

Principles of Economics – Lecture 1 (Human Action) • Study Notes

By Saifedean Ammous

Big Picture

- Economics should be understood as the study of **human action under scarcity**, not as abstract formulas or aggregates.
 - Mainstream economics is confusing because it pretends to imitate physics, building models with false precision but no real constants.
 - The Austrian approach, starting with Mises' *Human Action*, grounds the discipline in **purposeful behavior**: people acting to achieve chosen ends with scarce means.
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Core Claims

1. **University Economics Is Flawed**
2. Modern textbooks are steeped in Keynesian assumptions, high time preference, and irrelevant models.
3. Quantitative formulas promise predictive power but fail to match reality.
4. **The Austrian Alternative**
5. Rooted in Mises and Rothbard, but made accessible here without academic bloat.
6. Economics is about individuals making purposeful choices, not abstract aggregates.
7. **Action Defined**
8. Human action = **purposeful behavior aimed at ends**.
9. Distinguishes rational (deliberate) decisions from instinctive reactions.

10. Animals react by instinct; humans act with reason.
 11. **Methodology**
 12. Austrian economics relies on **logical deduction, thought experiments, and common-sense familiarity with reality.**
 13. Quantitative methods are secondary — data without logic leads nowhere.
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Key Concepts & Mental Models

- **Action:** Will put into operation, directed at ends.
 - **Rationality (Austrian sense):** Deliberate, reasoned choice — not necessarily correct or successful.
 - **Understanding (Verstehen):** The economist's task is to interpret and understand, not to predict with false precision.
 - **Ordinal vs. Cardinal Value:** Value is ranked (ordinal), not measured with fixed units (cardinal).
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Critique of Quantitative Economics

1. **No Constants**
 2. Physics works because constants exist (meters, seconds, kilograms).
 3. Economics has no measurable units of value. Value is subjective.
 4. **No Replicable Experiments**
 5. You can test gases in a lab; you can't recreate human societies.
 6. **Confusing Measurable with Causal**
 7. Economists focus on GDP, CPI, unemployment — measurable aggregates — while ignoring the subjective causes behind them.
 8. **Mistaking Accounting Identities for Causality**
 9. Example: assuming spending causes output just because they're equal in accounting terms.
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Applied Example: Minimum Wage

- Mainstream approach: plug numbers into a Keynesian model → “higher wages → more spending → more jobs.”
 - Austrian approach: analyze human action.
 - Worker accepts job if wage > subjective value of time.
 - Employer hires only if worker’s productivity > wage.
 - Minimum wage law **criminalizes employment** below arbitrary productivity thresholds.
 - Effects: unemployment among low-skilled workers, blocked skill development, rising prices, automation.
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Quotable Ideas

- “Action is purposeful behavior toward the attainment of ends in some future period.” — Mises
 - “Economics has no constants. Without constants, there can be no quantitative laws.” — Ammous
 - “Understanding is the Austrian economist’s goal — not predictive equations.” — Ammous
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Study Prompts

- Define **human action** and explain how it differs from instinct or reaction.
 - Why can’t economics be studied with the same methods as physics?
 - Contrast ordinal vs. cardinal value.
 - Apply Austrian methodology: How would you analyze a law mandating rent control?
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TL;DR

Economics begins with **human action**: individuals acting purposefully to achieve ends with scarce means. Mainstream economics pretends to be physics, but without constants or experiments its formulas are empty. Austrian economics, by contrast, builds logically from human action, subjective value, and understanding. Through this lens, policies like minimum wage laws are revealed not as mathematical levers but as distortions of human choice that harm the very people they claim to help.

Principles of Economics – Lecture 2 (Value) • Study Notes

By Saifedean Ammous

Big Picture

- **Subjective value** is the cornerstone of Austrian economics.
 - **Marginal analysis** (from Carl Menger, 1871) marked the shift from “old economics” to modern economics.
 - Value is **not inherent in goods** – it arises from human judgments about how well something satisfies needs.
 - Scarcity forces us to **economize**, and valuing is the act of ranking goods to maximize satisfaction.
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Core Claims

1. **Definition of Goods & Utility**
2. A good satisfies a human need.
3. Utility = the capacity of a good to satisfy those needs.
4. An *economic good* exists when demand > supply.
5. A *non-economic good* (like air or abundant river water) exists when supply > demand.
6. **Scarcity Is Permanent**
7. Easier to desire than to produce (Ferrari vs. imagining one).
8. Our wants are limitless and costless, production is costly and difficult.
9. Therefore scarcity never disappears – we always face trade-offs.
10. **Value Is Subjective**
11. Value = a mental construct, not an inherent property.

12. Example: **Oil** was once waste (negative value), became vital with engines, dipped negative again in 2020.
 13. Value exists **only in human consciousness**, not in the good itself.
 14. **Ordinal vs. Cardinal Value**
 15. Austrians: Value is **ordinal** (ranked preferences).
 16. Mainstream: Tries to make it **cardinal** (numerical “utils”), which is meaningless without real units.
 17. Quote (Mises): “A judgment of value does not measure. It arranges in a scale of degrees.”
 18. **Price vs. Value**
 19. Price shows an **upper and lower bound** of value at the moment of exchange.
 20. Buyer values the good more than the price; seller values the money more than the good.
 21. Mutual benefit proves value is subjective.
 22. **Labor Theory of Value Rejected**
 23. Marx: value comes from labor input.
 24. Counterexample: **Mud pie vs. apple pie** — equal labor, radically different value.
 25. Labor contributes to production, but doesn’t create value. Value depends on meeting human wants.
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Marginal Analysis

- Each additional unit of a good is valued **less** than the previous one.
 - **Law of Diminishing Marginal Utility:**
 - First meal after starving = life-saving.
 - Second meal = still vital but less so.
 - 25th meal = no value.
 - Total utility rises, but marginal utility declines.
 - **Least Valuable Use Rule:**
 - Purchases reflect the **least important satisfaction** a good meets at the margin.
 - Explains why water (essential) is cheap, and diamonds (luxury) are expensive.
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Examples & Paradoxes

- **Water-Diamond Paradox**
 - Water sustains life yet is cheap.
 - Diamonds are non-essential yet expensive.
 - Answer: We don't choose between "all water" vs. "all diamonds."
 - We choose between marginal units. Water is abundant → cheap at the margin. Diamonds are scarce → high marginal value.
 - **Iron vs. Gold**
 - Iron underpins infrastructure but is cheap.
 - Gold serves jewelry/luxury but is expensive.
 - Marginal units explain the difference: extra iron is nearly worthless, extra gold is highly valued.
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Quotable Ideas

- "Value is not a property of goods. It is a judgment economizing men make." — Carl Menger
 - "Value does not exist outside the consciousness of men." — Menger
 - "A judgment of value does not measure. It arranges in a scale of degrees." — Mises
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Study Prompts

- Define an **economic good** vs. a **non-economic good**.
 - Why is scarcity permanent?
 - Explain why value is subjective and not inherent in goods.
 - Contrast ordinal and cardinal value.
 - How does marginal utility solve the water-diamond paradox?
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TL;DR

Value is not in objects — it is in us. Goods are valued according to how they satisfy human needs, and that valuation depends on scarcity and context. Scarcity forces economizing, and **marginal analysis** shows that each additional unit of a good is worth less than the previous one. This explains paradoxes like cheap water and expensive diamonds. Austrian economics stands apart by insisting: **value is subjective, ordinal, and rooted in human choice — not labor, not equations, not imaginary “utils.”**

Principles of Economics – Lecture 3 (Time) • Study Notes

By Saifedean Ammous

Big Picture

- **Time is the ultimate resource.** All scarcity originates from the scarcity of time.
 - Every economic action unfolds across time; production requires time as an input.
 - Because humans are mortal, time is limited and irreversible – making it the most fundamental economic good.
 - Julian Simon’s work (*The Ultimate Resource*) frames time as the key to understanding scarcity and abundance.
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Core Claims

1. **Time as an Economic Good**
2. Scarce and valuable, like other goods, but unique because it is irreversible.
3. You can replace goods, but you cannot buy back time.
4. **Scarcity Comes From Time**
5. Physical materials on Earth are practically infinite relative to human use.
6. What makes goods scarce is the **time** required to make them usable.
7. **Opportunity Cost Defined by Time**
8. Every action has a cost: the foregone action you could have taken with the same time.
9. Time’s scarcity ensures all decisions involve trade-offs.
10. **Resources Are Human Creations**
11. Oil, gold, iron – they are not “resources” until humans dedicate time to make them usable.

