Economic Power

A Perspective from the Entropy Theory of Value

Based on

Entropy Economics
The Living Basis of Value and Production

A Book

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The Standard Textbook View

- Exchange is the primary economic activity
- Markets are the key institution
- Markets are efficient, except when they fail
- Competition prevents accumulation of power
- Regulation addresses “market failure”
- Production is a derivative activity, also organized in markets for labor, capital, etc.
- Equilibrium, once achieved, is stable unless disturbed. Progress is normal.

Basic Principles of EE

- Production is the central economic activity
- All production requires low-entropy resources
- Which must be extracted with a surplus
- To do this, requires fixed investment
- Which is carried out according to a plan.
- Useful work is based on inequalities - of temperature, pressure, income, wealth.
- But these *must* be regulated.
- More complex systems are more efficient, but more fragile. And nothing lasts forever!

Entropy Economics: Value and Power

Economic value depends on scarcity and on the degree of market power or monopoly. Scarcity can be represented as a probability; monopoly can be modeled by the base of the log function. New products are inherently scarce and monopolized but become less so with time; value is therefore an evolving, non-equilibrium construct.

$$V(P) = -log_b P$$

$$V(X) = \sum_{i=1}^{n} P_i \left(-log_b P_i\right)$$

Adding across products or processes, one can measure the value of a collection of goods and services; the equation is identical to the entropy measure in physics and Information theory. Also notice the similarity to Theil's inequality measure.

