rate (DR):

DR = (Rev_TR - Rev_TB - Rev_IRL) / Rev_TR

The disruption rate measures the extent of disruption caused by the growth and expansion of the time-based economy (Rev_TB) and the IRL economy (Rev_IRL) on traditional revenue streams (Rev_TR). It quantifies the impact of decentralized autonomous economies on the traditional economic landscape.

Autonomy Index (AI):

AI = (Rev_TB + Rev_IRL) / (Rev_TR + Rev_TB + Rev_IRL)

The autonomy index represents the degree of economic autonomy achieved by the time-based economy (Rev_TB) and the IRL economy (Rev_IRL) compared to the total revenue generated by both the decentralized autonomous economies and the traditional economy. It quantifies the independence of decentralized autonomous economies.

Innovation Productivity Index (IPI):

IPI = (Inno_TB + Inno_IRL) / (Inno_TR + Inno_TB + Inno_IRL)

The innovation productivity index calculates the proportion of innovation output achieved by the time-based economy (Inno_TB) and the IRL economy (Inno_IRL) compared to the total innovation output of both the decentralized autonomous economies and the traditional economy. It captures the higher innovation productivity in decentralized autonomous economies.

<u>Market Share Shift (MSS):</u>

MSS = (MS_TB + MS_IRL) / (MS_TR + MS_TB + MS_IRL)

The market share shift represents the proportion of market share held by the time-based economy (MS_TB) and the IRL economy (MS_IRL) compared to the total market share of both the decentralized autonomous economies and the traditional economy. It quantifies the shift in market dominance from traditional corporations to decentralized autonomous economies.

<u>Disintermediation Rate (DIR):</u>

DIR = (Rev_TB + Rev_IRL) / Rev_TR

The disintermediation rate measures the proportion of revenue generated by the time-based economy (Rev_TB) and the IRL economy (Rev_IRL) compared to the revenue generated by traditional intermediaries (Rev_TR). It quantifies the reduction in reliance on traditional intermediaries in decentralized autonomous economies.