12. Proven reserves grow as we spend more time searching and producing.
 13. **Abundance vs. Scarcity**
 14. Proven reserves of raw materials have increased over decades despite growing consumption.
 15. Commodities get cheaper in terms of human labor (time prices fall), showing abundance grows with time.
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Key Concepts & Mental Models

- **Ultimate Resource:** Time is the binding constraint, not Earth's finite size.
 - **Proven Reserves:** Not a cap on total supply, just what humans have discovered with time investment.
 - **Opportunity Cost:** The foregone best alternative when time is allocated.
 - **Time Preference:** Universal human preference for present goods over future goods (explored deeper in Lecture 13).
 - **Labor vs. Leisure:** Two main uses of time — productive work for future gain vs. enjoyment for its own sake.
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Illustrative Examples

- **Oil Reserves:** From 1950 to 1990, population and GDP grew, yet proven reserves of oil and other materials multiplied (oil $\times 13$, bauxite $\times 16$). Scarcity fears proved wrong.
 - **Swimming Pool Analogy:** All global mining to date equals half a cup of water taken from an Olympic pool — negligible compared to Earth's abundance.
 - **Simon-Ehrlich Bet:** Ehrlich predicted resources would run out; Simon bet prices would fall. Simon won across all five commodities, showing abundance increases with time and human ingenuity.
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Quotable Ideas

- “Time is the ultimate resource.” — Julian Simon
 - “The only real scarcity is human time.” — Ammous
 - “Value is created by human action. Resources don’t exist until we make them.”
— Ammous
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Study Prompts

- Why is time considered the ultimate resource?
 - Explain how scarcity of goods is rooted in the scarcity of time.
 - What is opportunity cost, and how does time give rise to it?
 - How did the Simon-Ehrlich bet illustrate the difference between physical limits and economic scarcity?
 - What trade-offs exist between **labor** and **leisure**?
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TL;DR

Time is the binding constraint on all human action and production. While Earth’s materials are abundant, their availability as resources depends on the time we dedicate to making them useful. All scarcity, therefore, is ultimately time scarcity. Opportunity cost reflects this reality: every choice is a trade-off in how we spend our limited time. Proven reserves and commodity prices demonstrate that abundance grows as humans invest time and ingenuity, not that Earth is “running out.” At its heart, economics is about economizing time — balancing labor for the future with leisure in the present.

Principles of Economics – Lecture 4 (Labor) • Study Notes

By Saifedean Ammous

Big Picture

- **Labor is the first way humans economize.** We dedicate our time and bodies to produce things we value.
 - Leisure = activities enjoyed for their own sake.
 - Labor = activities done for their output, not for enjoyment.
 - Mises: “Labor is the employment of the physiological functions of human life as a means.”
 - Labor has **negative utility** – we’d prefer leisure, but work promises greater future reward.
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Core Claims

1. **Labor and the Future**
2. Children seek immediate gratification; maturity comes with sacrificing the present for the future.
3. Reason allows humans to grasp that working today improves tomorrow.
4. Not working ultimately means death.
5. **Production as Alteration by Reason**
6. Production = altering nature with designs of reason.
7. Ideas, recipes, and plans are what turn raw inputs into useful goods.
8. Human action is fundamentally **mental before material**.
9. **Consumer vs. Producer Goods**
10. **Consumer goods** (final/first-order): directly satisfy wants.

11. **Producer goods** (capital, higher-order): indirectly satisfy wants by producing consumer goods.
 12. All capital goods are the result of **foregone consumption**.
 13. **All Action as Exchange**
 14. Production = exchange of leisure (present satisfaction) for future goods.
 15. Price = what you give up in an exchange.
 16. Cost = subjective value of what is sacrificed.
 17. Profit = the subjective gain in happiness from successful action.
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Productivity of Labor

- Productivity = output per unit of input.
 - Wage labor dominates modern economies because workers and employers trade voluntarily.
 - **Marginal Revenue Product (MRP):**
 - $MRP = \text{marginal product of a worker} \times \text{price of output}$.
 - A worker is hired if $\text{wage} < MRP$.
 - Example: If a worker produces 20 extra sandwiches a day, sold for \$5 each, with \$2 ingredient cost $\rightarrow MRP = \$60$. Hire if $\text{wage} < \$60$.
 - Businesses that ignore this arithmetic go bankrupt.
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Labor vs. Capital

- Labor is **non-specific** — human skills can be repurposed widely.
 - Capital is rigid, tied to specific uses.
 - Demand for human time is insatiable because of labor's adaptability.
 - Industrial Revolution + fossil fuels = huge labor productivity gains.
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Inflation, Unemployment & Intervention

- Unemployment is **not natural** in free markets.
 - 20th century inflation and minimum wage laws created mass unemployment.
 - Inflation erodes employer and worker wealth → layoffs and bankruptcies.
 - Business cycles (credit inflation booms → busts) cause sector-wide unemployment.
 - Minimum wage laws make it illegal to hire low-productivity workers.
 - Example: Switzerland under gold standard had **no inflation and no unemployment**. After leaving gold in 1970s → unemployment emerged like elsewhere.
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Will Work Ever End?

- Keynes predicted a 15-hour work week by 2030.
 - Reality: rising living standards but people still work long hours.
 - Scarcity of time means there's always reason to economize and work for future gain.
 - Humans always face trade-offs between labor (future) and leisure (present).
 - Work never ends as long as humans are mortal and time is scarce.
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Labor and Exploitation?

- Marx's **labor theory of value**: all value comes from labor, so capitalist profit = exploitation.
- Refutation: Capital goods are essential — try being a cab driver without a car.
- Capitalists sacrifice consumption to provide tools → enabling higher worker productivity.
- Workers freely choose to work with capitalists because it makes them more productive.

- Destroying private capital always leads to famine and collapse.
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Quotable Ideas

- “Labor is the employment of the physiological functions of human life as a means.” — Mises
 - “All capital goods are foregone consumption.” — Ammous
 - “Unemployment is not a natural part of capitalism; it is the result of inflation and intervention.” — Ammous
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Study Prompts

- Define labor and contrast it with leisure.
 - What is the difference between consumer and producer goods?
 - Explain why all capital goods are foregone consumption.
 - How does inflation create unemployment?
 - Why is labor not exploitation?
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TL;DR

Labor is how humans trade time and effort today for better conditions tomorrow. Production relies on reason, turning nature into goods through plans and capital — which always requires foregoing consumption. Wage labor is voluntary, guided by marginal productivity. Unemployment and the notion of exploitation are not products of free markets but of intervention, inflation, and faulty theories. Time remains scarce, so the need to work never ends.



Principles of Economics – Lecture 5 (Property) • Study Notes

By Saifedean Ammous

Big Picture

- **Property is the solution to scarcity.** Without it, endless conflict is the only alternative.
 - Property means the right to control and use goods to satisfy one's needs.
 - By clearly assigning ownership, society avoids violence and enables cooperation.
 - Property rights are not arbitrary – they are the foundation of civilization and the market economy.
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Core Claims

1. **Definitions of Property**
2. Menger: property = the sum of goods at an individual's command for satisfying needs.
3. Yiannopoulos: property = exclusive right to control an economic good.
4. Both stress: property is about *control and use* for human purposes:contentReference[oaicite:0]{index=0}.
5. **Why Property?**
6. Scarcity forces us to economize → we value goods → we take ownership of them.
7. Durable goods (house, car) are cheaper to maintain as property than to reacquire repeatedly.
8. Farming land is more efficient than foraging everywhere anew:contentReference[oaicite:1]{index=1}.

9. **Property Prevents Conflict**
 10. Without ownership, disputes over scarce goods become endless.
 11. Kinsella: assigning an owner to each resource sets visible boundaries non-owners can respect:contentReference[oaicite:2]{index=2}.
 12. **Types of Property (Economic Goods)**
 13. **Consumer goods:** directly satisfy wants (food, house, clothes).
 - Non-durable: quickly consumed (food).
 - Durable: long-lasting (house, washing machine).
 14. **Capital goods:** used to produce other goods (tractors, tools).
 15. **Monetary goods:** held to exchange for other goods (money).
 16. **Legitimate Acquisition of Property (Rothbard)**
 17. **Homesteading:** claim unowned resources by first use.
 18. **Production:** take ownership of what you produce from your resources.
 19. **Voluntary exchange/gift:** receive property willingly from legitimate owners.
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Self-Ownership

- Humans themselves are scarce. Who owns human beings? Three options:
 - **Self-ownership** — each person owns their own body and time.
 - **Communal ownership** — society jointly owns everyone. Impractical → degenerates into conflict.
 - **Slavery** — some own others. Inconsistent, unethical, unstable.
 - Only self-ownership is logically and ethically coherent.
 - Self-ownership enables peaceful cooperation: people must persuade, not coerce.
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Property & Civilization

- Property is the **building block of civilization**.
- Rejecting property = regression to the jungle.
- Hopper's **argumentation ethics**:

- To argue against property is self-defeating.
 - Argument itself presupposes respect for self-ownership (you own your body, your words, your mind).
 - Property rights allow:
 - Investment and future orientation.
 - Trade and specialization.
 - Resources to flow to their most efficient users.
 - Mises: “Private ownership of the means of production is the fundamental institution of the market economy.”:contentReference[oaicite:3]{index=3}
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Quotable Ideas

- “Property is not an arbitrary invention, but the only possible solution to scarcity.” — Menger:contentReference[oaicite:4]{index=4}
 - “By assigning an owner, society establishes objective boundaries and minimizes conflict.” — Kinsella:contentReference[oaicite:5]{index=5}
 - “To argue against property is to presuppose property in yourself.” — Hopper
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Study Prompts

- Define property according to Menger and Yiannopoulos.
 - Why is property the only way to resolve scarcity?
 - List and explain the four types of property.
 - What are Rothbard’s three legitimate means of acquiring property?
 - Why is self-ownership the only coherent solution to human scarcity?
 - Explain Hopper’s “argumentation ethics.”
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TL;DR

Property is not optional – it is the only workable solution to scarcity. By clearly assigning ownership, property prevents conflict, enables trade, and sustains civilization. There are three legitimate ways to acquire property: homesteading, production, and voluntary exchange. Self-ownership is the only coherent stance on human beings. Rejecting property rights is not only impractical but also contradictory, since even argument assumes ownership of one's body and mind. Civilization itself rests on respecting property.