Scarcity and Value

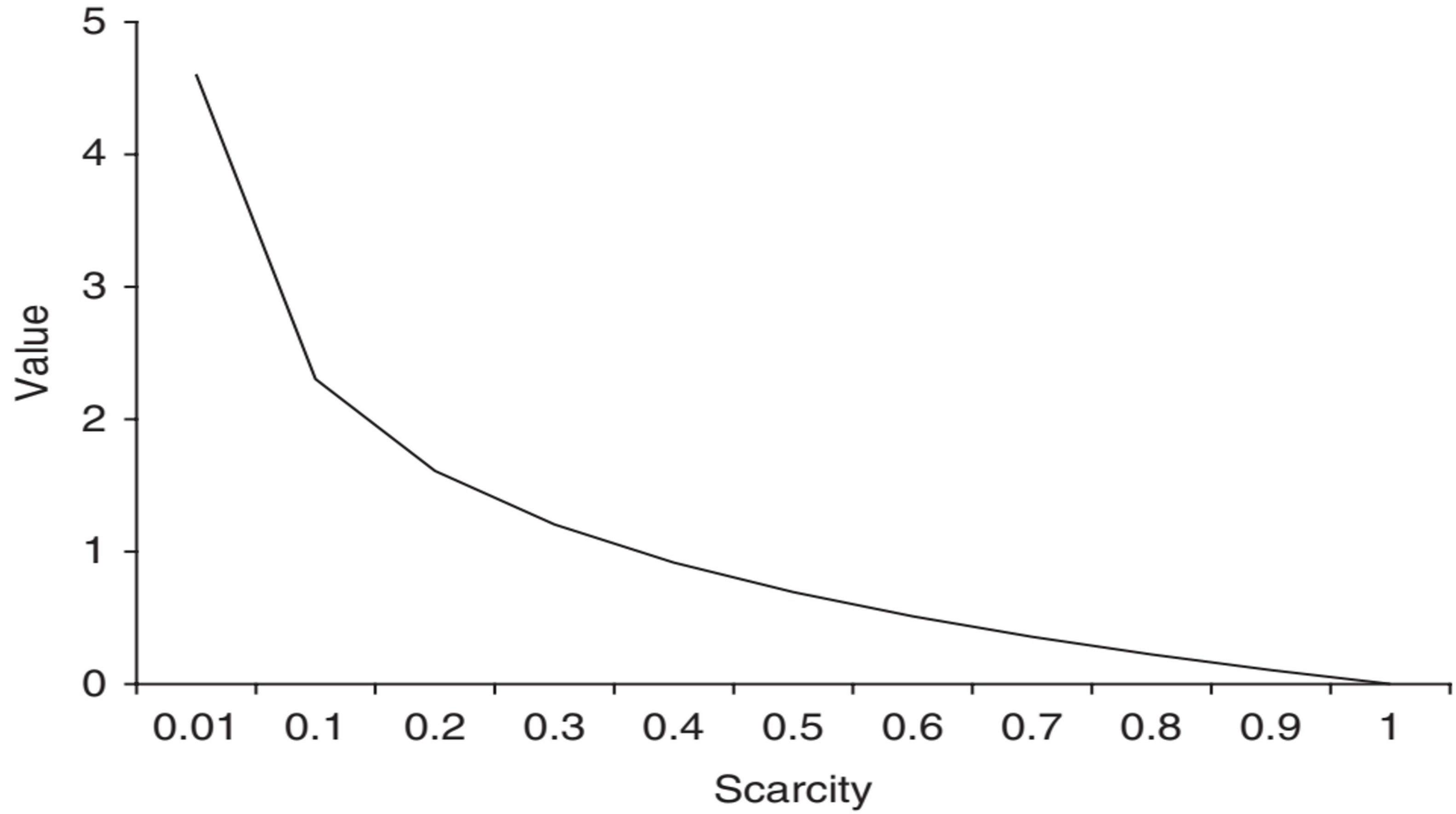


FIGURE 4.1 Value and scarcity.