Principles of Economics – Lecture 6 (Capital) • Study Notes

By Saifedean Ammous

Big Picture

- **Capital = saved resources used to produce more goods.**
 - Capital is not consumed directly but employed to increase productivity.
 - Every capital good is the result of **delayed consumption** – someone had to save and forego present use.
 - More capital → longer production processes → higher productivity and safety margins.
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Core Claims

1. **What Is Capital?**
2. A form of property used to produce other goods, not consumed directly:contentReference[oaicite:0]{index=0}.
3. Example: a computer for gaming = consumption good; for work = capital good.
4. Same item may be capital or consumption depending on its use.
5. **Capital Lengthens Production**
6. Capital goods require time to produce.
7. Example: catching fish → with hands = short, with spear/boat = longer process, but higher productivity:contentReference[oaicite:1]{index=1}.
8. Capital = longer production process, shorter marginal time per unit.
9. **Saving: Mother of Capital**
10. Without saving, no capital formation.
11. A fisherman must save fish to survive while building a rod or boat:contentReference[oaicite:2]{index=2}.

12. Boeing 787: 9 years of no revenue; required investors to sacrifice consumption to finance production.
 13. **Capital Increases Productivity**
 14. Same worker with capital vs. without capital: huge productivity gap.
 15. Example: fishing trawler worker = 5 tons/day vs. bare hands = 1 fish/day:contentReference[oaicite:3]{index=3}.
 16. Wealth differences across nations stem mainly from differences in capital stock.
 17. **Capital Is Costly**
 18. Requires **delayed gratification**: giving up certain present consumption for uncertain future output.
 19. Faces **risk of destruction**: natural disasters, accidents, obsolescence.
 20. Suffers **depreciation**: constant maintenance needed.
 21. Carries **uncertainty**: future demand or profitability not guaranteed:contentReference[oaicite:4]{index=4}.
 22. **Capital as Responsibility, Not Privilege**
 23. Owners must deploy capital productively or lose it.
 24. Capital only remains capital if it produces outputs valued by others.
 25. Mismanagement → bankruptcy, rust, decay:contentReference[oaicite:5]{index=5}.
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Capital & Time Preference

- Investment decisions hinge on **time preference**: willingness to sacrifice now for future gains.
 - Low time preference → more saving → more capital formation.
 - Virtuous cycle: more capital → higher productivity → better living standards → further lowered time preference:contentReference[oaicite:6]{index=6}.
 - Hans-Hermann Hoppe: civilization itself is the process of lowering time preference.
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Critique of Keynesian View

- Keynesian textbooks downplay saving, treat it as harmful (“paradox of thrift”).
 - Define saving/investment incorrectly:
 - Saving = buying stocks/bonds.
 - Investment = buying capital goods.
 - This disconnect allows them to argue saving causes unemployment.
 - Policy “solution”: government prints and spends → destroys real savings, promotes debt slavery:contentReference[oaicite:7]{index=7}.
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Are There Limits to Capital?

- No natural upper bound.
 - More saving → more capital → more technology and productivity.
 - Technology = non-physical capital (ideas, methods).
 - Limits come only from **time preference** and opportunity cost of foregone consumption:contentReference[oaicite:8]{index=8}.
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Quotable Ideas

- “Saving is the mother of capital.” – Ammous:contentReference[oaicite:9]{index=9}
 - “Capital is a responsibility, not a privilege.” – Mises (paraphrased through Ammous):contentReference[oaicite:10]{index=10}
 - “The longer the production process, the higher the productivity – and the greater the margin of safety from starvation.” – Ammous:contentReference[oaicite:11]{index=11}
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Study Prompts

- What distinguishes a consumption good from a capital good?
 - Explain how saving enables capital formation.
 - Why does capital lengthen production processes but shorten marginal time per unit?
 - List the four costs/risks of owning capital.
 - How does time preference control capital accumulation?
 - Why is capital a responsibility, not a privilege?
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TL;DR

Capital is saved property dedicated to production, not immediate consumption. It lengthens production processes but massively increases productivity. Capital requires sacrifice — saving, risk-taking, maintenance, and foresight — and it survives only if deployed to satisfy others. The more capital accumulated, the safer and wealthier society becomes. Misunderstanding capital, as Keynesians do, leads to debt-fueled policies that destroy savings. The only true limits to capital are time preference and our willingness to delay consumption.

Principles of Economics – Lecture 7 (Technology) • Study Notes

By Saifedean Ammous

Big Picture

- **Technology = non-material capital.**
 - Unlike physical capital, it is not scarce — ideas can be shared, copied, and reused without diminishing.
 - Technology is the plan for economic action: the recipe in the human mind before production takes place .
 - Innovation is what prevents diminishing returns to capital and drives long-term growth.
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Core Claims

1. **Technology as a Recipe**
2. Production happens first in the mind of the acting person.
3. Technology = knowledge of how to combine inputs to achieve ends.
4. Like a recipe: not physical, but essential to the meal .
5. **Avoiding Diminishing Returns**
6. Physical capital eventually hits diminishing returns (no point in endless fishing rods).
7. New technology (nets, boats, engines) resets productivity and enables more capital formation .
8. **Technology & Labor**
9. Myth: “Machines cause unemployment.”
10. Reality: labor is always scarce; technology makes labor more productive.

11. Historical evidence: Britain has more workers and higher productivity today than in the Luddite era.
12. Technology frees labor from drudgery, raises wages, and creates new industries .
13. **Jobs vs. Services**
14. Technology eliminates outdated jobs but not the underlying *service*.
15. Example: transportation → from slaves carrying loads → carts → horses → trains → trucks → planes → ships.
16. The service (transportation) expands and improves, even if old job forms vanish .
17. **Technology & Slavery**
18. Industrialization raised productivity so much that slavery became uneconomical.
19. Machines outperform brute labor; modern work requires intelligence and consent.
20. Slavery collapses when capital is abundant because the marginal value of forced labor drops .
21. **Entrepreneurship, Not Science, Drives Innovation**
22. Common myth: science → engineering → technology.
23. Reality: entrepreneurs and tinkerers drive technology to meet market needs.
24. Example: Steam engine preceded thermodynamics; Wright brothers invented flight before scientific consensus accepted it.
25. Profit motive, trial and error, and market feedback guide real innovation .
26. **Software as Pure Technology**
27. The purest form of non-material capital.
28. Abstract, infinitely reproducible, boosts productivity across all industries.
29. Software = automation of instructions; turns general-purpose machines into tools for infinite tasks .

Key Concepts & Mental Models

- **Technology = non-material capital** (ideas, recipes, blueprints).
- **Diminishing returns avoided through innovation.**
- **Jobs vs. services distinction** → services persist, jobs evolve.

- **Industrialization obsoletes slavery** by making brute force uneconomical.
 - **Entrepreneurial innovation** as primary driver, not academia.
 - **Software = pinnacle of informational capital.**
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Historical Examples

- **Luddites:** destroyed machines out of fear → proven wrong by history.
 - **Transportation:** from human carriers → wheels → horses → engines → planes → ships. Each leap raised productivity.
 - **Steam engine:** invented by workers, not scientists; later forced physics to update.
 - **Aviation:** Wright brothers succeeded despite scientific consensus declaring flight impossible.
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Quotable Ideas

- “Technology is the plan for economic action.” — Ammous
 - “It is not thermodynamics that gave us the steam engine; it is the steam engine that gave us thermodynamics.” — Terence Kealey (via Ammous)
 - “Technological progress makes labor more productive, and that makes it more valuable.” — Ammous
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Study Prompts

- Why is technology considered a form of capital?
- How does innovation prevent diminishing returns?
- Explain why machines do not cause unemployment.

- How did industrialization contribute to ending slavery?
 - Why is entrepreneurial innovation more important than scientific theory for technological progress?
 - Why is software considered the purest form of technology?
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TL;DR

Technology is non-material capital — the recipes in our minds that guide production. Unlike physical capital, it does not run into scarcity. Innovation resets productivity, prevents diminishing returns, and drives long-term growth. Far from destroying jobs, technology makes labor more productive and more valuable, while eliminating slavery as an economic rationale. Real innovation comes from entrepreneurs solving market problems, not academic theory. Software represents the purest form of technological progress: infinitely reproducible, abstract, and transformative across every industry.

Principles of Economics – Lecture 8 (Energy and Power) • Study Notes

By Saifedean Ammous

Big Picture

- **Energy is abundant, but power is scarce.**
 - Human progress can be measured by our ability to harness ever more powerful energy sources.
 - Hydrocarbons (coal, oil, gas) – not “renewables” – drove industrialization because they provide dense, reliable, on-demand power.
 - Industrialization and rising energy consumption explain the abolition of slavery, the empowerment of women, and massive increases in global living standards .
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Core Claims

1. **Energy vs. Power**
2. Energy is the capacity to do work (heat or force).
3. Power = energy per unit of time (joules/sec = watts).
4. **Economically, we value power, not energy.** The sun provides more raw energy than we need, but it cannot be channeled on demand .
5. **History of Human Power**
6. Hunter-gatherers: relied on sunlight, rivers, firewood.
7. Agriculture: sedentary life enabled domestication of animals, wood, water wheels, windmills.
8. Industrialization: hydrocarbons multiplied accessible power thousands of times .
9. **Energy Density Progression**

10. Wood: 16 MJ/kg.
11. Coal: 24 MJ/kg (~50% higher).
12. Oil: 44 MJ/kg (double coal).
13. Gas: 55 MJ/kg.
14. Uranium: 3.9 million MJ/kg ($\approx 100,000\times$ oil).
15. Batteries: 0.5 MJ/kg ($\approx 1\%$ of oil).

Key Insight: Humans always economize toward higher energy density .

1. **Power Multipliers Over Time**

2. Human muscle: 200 W.
3. Horse: 750 W.
4. Roman water wheel: 1,800 W.
5. Dutch windmill (1750): 12,000 W.
6. Ford Model T (1908): 15,000 W.
7. Diesel tractor (2015): 300,000 W.
8. Concorde jet (1969): 108,000,000 W.
9. Siemens SGT-9000HL turbine (2022): 410,000,000 W .

→ In 200 years, humanity scaled usable power **2,000,000 \times** .

1. **Hydrocarbons as Natural Batteries**

2. Stable, portable, energy-dense, usable on demand.
3. Unlike solar/wind, hydrocarbons provide continuous power supply at low marginal cost.
4. Modern life — transport, medicine, steel, plastics — depends on hydrocarbons. Even nuclear reactors require hydrocarbon inputs (steel, plastics, etc.) .

5. **Freedom Through Energy**

6. Pre-industrial societies: slavery valuable because each slave nearly doubled available energy.
7. Industrialization: machines made brute labor uneconomical → slavery abolished.
8. Physical strength gap between men and women mattered less → women gained independence.
9. More energy = more freedom, specialization, and trade .

Key Concepts & Mental Models

- **Energy vs. Power** → Raw abundance vs. usable scarcity.
 - **Marginal Analysis of Energy** → Value lies in *availability on demand*.
 - **Energy Density Ladder** → Civilizational progress = moving up to denser fuels.
 - **Hydrocarbons as Batteries** → Nature's store of portable, reliable energy.
 - **Energy & Freedom** → More power = less need for slavery, more human liberty.
-

Quotable Ideas

- “Energy is not scarce. Power is.” — Ammous
 - “Hydrocarbons are nature's batteries — far superior to anything we can build.” — Ammous
 - “Wherever the engine went, slaves were freed.” — Ammous
-

Study Prompts

- Why is power, not energy, the true economic good?
 - Explain the historical progression of energy density.
 - How do hydrocarbons outperform solar and wind despite being costlier to extract?
 - Why did industrialization abolish slavery?
 - How did industrialization contribute to female empowerment?
-

TL;DR

Energy surrounds us in abundance — sunlight, wind, rivers — but it only becomes an economic good when harnessed as **power**. Human progress is the story of mastering denser, more reliable fuels, culminating in hydrocarbons and nuclear energy. Hydrocarbons act as natural batteries, enabling on-demand power that built modern civilization. They powered industrialization, ended slavery, raised living standards, and gave women independence by replacing brute labor with machines. The world does not run on “energy”; it runs on **power at the margin**, delivered when and where we need it.

Principles of Economics – Lecture 9 (Trade) • Study Notes

By Saifedean Ammous

Big Picture

- **Two modes of human interaction:** consent or coercion.
 - Trade is the prime example of consensual interaction – both parties voluntarily exchange because they expect to benefit.
 - Coercion (theft, extortion, slavery) is zero- or negative-sum, while trade is **positive-sum**.
 - Specialization and division of labor make cooperation far more productive than isolation.
-

Core Claims

1. **Consent vs. Coercion**
2. Consent: peaceful, voluntary exchange. Both parties benefit.
3. Coercion: violence or threat of violence. One benefits at the expense of the other.
4. Trade = positive-sum; coercion = negative-sum.
5. **Why People Trade**
6. **Subjective value:** seller values money more than the good, buyer values the good more than the money.
7. **Marginal utility:** abundance lowers marginal value, scarcity raises it. → Basis for exchange.
8. **Differences in production costs:** specialization according to absolute advantage.

9. **Differences in opportunity cost:** comparative advantage ensures gains even when one party is more productive at everything:contentReference[oaicite:3]{index=3}.
 10. **Crusoe & Friday Example**
 11. In isolation: Crusoe = fish, Friday = rabbits. Both limited.
 12. With trade: specialization → both consume more fish and rabbits than in isolation.
 13. Absolute advantage: focus on what each produces at lowest cost.
 14. Comparative advantage: even if Crusoe is better at both, differences in opportunity cost still make trade mutually beneficial:contentReference[oaicite:4]{index=4}.
 15. **Specialization & Division of Labor**
 16. People get better at tasks they focus on.
 17. Specialization magnifies productivity even if initial skill sets are equal:contentReference[oaicite:5]{index=5}.
 18. Division of labor allows production of goods (like pencils, cars) that would be impossible in isolation.
 19. **Extent of the Market**
 20. The larger the market, the deeper specialization can go, raising productivity and variety.
 21. Milton Friedman’s “I, Pencil” story: no single person knows how to make a pencil – only possible through global cooperation:contentReference[oaicite:6]{index=6}.
 22. Isolated communities are poor; integrated markets create prosperity.
 23. **Trade & Civilization**
 24. Trade teaches humans to moderate aggression and seek cooperation.
 25. The ability of strangers to deal peacefully is the essence of civilization:contentReference[oaicite:7]{index=7}.
 26. Free trade zones (e.g., U.S. states) illustrate how removing barriers creates wealth.
-

Key Concepts & Mental Models

- **Positive-Sum vs. Zero-Sum** → Trade grows the pie; coercion just shifts or

shrinks it.

- **Absolute Advantage** → Specialize in what you can produce more efficiently.
 - **Comparative Advantage** → Even if superior at both, specialize where your opportunity cost is lowest.
 - **Extent of the Market** → Larger markets enable more specialization and complex goods.
 - **Trade = Civilization** → Cooperation with strangers underpins progress.
-

Quotable Ideas

- “Trade is a positive-sum game.” — Ammous:contentReference[oaicite:8]{index=8}
 - “You can only rob him once, but you can benefit from exchanging with him forever.” — Ammous:contentReference[oaicite:9]{index=9}
 - “There is not a single person in the world who knows how to make a pencil.” — Leonard Read / Milton Friedman:contentReference[oaicite:10]{index=10}
 - “The ability of strangers to trade peacefully is the foundation of civilization.” — Ammous:contentReference[oaicite:11]{index=11}
-

Study Prompts

- What are the two modes of human interaction?
 - Why is trade positive-sum while coercion is zero- or negative-sum?
 - Explain the role of subjective value in trade.
 - Differentiate between absolute and comparative advantage.
 - What does the “I, Pencil” story reveal about markets?
 - Why does the extent of the market matter for prosperity?
-

TL;DR

Trade is the peaceful, voluntary exchange of goods that makes both parties better off. Unlike coercion, which destroys value, trade creates value through specialization, subjective valuation, and comparative advantage. The larger the market, the deeper the division of labor, enabling the production of complex goods like pencils or airplanes. Trade is not just economic — it is civilizational. The ability of strangers to exchange peacefully is the foundation of prosperity and human progress.

Principles of Economics – Lecture 10 (Money) • Study Notes

By Saifedean Ammous

Big Picture

- **Money = the solution to the “coincidence of wants” problem.**
 - Direct exchange (barter) and small-scale debt work only in small communities; they break down in larger societies.
 - Indirect exchange introduces a *medium of exchange* — a good acquired not for consumption but for its tradeability.
 - Over time, the most *saleable* goods emerge as money.
-

Core Claims

1. **The Coincidence of Wants Problem**
2. Barter requires a double coincidence: I want what you have, and you want what I have.
3. Works in tiny societies; collapses in larger markets:contentReference[oaicite:0]{index=0}.
4. Money solves this by allowing indirect exchange.
5. **Saleability as Key Criterion**
6. **Definition:** ease of selling a good at prevailing prices:contentReference[oaicite:1]{index=1}.
7. Dimensions of saleability:
 - **Across goods** → universally acceptable.
 - **Across space** → transportable.
 - **Across scale** → divisible/aggregatable.
 - **Across time** → durable & resistant to

debasement:contentReference[oaicite:2]{index=2}.

8. Goods with higher saleability become money.

9. **Hard vs. Easy Money**

10. **Hard money**: stockpile large relative to annual flow → resistant to inflation.

11. **Easy money**: stockpile small, flow large → easy to
debase:contentReference[oaicite:3]{index=3}.