Market Power and Economic Value

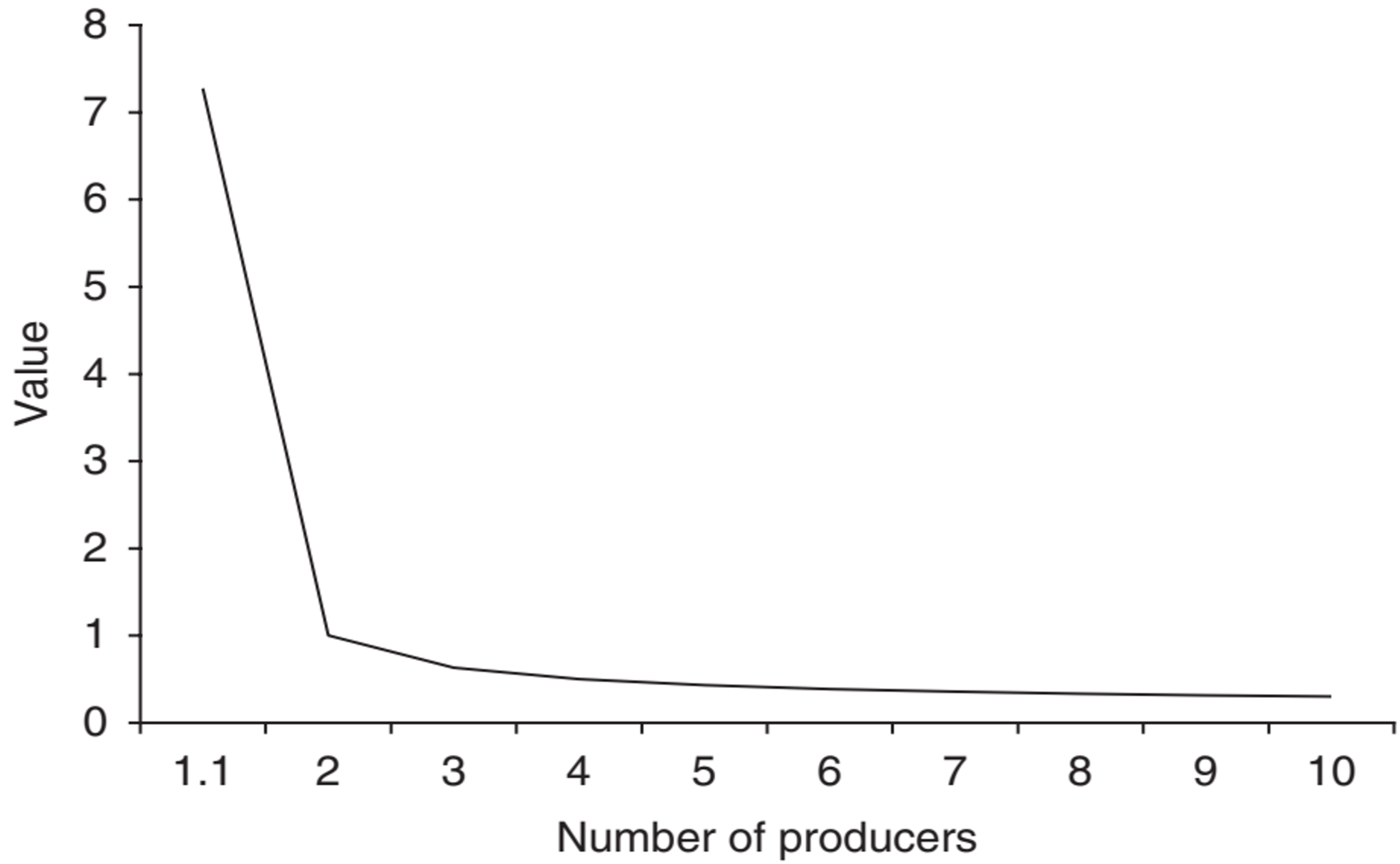


FIGURE 4.2 Value and the number of producers.

Key Role of Resources

- High quality resources, when abundant, have low economic value, but they are the foundation of activities that generate economic value
- Food, energy, rare earths are examples
- Energy and rare earths feed a system that generates new technologies, products and weapons, which are scarce and valuable.
- Control of resource-producing regions is a key to the wealth of those that do not have high-quality resources.

Example of Critical Minerals

- China controls the refining of rare earths (which are not themselves actually rare) and the production of gallium, a by-product of refining bauxite into alumina. Gallium is indispensable for advanced (military-use) micro-electronics.
- This monopoly power gives China the ability to specify the terms of trade and other policy – including security policy – to the United States.
- Realization of this fact (a bit tardy...) is what produced a trade truce between the US and China in 2025.

Example of Armaments Trade

- Armaments are typically thought of as being specific to the country that produces them and an instrument of national power.
- That is because there is (in the standard view) only one buyer and several or many producers.
- However, in the modern West – NATO – firms differentiate their weapons and export to many buyers. This reverses the power relationship, passing power to the contractors.
- In Russia, weapons are standardized, of low economic value, but cheap and abundant

Example of Market Integration

(e.g., United States and Venezuela)

TABLE 4.1. Summary of value changes with market integration

	Segmented market		Integrated market
	Resource-poor region	Resource-rich region	
Market size	1,000	100	1,100
Scarcity	0.2	0.9	0.26
Unit price	1.61	0.11	1.33
Value in segregation	321.89	9.48	331.37 (sum in segregation)
Value in integration	266.64	120	386.62
Difference in value	−55.25	110.51	55.25

Integrating a resource-rich and resource-poor region brings gains to resource producers in the resource-rich region and to consumers in the resource-poor region. But consumers in the resource-rich region and producers in the resource-poor region will be unhappy.
The question of who controls production in the resource-rich region is therefore decisive

Example of Divide and Rule

- Divide and rule is an effective strategy to reduce the political value of the lower class.
- Suppose 10% are upper class, 30% are middle class, 60% are lower class, in a two-party system.
- Then,
  - The value of a “U” is -log2(0.1)=3.32
  - The value of an “M” is -log2(0.3)=1.74
  - The value of an “L” is -log2(0.6)=0.74
- The power differential U/L is about 5

Divide and Rule, Continued

- Suppose the upper class decides to merge the middle and lower classes by increasing taxes on the middle and subsidies to the lower.
- So now there are two classes: U and ML
- Now, the power of any single member of ML is -log2(.9)=0.15
- The new class is very numerous but the power differential U/ML is now about 22, or more than the 9/1 numerical advantage of the ML group.