12. Gold's high stock-to-flow ratio made it the dominant money; copper/silver fell to industrial use.

13. Bitcoin replicates and strengthens these properties digitally.

14. **Money Is Not a Collective Hallucination**

15. Contrary to Keynesian/Marxist claims, money is not just a story or
decree:contentReference[oaicite:4]{index=4}.

16. Not everything can function as money (bananas, copper, etc.).

17. Money emerges spontaneously as the hardest-to-produce, most saleable good.

18. **Functions of Money**

19. Expands scope for **division of labor** → foundation of civilization.

20. Enables **economic calculation** → prices in one unit instead of millions of barter ratios.

21. Allows **saving & time preference reduction** → incentivizes future provision,
lowers uncertainty:contentReference[oaicite:5]{index=5}.

22. **How Much Money Should There Be?**

23. Austrian view: *any* quantity of money is sufficient:contentReference[oaicite:6]{index=6}.

24. People want purchasing power, not units.

25. Money's utility comes from exchange, not consumption or production.

26. More units ≠ more wealth — higher purchasing power = more wealth.

Key Concepts & Mental Models

- **Medium of exchange** = bought only to be sold later.
- **Money** = the *generalized* medium of exchange.
- **Saleability** = liquidity, fungibility, durability, portability.
- **Stock-to-Flow Ratio** = hardness measure; higher = better money.
- **Regression Theorem (Mises)** = money arises from prior market demand for a

good:contentReference[oaicite:7]{index=7}.

Historical & Modern Notes

- Gold & silver dominated for millennia; gold won out as hardest money.
 - Silver lost monetary role as banking technology replaced it.
 - Fiat money did not emerge by decree but by breaking redemption promises (fraud).
 - Bitcoin = first non-state money to emerge globally before any government recognition.
-

Quotable Ideas

- “The services money renders are conditioned by the height of its purchasing power.” — Mises:contentReference[oaicite:8]{index=8}
 - “Money is not an invention of the state; it emerges naturally from human action.” — Menger:contentReference[oaicite:9]{index=9}
 - “Money is not a hallucination. Some things work as money, others do not.” — Ammous:contentReference[oaicite:10]{index=10}
-

Study Prompts

- What problem does money solve?
- Define saleability and its four dimensions.
- Explain the difference between hard and easy money.
- Why is money not a “collective hallucination”?
- How does money enable economic calculation?

- Why is “any quantity of money sufficient” in the Austrian view?
-

TL;DR

Money emerges to solve the coincidence of wants problem in large societies. The most saleable goods — durable, divisible, portable, and resistant to debasement — outcompete others to become money. Hard money (gold, Bitcoin) resists supply shocks and holds value; easy money (copper, fiat) enriches producers at holders’ expense. Money is not a collective belief but an economic reality grounded in scarcity and salability. Its functions — enabling trade, calculation, and saving — make it the foundation of civilization. And in Austrian economics, *any supply of money suffices*; what matters is its purchasing power, not the number of units.

Principles of Economics – Lecture 11 (Markets) • Study Notes

By Saifedean Ammous

Big Picture

- Markets emerge as the natural outcome of **money and trade**.
 - With money solving the coincidence of wants problem, humans can engage in large-scale specialization and cooperation.
 - A market economy is **voluntary, decentralized, and peaceful**, coordinating billions of people without coercion.
 - Markets civilize: they make survival dependent on serving others, not violence or isolation.
-

Core Claims

1. **Market Economy Defined**
2. A system of voluntary cooperation where goods and services are exchanged without central authority.
3. Possible only through money, which enables calculation and comparison across goods.
4. **Isolation vs. Market Participation**
5. Isolation = precarious survival, constant struggle, self-centered existence.
6. Market participation = prosperity, stability, and cooperation with billions of others.
7. Markets compel people to care about others' well-being, since meeting others' needs is the path to meeting one's own.
8. **Civilizing Effect of Markets**
9. Markets channel self-interest into cooperation.

10. No need for altruism — self-interest ensures peaceful trade.
 11. Civilization is not imposed but emerges naturally from voluntary exchange.
 12. **Economic Calculation**
 13. With money, individuals can compare ordinal valuations against market prices.
 14. Producers seek to minimize costs and maximize revenues → creating value for consumers.
 15. Without money, no large-scale calculation or markets are possible.
-

Demand & Supply

- **Law of Demand:** As price rises, quantity demanded falls. Demand curves slope downward.
- **Law of Supply:** As price rises, quantity supplied rises. Supply curves slope upward.
- **Equilibrium:** Point where supply = demand. Not an endpoint, but a constant process of adjustment.

Examples

- Beef demand schedule: willingness to pay declines with each additional pound (marginal utility).
 - Producer supply schedule: output rises with higher prices until capacity limits are reached.
 - Market supply & demand combine to form equilibrium — the market price.
-

Market Dynamics

1. **Surplus:** Price above equilibrium → producers supply more than consumers want → unsold goods.
2. **Shortage:** Price below equilibrium → consumers demand more than producers supply → empty shelves.

3. **Adjustment:** Surpluses push prices down, shortages push them up. Markets equilibrate naturally.
-

Shifts in Demand & Supply

- **Demand Shifts:**
 - Preferences (new trends, books, cultural shifts).
 - Income (normal vs. inferior goods).
 - Prices of related goods (substitutes vs. complements).
 - **Supply Shifts:**
 - Production costs (technology, inputs).
 - Prices of alternative goods producers could make.
 - Result: New equilibrium at new prices/quantities.
-

Producer Goods & Consumer Sovereignty

- Producers buy capital goods not for enjoyment, but for producing final goods.
 - A factor of production is employed only if its marginal revenue $>$ its marginal cost.
 - **Consumer sovereignty:** Wages, rents, and profits reflect consumer valuations.
 - Capitalists are not masters of society – they survive only if they serve consumers effectively.
-

Key Concepts & Mental Models

- **Markets = emergent order** from voluntary exchange.
- **Economic calculation** enabled only by money.

- **Equilibrium as process**, not a fixed state.
 - **Consumer sovereignty**: consumers dictate allocation of resources.
 - **Civilization = cooperation** through markets, not coercion.
-

Quotable Ideas

- “Markets compel you to serve others as the best way of serving yourself.” — Ammous
 - “Civilization is not a conspiracy; it is the emergent result of peaceful cooperation.” — Ammous
 - “Consumers are kings in the market economy.” — Ammous
-

Study Prompts

- Why can markets only emerge with money?
 - Contrast life in isolation with participation in a market economy.
 - Explain equilibrium as a process, not a point.
 - What factors shift demand and supply curves?
 - Define consumer sovereignty and explain its implications for capitalists.
-

TL;DR

Markets are the emergent order of money, trade, and voluntary cooperation. They transform self-interest into peaceful service of others, making civilization possible. Supply and demand curves reveal how prices equilibrate through constant adjustment. Shifts in preferences, income, or costs move curves, creating new

equilibria. Ultimately, producers and capitalists are bound by consumer sovereignty: survival in markets requires serving others effectively. Civilization is built not on coercion, but on the freedom and discipline of markets.

Principles of Economics – Lecture 12 (Capitalism) • Study Notes

By Saifedean Ammous

Big Picture

- **Capitalism = private ownership of capital goods.**
 - Individuals freely buy, sell, and allocate capital, reaping profits for good choices and suffering losses for bad ones.
 - The stock market is the **litmus test** of capitalism, since it allows capital to be traded and allocated freely.
 - Capitalism is entrepreneurial at its core: entrepreneurs allocate scarce capital toward production based on profit-and-loss signals.
-

Core Claims

1. **Definition of Capitalism**
2. A system where capital goods are privately owned and freely traded.
3. Owners decide how to employ capital, benefiting from productivity or bearing losses.
4. Contrast: **Socialism** = capital allocation by bureaucrats without private property.
5. **Why the Stock Market Matters**
6. Makes capital a financial good: people invest without managing physical goods directly.
7. Extends division of labor: separates management from financing.
8. Allows anyone to become a capitalist by investing savings.
9. Ensures capital flows to the most productive users.
10. **Property Rights & Capital**

11. Only with property rights can capital be productively allocated.
 12. Capital goods have value only if they serve people's wants profitably.
 13. Without markets, capital is "a fish out of water" — it ceases to be real capital.
 14. **Roles in the Investment Process**
 15. **Capitalist:** defers consumption, supplies resources.
 16. **Entrepreneur:** allocates capital, decides where to invest.
 17. **Manager:** oversees daily production.
 18. Distinguishing these roles explains why central planning fails: planners confuse management with entrepreneurship.
 19. **Profit & Loss as Feedback**
 20. Entrepreneurs speculate on production, bearing risk and uncertainty.
 21. Profit = evidence capital is serving others; loss = evidence of waste.
 22. Capitalism punishes bad allocation, rewards good allocation — increasing productivity over time.
-

Economic Calculation Problem

- **Key Austrian insight:** socialism fails not from lack of incentives, but from lack of calculation.
 - Without private property, no real prices exist for capital goods.
 - Without prices, no way to calculate costs and benefits → blind, arbitrary allocation.
 - Mises' critique: "The wheels will turn, but run to no effect."
 - Soviet collapse illustrated this: factories looked operational, but inputs/outputs mismatched, making production impossible.
-

Misunderstandings & Cargo Cult Economics

- Socialist economists mimic markets with pretend prices, but without ownership and profit/loss, these are meaningless.
- Like children imitating airplanes with sticks — they resemble the form, but lack

the function.

- Mainstream economics textbooks echo this fallacy by assuming central planners can improve economies.

Civilization & Capitalism

- Capitalism extends division of labor to capital allocation itself.
- Encourages saving, lowers time preference, and raises productivity.
- Workers benefit from rising productivity without taking entrepreneurial risk.
- Entrepreneurs bear uncertainty, but their success drives civilization forward.
- By aligning incentives with peaceful cooperation, capitalism fosters social stability and prosperity.

Key Concepts & Mental Models

- **Capitalism = free market in capital goods.**
- **Stock market = litmus test** for capitalism.
- **Three roles:** capitalist, entrepreneur, manager.
- **Profit & loss** = lifeblood of calculation.
- **Economic calculation problem** = why socialism fails.
- **Cargo cult analogy** = pretending to imitate markets without property.

Quotable Ideas

- “If capital allocation is determined by owners free to buy and sell, you have capitalism. If it is determined by officials without ownership, you have socialism.” — Ammous

- “Capital outside a market economy is like a fish out of water.” — Ammous
 - “The stock market is the litmus test for capitalism.” — Mises (via Ammous)
 - “Profit and loss are the lifeblood of the market economy.” — Ammous
-

Study Prompts

- Define capitalism and contrast it with socialism.
 - Why is the stock market the litmus test of capitalism?
 - Distinguish between the roles of capitalist, entrepreneur, and manager.
 - Explain the economic calculation problem and why socialism fails.
 - How does capitalism encourage saving and lower time preference?
 - Why is profit-and-loss feedback essential for civilization?
-

TL;DR

Capitalism is the system of private ownership of capital goods, where individuals freely allocate capital through markets. The stock market is its defining feature, enabling capital to be traded and allocated efficiently. Entrepreneurs, not bureaucrats, drive progress by performing economic calculation under property rights, guided by profit and loss. Socialism fails because it lacks this mechanism, reducing allocation to blind guesswork. Capitalism rewards responsibility, punishes waste, and fosters peaceful cooperation — making it the economic foundation of civilization.

Principles of Economics – Lecture 13 (Time Preference) • Study Notes

By Saifedean Ammous

Big Picture

- **Time preference = the degree to which people value present goods over future goods.**
 - It is always positive: humans prefer the present to the future, since life is uncertain and death is inevitable.
 - Civilization advances as people learn to **lower their time preference**: delaying gratification, saving, and investing for the long run.
 - Hard money plays a central role in reducing time preference by allowing reliable provision for the future.
-

Core Claims

1. **Time as Unique Scarcity**
2. Time passes irreversibly; every decision has an opportunity cost.
3. Present goods are always valued higher because they are certain, while the future is uncertain.
4. **Definition of Time Preference**
5. High time preference = living for today, discounting the future heavily.
6. Low time preference = sacrificing now for a better future.
7. Individuals and societies vary in their time preferences, which shape their economic trajectories.
8. **Property & Future Orientation**
9. Durable goods reduce uncertainty and encourage future planning.

10. Secure property rights lower time preference: people invest more in maintaining and improving what they own.
 11. **Money as Future Provision**
 12. Money solves the “coincidence of wants” with your future self.
 13. By saving money, individuals can defer consumption and provide for uncertain future needs.
 14. The harder the money, the better it preserves value → lower time preference.
 15. **Hard vs. Easy Money**
 16. Hard money (gold, Bitcoin): supply growth very limited, value preserved → encourages saving.
 17. Easy money (fiat): supply grows rapidly, value destroyed → encourages spending and short-termism.
 18. Fiat era: global average money supply growth ~14% per year → rising time preference worldwide.
 19. **Civilization as Declining Time Preference**
 20. Saving → capital accumulation → investment → technological progress → rising productivity.
 21. A virtuous cycle: as people become wealthier, they can afford to delay gratification further.
 22. Historically, interest rates trended downward over 5,000 years under harder monies.
-

Negative Effects of Rising Time Preference

- **Inflation & Hyperinflation**
- Destroy savings → people consume immediately, stop planning for the future.
- Capital destroyed: trees cut for firewood, seed corn eaten, businesses liquidated.
- Crime and violence rise, families collapse, society destabilizes.
- **Fiat Culture**
- Conspicuous consumption replaces thrift.
- People live paycheck to paycheck.
- Quality of goods and art declines under short-term incentives.

Bitcoin & Time Preference

- **Bitcoin's Fixed Supply**
- 21 million coins, independent of demand.
- Hardest money ever created → best salability across time.
- **Impact on Saving Behavior**
- People who adopt Bitcoin save dramatically more of their income.
- “Stacking sats” becomes a cultural norm of low time preference.
- Holding Bitcoin for 4+ years historically yielded >10× returns.
- **Civilizational Implications**
- Bitcoin offers an escape hatch from fiat-driven high time preference.
- Allows individuals to plan for the long term, invest, start families, improve health, quit destructive habits.
- Restarts the historical process of declining time preference.

Key Concepts & Mental Models

- **Time preference:** present vs. future orientation.
- **Hard money lowers time preference;** easy money raises it.
- **Civilization = low time preference.**
- **Virtuous cycle:** saving → capital → productivity → lower time preference → more saving.
- **Bitcoin = technological solution** to fiat-induced short-termism.

Quotable Ideas

- “Man gets one uninterrupted shot at life, and he never knows when it will end.”
— Ammous

- “Time preference initiates the process of civilization.” — Hoppe
 - “Hard money makes the future less uncertain, lowering time preference.” — Ammous
 - “Fiat money is a tax on future provision.” — Ammous
-

Study Prompts

- Define time preference and explain why it is always positive.
 - How do property rights affect time preference?
 - Why does money solve the problem of providing for your future self?
 - Contrast hard vs. easy money in their effects on saving behavior.
 - Explain how Bitcoin lowers time preference compared to fiat.
 - How does civilization depend on lowering time preference?
-

TL;DR

Time preference measures how much we value the present over the future. Humans always prefer present goods, but lower time preference fosters saving, investment, and civilization itself. Hard money (gold, Bitcoin) preserves value across time, reducing uncertainty and encouraging thrift. Easy money (fiat) destroys savings, raises time preference, and fuels reckless short-termism. Hyperinflation accelerates this into chaos. Bitcoin offers an escape hatch: with its fixed supply, it re-enables long-term planning, saving, and capital accumulation. Civilization itself depends on lowering time preference — and Bitcoin restores this process.

Principles of Economics – Lecture 14 (Credit and Banking) • Study Notes

By Saifedean Ammous

Big Picture

- Credit and banking emerge from **declining time preference** and the accumulation of savings.
 - **Two core functions of banking:**
 - **Deposits** → safekeeping of savings.
 - **Investment banking** → channeling savings into productive use.
 - Distinction between **commodity credit** (backed by real savings) and **circulation credit** (created without savings) is essential to Austrian economics.
 - Interest is explained as the **price of time**: a reflection of differing time preferences between borrowers and lenders.
-

Core Claims

1. **From Time Preference to Credit**
2. Lower time preference → more saving → capital accumulation.
3. Capital requires specialized management → birth of banks as institutions.
4. **Two Banking Functions**
5. **Deposits**: pay a bank to keep money safe, reducing risk of theft or loss.
6. **Investment banking**: savers provide funds for entrepreneurs, expecting returns but bearing risk.
7. **Bankers as Entrepreneurs**
8. Banks act as intermediaries between savers and entrepreneurs.
9. They specialize in allocating capital productively.

10. **Commodity Credit vs. Circulation Credit**
 11. **Commodity credit:** every loan matches actual savings in amount and duration.
 12. **Circulation credit:** banks lend more than savings available → expansion of money supply.
 13. Commodity credit = sustainable. Circulation credit = root of the business cycle.
 14. **Interest as Price of Time**
 15. Borrowers have higher time preference (want resources now).
 16. Lenders have lower time preference (willing to wait).
 17. Interest rate emerges as the market price reconciling these valuations.
 18. **Austrian vs. Productivity Theory of Interest**
 19. Austrians: interest reflects time preference.
 20. Mainstream: interest reflects productivity of capital.
 21. Ammous sides with Austrians – infinite variation in productivity means only time preference determines the general rate.
-

Originary Interest

- Defined by Mises as a **category of human action**.
 - Present goods are always valued more highly than identical future goods.
 - The interest rate harmonizes time preferences across society, becoming the market discount rate for future goods.
-

Capitalist's Role

- Capitalist defers consumption so that workers and suppliers can be paid **before** production finishes.
- Interest is the payment for this **time input**.
- Profit ≠ interest:
- **Profit:** difference between input and output valuations.
- **Interest:** compensation for deferring consumption (the cost of time).

Interest and Civilization

- Declining time preference → lower interest rates over millennia.
- Historical trend: interest rates fell from ~16% in ancient Greece to ~2.5% in 19th-century Europe, interrupted by wars, plagues, and fiat money.
- Ammous speculates: under hard money, interest could naturally fall to **zero**, replaced by equity financing.

Religion and Usury

- Religions banned usury to enforce low time preference.
- Ammous argues free markets may achieve the same outcome without bans: as capital becomes abundant, lending shifts to equity.
- At extreme abundance, loans for emergencies could be interest-free, while business finance relies on equity partnerships.