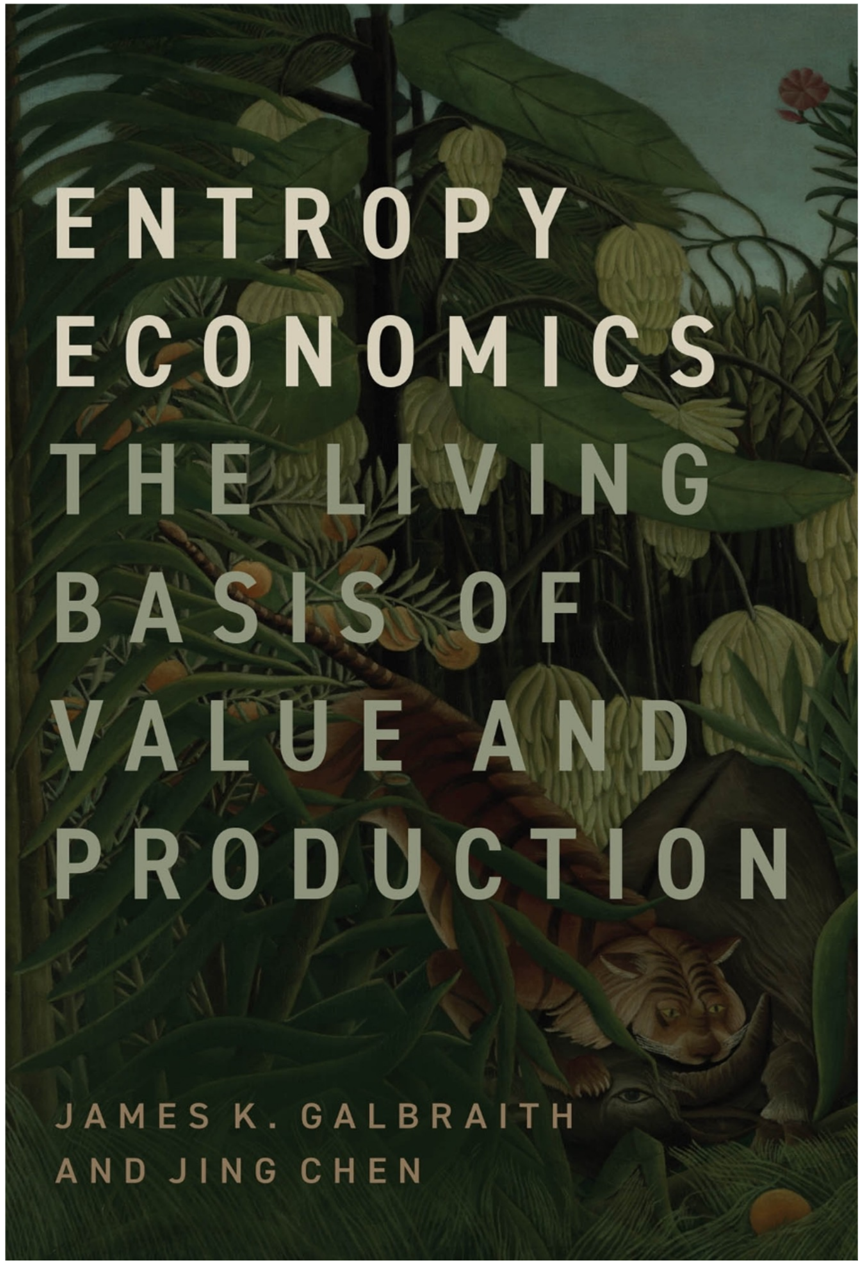
Divide and Rule, Completed

- Now suppose that the upper class works to divide the lower group by many internal factors, such as race, religion, gender identity, national origin and so forth.
- Suppose there are now 10 such groups
- Now, the power of an individual in the lower group is -log10(0.9)=0.05
- The power differential U/ML is now 66
- DIVIDE AND RULE IS VERY EFFECTIVE

General Conclusions

- We present foundational concepts for an economics rooted in real-world conditions and problems, including the distribution of power.
- These are closely tied to resource quality, scarcity, and the development of technologies.
- Economic processes involve valuation and production decisions, requiring fixed investments, that are inherently dynamic and unstable: there is no long-term equilibrium.
- We can at best hope to keep the system running for a while longer. (Good luck with that.)

For further reading



Thank you for your attention to this matter!