Key Concepts & Mental Models

- **Commodity credit** vs. **circulation credit**.
 - **Interest = price of time**.
 - **Originary interest**: universal discounting of future goods.
 - **Capitalist function**: time provider in production.
 - **Declining interest rates = civilizational progress**.
-

Quotable Ideas

- “The banker is an entrepreneur specializing in the allocation of capital.” — Ammous
 - “Interest is the price of time.” — Ammous
 - “Capital outside a market economy is like a fish out of water.” — Mises (via Ammous)
 - “Civilization is the process of declining time preference and interest.” — Ammous
-

Study Prompts

- What are the two essential functions of banking?
 - Define commodity credit and circulation credit.
 - Why do Austrians see interest as rooted in time preference rather than productivity?
 - Distinguish profit from interest.
 - How can declining time preference lead to interest-free lending?
 - Why do religions oppose usury, and how does Ammous reinterpret this?
-

TL;DR

Credit and banking arise from declining time preference and saving. Banks specialize in safekeeping (deposits) and capital allocation (investment banking). The Austrian distinction between commodity credit (backed by real savings) and circulation credit (unsupported money creation) explains why the latter causes business cycles. Interest reflects time preference, not productivity — it is the market price of time. Over centuries, civilization lowers interest rates, potentially

toward zero, where equity replaces lending as the primary financing model. Religion's ban on usury echoes this: both point toward a world where saving, abundance, and low time preference make interest unnecessary.

Principles of Economics – Lecture 15 (Monetary Expansion) • Study Notes

By Saifedean Ammous

Big Picture

- This lecture contrasts **commodity credit** (backed by real savings) with **circulation credit** (created without savings).
 - Expansion of credit without prior saving is not harmless – it causes the **business cycle**.
 - Fiduciary media (unbacked claims on money) distort economic calculation, misallocate capital, and inevitably lead to recession.
-

Core Claims

1. **Credit Cannot Substitute for Capital**
2. As Mises argued: *“Expansion of credit cannot form a substitute for capital.”*
3. Real capital comes only from **foregone consumption** and saving.
4. Circulation credit attempts to “cheat physics” by creating financial claims without real resources.
5. **Mechanisms of Monetary Expansion**
6. **Fractional reserve banking**: deposits lent while simultaneously available on demand.
7. **Maturity mismatching**: short-term deposits lent as long-term loans.
8. **Rehypothecation**: collateral reused for multiple loans.
9. All create **fiduciary media** – redeemable claims without full backing.
10. **Money Substitutes**
11. **Money certificates**: 100% backed, fully redeemable.

12. **Fiduciary media:** partially backed, inflate supply, cause instability.
 13. Fiat emerges when redemption is suspended and certificates circulate as money.
 14. **Inflation Through History**
 15. Roman emperors debased coins with base metals, creating more coins without more gold.
 16. Modern states debase through unbacked credit and fiat issuance.
 17. Both reduce purchasing power and amount to theft.
 18. **Why Fiduciary Media Are Dangerous**
 19. Money is unique: a claim on money can circulate almost as easily as money itself.
 20. This makes unbacked claims indistinguishable at first from real savings, leading to **malinvestment**.
-

Austrian Business Cycle Theory (ABCT)

1. **The Boom**
 2. Circulation credit lowers interest rates artificially.
 3. Entrepreneurs undertake longer, more capital-intensive projects.
 4. Appears profitable because input prices haven't yet risen.
 5. **The Bust**
 6. Real resources are insufficient to complete all projects.
 7. As input prices rise, projects fail simultaneously across sectors.
 8. Malinvestment is revealed; businesses liquidate; recession follows.
 9. **Key Point**
 10. Printing more credit cannot create real resources.
 11. It only distorts calculation, misleads entrepreneurs, and wastes capital.
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Graphical Framework (Hayek / Garrison)

- **Production Possibilities Frontier (PPF)**
 - Trade-off between consumption and investment.
 - Real growth requires lowering consumption, saving, and investing.
 - **Stages of Production Triangle**
 - Longer stages possible only with real saving.
 - Artificially extending stages without saving = collapse.
 - **Loanable Funds Market**
 - True decline in time preference shifts savings supply rightward → lower interest.
 - Artificially low rates from fiduciary media → investment > savings → malinvestment.
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Analogies

- **Seed corn:** you cannot consume corn and plant it at the same time. Unbacked credit pretends you can.
 - **Bricks & houses:** promising 120 houses with 800k bricks when 1M are required. Result = unfinished, worthless houses.
 - **Thermometer & lighter:** lowering interest by credit expansion is like heating a thermometer to fake a warmer room.
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Key Concepts & Mental Models

- **Commodity credit vs. circulation credit.**
 - **Fiduciary media** as root of business cycles.
 - **Malinvestment:** misallocation caused by distorted prices.
 - **Boom-bust cycle** as inevitable result of credit expansion.
 - **No free lunch:** real resources can't be conjured from paper claims.
-

Quotable Ideas

- “Expansion of credit cannot form a substitute for capital.” — Mises
- “Monetary expansion is cheating reality: it promises resources that do not exist.” — Ammous
- “The boom is the disease; the bust is the cure.” — Austrian insight

Study Prompts

- Differentiate between commodity credit and circulation credit.
- Explain why fiduciary media cause business cycles.
- How do fractional reserves, maturity mismatching, and rehypothecation expand credit?
- Illustrate malinvestment with the bricks-and-houses example.
- Why does artificially lowering interest rates lead to collapse?

TL;DR

Monetary expansion through fiduciary media creates financial claims without real resources. While it initially fuels booms by lowering interest rates and encouraging long-term projects, these projects are unsustainable. Rising input prices reveal insufficient real capital, leading to widespread failures — the bust. True growth requires saving and investment, not paper promises. The Austrian Business Cycle Theory explains why credit expansion always ends in malinvestment and recession.

Principles of Economics – Lecture 16 (Violence) • Study Notes

By Saifedean Ammous

Big Picture

- Up to now, economics has analyzed **voluntary human interaction**: trade, specialization, capital accumulation, markets.
 - But humans can also interact through **violence and coercion**.
 - Violence disrupts property, trade, and cooperation – making prosperity impossible.
 - The key insight: society flourishes when violence is limited to **defense only**, never initiation. This is the **Non-Aggression Principle (NAP)**.
-

Core Claims

1. **Coercion Defined**
2. Coercion = imposing one's will on another through violence or threat of violence.
3. Examples: theft, extortion, assault, killing, property violation.
4. Threats of violence are coercion even if not carried out.
5. **Why Violence Destroys Civilization**
6. Constant fighting over property makes trade and capital accumulation impossible.
7. People cannot specialize or plan for the future under constant threat.
8. Civilization rests on voluntary exchange and secure property rights.
9. **Voluntary vs. Coercive Interaction**
10. Voluntary: both parties benefit, hence consent.
11. Coercive: one party loses, hence resistance, conflict, or collapse of cooperation.
12. **Defense vs. Aggression**

13. Initiating violence = aggression, always destructive.
 14. Defensive violence = response to aggression, aimed at preserving cooperation.
 15. Societies that limit violence to defense flourish; those that legitimize aggression collapse into endless conflict.
 16. **The Non-Aggression Principle (NAP)**
 17. No one may threaten or commit violence against another's person or property.
 18. Violence is legitimate only in defense.
 19. A universal rule: anyone can join society by respecting NAP, without appeal to authority or hierarchy.
 20. **Historical Roots**
 21. Variants of NAP appear across civilizations:
 - Ancient Egypt, Hinduism, Hebrew law.
 - Chinese and Greek philosophy.
 - Cicero, Aquinas, Scholastics.
 - Classical liberal thinkers.
 22. Modern libertarianism and Austrian economics explicitly formalize it.
-

Government and Violence

1. **Government as Supposed Solution**
2. Classical liberal view (Mises): government protects property, enforces contracts, defends borders.
3. Mainstream economics treats government as monopolist of violence, making all other violence illegitimate.
4. **Problems with Government Intervention**
5. Every intervention (price controls, subsidies, welfare, regulations) is coercion — a violation of property rights.
6. Government cannot calculate rationally without prices (economic calculation problem).
7. Outcomes: shortages, black markets, misallocation, waste, rising time preference, cultural decay.
8. **Market Failures as Excuses**
9. Economists claim markets fail (externalities, imperfect competition, irrationality, public goods).

10. But these arguments rely on faulty assumptions and ignore property rights.
 11. Example: pollution is not an “externality” — it’s aggression against property.
 12. Information, security, and infrastructure can all be provided through markets.
 13. **The Fatal Conceit**
 14. Markets are not designed, they are emergent **spontaneous orders** (Hayek).
 15. Government “fixes” destroy the property rights foundation of that order.
 16. Result: coercion masquerading as protection.
-

Key Concepts & Mental Models

- **Coercion vs. Consent** → Two modes of human interaction.
 - **Defense vs. Aggression** → Only defense is legitimate.
 - **Non-Aggression Principle** → Universal rule of civilization.
 - **Government as Aggressor** → State coercion is violence, not solution.
 - **Spontaneous Order** → Markets, language, and society emerge without central design.
-

Quotable Ideas

- “Violence may be employed only defensively against the aggression of another.”
— Rothbard
 - “Civilization rests on the rejection of aggression and the acceptance of voluntary exchange.” — Ammous
 - “Government is not the protector of property rights, but their violator.” — Ammous
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Study Prompts

- Define coercion. Why is it incompatible with civilization?
 - Explain the Non-Aggression Principle and why it matters.
 - Distinguish between defensive and aggressive violence.
 - Why does government intervention fail, even when justified by ‘market failures’?
 - What does it mean to say markets are “spontaneous orders” rather than designed?
-

TL;DR

Violence is the alternative to voluntary cooperation. It destroys property rights, trade, and civilization itself. Only when violence is restricted to defense — never initiation — can markets, capital accumulation, and prosperity emerge. This is the Non-Aggression Principle, rooted in cultures across history. Governments claim to solve violence by monopolizing it, but in reality they initiate aggression through taxes, inflation, and regulation. Markets work as spontaneous orders; coercion disrupts them. Civilization flourishes not through government control, but through universal respect for property and the rejection of aggression.

Principles of Economics – Lecture 17 (Defense) • Study Notes

By Saifedean Ammous

Big Picture

- Defense is an **economic good**: it has utility, is scarce, and must be economized.
 - Violence destroys civilization, but **defensive violence** (protecting property from aggression) is legitimate.
 - The state is not the solution to defense — it is itself the **largest initiator of violence**.
 - Real-world evidence: there are more private security guards globally than state police, showing defense is already primarily market-provided.
-

Core Claims

1. **Defense as an Economic Good**
2. Scarce: requires real resources (guards, weapons, fortifications).
3. Valued: people want safety from aggression.
4. Can be produced privately like any other good.
5. **Defense vs. Aggression**
6. Initiation of violence = coercion, not an economic good.
7. Defensive violence = legitimate protection of property rights.
8. Aggressors forfeit their claim to safety by violating others' rights.
9. **Private Provision of Defense**
10. Market for locks, alarms, security services, weapons, insurance, arbitration.
11. Already larger than state provision — banks, shops, and companies hire their own guards.
12. The state protects itself first, citizens second.

13. **Economic Calculation & Defense**
 14. Only private property and prices allow rational allocation of defense resources.
 15. Example: how many guards should protect a billionaire's house vs. a school?
Only prices can decide.
 16. State allocation = arbitrary, political, inefficient.
 17. **Law & Order as Economic Goods**
 18. Historical precedents:
 - **British Common Law**: emerged from private courts, no monopoly.
 - **Lex Mercatoria** and **Admiralty Law**: voluntary merchant and maritime courts.
 19. Private arbitration today proves law doesn't need a monopoly.
 20. **Weapons & Capitalism**
 21. Advanced weapons possible only through capital accumulation and division of labor.
 22. Even aggressors rely on markets for their tools of violence.
 23. Productivity and wealth, not raw violence, determine military success.
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Mises on Secession

- Mises supported the **right of self-determination**: every village or district should be free to secede.
 - True security comes when governments are forced to compete for citizens like businesses compete for customers.
 - Without secession rights, government monopolies degenerate into coercion.
-

Failure of State Monopolies

- **Police**: underprovide protection, often harass citizens.
- **Military**: wastes resources, manufactures conflicts to extract taxes.
- **Courts**: slow, politicized, detached from customer needs.
- Tax-funded monopolies lack profit-and-loss discipline, so they misallocate

resources.

Market Alternatives

1. **Self-Defense:** legitimate use of force to protect property.
 2. **Mutual Contracts:** communities agree on courts, arbitration, and defense providers.
 3. **Ostracism & Boycotts:** non-violent enforcement of norms.
 4. **Insurance-Linked Defense:** insurers fund protection to reduce payouts.
 5. **Exit Rights:** secession as ultimate check on abusive governments.
-

Key Concepts & Mental Models

- **Defense = scarce good;** requires economizing like any other.
 - **Aggression vs. defense** distinction is central.
 - **Economic calculation problem** applies to defense and law.
 - **Common law as emergent order** vs. state monopoly law.
 - **Exit (secession)** as superior to voice (voting).
-

Quotable Ideas

- “Defense is an economic good like any other.” — Ammous
- “The state is the largest gang of thugs.” — Ammous
- “Property rights exist independently of the state; the state’s legitimacy derives from respecting them.” — Ammous
- “Security provided by the market is reality, not utopia.” — Ammous

Study Prompts

- Why is defense considered an economic good?
- What distinguishes defense from aggression?
- How does the calculation problem apply to police allocation?
- Give historical examples of law without monopolies.
- How do secession rights transform government into a market actor?
- Why do monopolies in defense inevitably fail?

TL;DR

Defense is not a special case requiring state monopoly — it is simply another scarce good. Markets already provide more defense than governments, from security guards to arbitration courts. Aggression is never an economic good, but defensive force is legitimate. State monopolies fail because they cannot calculate, conserve resources, or serve citizens; they protect themselves, not the public. History shows law and defense can emerge from voluntary arrangements. True security arises when people have property rights, the freedom to choose defense providers, and the right to secede from coercive monopolies.

Principles of Economics – Lecture 18 (Civilization) • Study Notes

By Saifedean Ammous

Big Picture

- Civilization is the emergent result of **human action guided by reason**.
 - It arises from three core drivers: **lowering time preference, division of labor, and human ingenuity**.
 - Capitalism — private property, trade, and economic calculation — makes civilization possible.
 - Fiat money undermines this process, while Bitcoin offers the technological solution that may restore it.
-

Core Claims

1. **Civilization as Division of Labor**
2. Mises: civilization exists because labor under the division of labor is more productive than isolated labor.
3. Reason enables humans to recognize this and cooperate peacefully.
4. Every increase in productivity and stability rests on this foundation.
5. **Three Drivers of Civilization**
6. **Lowering Time Preference** → saving, capital accumulation, long-term planning.
7. **Division of Labor** → specialization, cooperation, markets.
8. **Ingenuity & Reason** → invention, technology, institutions.
9. **The Cost of Civilization**
10. Civilization requires curbing destructive instincts: theft, violence, pillaging, impulsivity.

11. Individuals must restrain short-term impulses for long-term gains.
 12. Customs, traditions, and moral codes evolve to enforce this restraint.
 13. **Family as a Civilizing Institution**
 14. Lowers time preference by orienting individuals toward future generations.
 15. Promotes cooperation, stability, and long-term investment.
 16. **Economic Calculation as Core**
 17. Only private property and sound money allow rational calculation.
 18. Slavery or command economies cannot replicate capitalist productivity.
 19. Prices coordinate billions of decisions globally, making civilization scalable.
 20. **The Case for Civilization**
 21. Biological argument: capitalist civilization extends life, health, and safety.
 22. Natural rights argument: civilization is respecting others' rights.
 23. Human action argument: most people choose civilization daily, even its critics rely on it.
 24. **Hoppe's Argumentation Ethics**
 25. To argue at all is to accept property rights (over one's body and mind).
 26. Therefore, arguing against civilization is a performative contradiction.
 27. Critics of property rights rely on the fruits of property-based civilization to make their critiques.
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Fiat Money and Decivilization

- Fiat breaks contracts and destroys trust.
 - Undermines savings → less capital accumulation.
 - Fuels business cycles, inflation, hyperinflation.
 - Corrupts science, nutrition, energy, and education through politicized funding.
 - Raises time preference, pushing society toward short-term consumption and decay.
 - Leads to decivilization: crime, family breakdown, loss of trust, and cultural decline.
-

Bitcoin as Civilizational Technology

- **Hardest money ever invented:** fixed supply, incorruptible, global.
 - Restores salability across time and space, enabling true savings.
 - Provides non-coercive access to the global division of labor.
 - Software-based, decentralized, transparent – verification replaces authority.
 - May reverse fiat’s decivilizing effects and be remembered as one of history’s greatest achievements.
-

Key Concepts & Mental Models

- **Civilization = division of labor + reason + low time preference.**
 - **Economic calculation** as the engine of cooperation.
 - **Customs & traditions** as tools for curbing destructive instincts.
 - **Fiat = decivilization; Bitcoin = re-civilization.**
 - **Argumentation ethics:** critics of civilization presuppose it.
-

Quotable Ideas

- “Civilization exists because labor performed under the division of labor is more productive than labor performed in isolation.” – Mises
 - “Civilization is the sum of human efforts to economize and increase the quality and quantity of time on Earth.” – Ammous
 - “Fiat money derailed civilization; Bitcoin may save it.” – Ammous
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Study Prompts

- Why is division of labor the foundation of civilization?
 - How do time preference, division of labor, and ingenuity drive progress?
 - What instincts must be curbed for civilization to thrive?
 - Why is economic calculation impossible without private property?
 - Explain Hoppe's argumentation ethics as a defense of civilization.
 - How does fiat undermine civilization, and how can Bitcoin restore it?
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TL;DR

Civilization is not a given — it is the emergent result of human beings using reason to lower time preference, specialize, and invent. It requires curbing destructive instincts and respecting property rights, enforced through tradition and calculation. Fiat money undermines all of this by destroying savings, trust, and calculation, leading to decivilization. Bitcoin, as incorruptible hard money, offers a path to restore civilization by enabling savings, trust, and global cooperation on sound economic foundations.
