

HIGH FRONTIER 4 ALL - MODULE 5:

ECONOMY

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High Frontier 4
Module 5 - Economy
for 1 to 6 players.
Updated October, 2025.



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5A. Module 5 for the High Frontier game system

*Module 5 Economy*¹ allows you and the other players to buy and sell shares in aerospace **companies** whose value is tracked in a matrix called the **stock market**.² You can be a **shareholder** or a **customer** of a company, or both. By improving either the treasury or capital of a company, you improve its **share value**.³ If you own the most shares in a company, you are its **chair**. The chair controls **dividends** and capital **reinvestment**, allowing either payouts to shareholders or cheaper services respectively. You should buy shares in companies that are likely to rise in value and sell them when their cash could be better used elsewhere. Because shares are so easily bought and dumped, and they retain value after an Aqua crash, holding shares is generally superior to holding Aqua.

a. Number of Players: 1 to 6. The solitaire and 2-player variant is on page 43.

b. The 4 Company Shapes. Squares (2), triangles (2), circular (2), & hexagons (2).

c. Module 5 Economy is a *High Frontier 4 All* module that can be combined with any or all prior modules (0-4).

However, for isobanks that can be converted into *desperation starshots* (**4D3**), Module 4 is required.

d. A Term being defined is listed in **bold**. If it defined elsewhere, it is listed in *italics* followed by a reference.

Capitalized terms are defined in the glossary in the Core rulebook.⁴ Rules in **orange font** are only relevant after the market flips to its post-monetization side.

e. References. The numerical prefix on a reference (e.g. **1A3**) signifies the Module number.

¹ ECONOMICS is the science that studies the productive use of scarce resources under a system of division-of-labor. These resources are goods and services created by humans for their own health and well-being, indeed for the very existence of humankind. Because Economics is a hard science, there exist objective Laws of Economics, which can be simulated by game rules. Economics works as a science because, in aggregate, people are rational beings. The universal merit of wealth makes it possible to track the value of collective endeavors in a stock market.

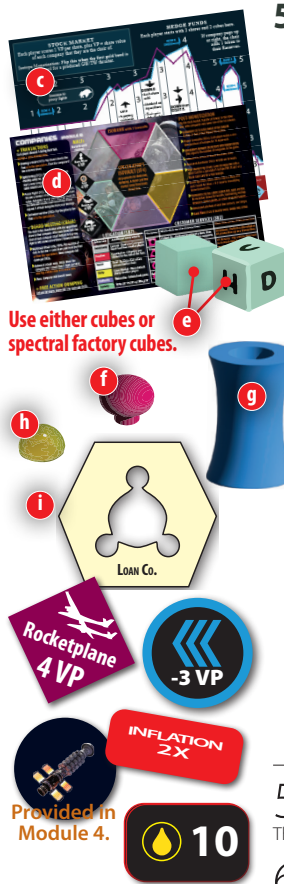
² STOCK MARKET. Buying shares enables investment in businesses operated by others, and selling shares allows the funds for one's own endeavors, such as Aqua for a major space flight. Thus a stock market increases the availability of capital in the same way trade increases the availability of goods. The stock price (share value) of a company is heavily influenced by changes in its production capacity due to technological change.

³ CAPITAL is wealth employed to create wealth (in the form of products or services). An example of capital equipment is the Launch Loop depicted on the cover. Moving a company chit to the right indicates more capital, including more machines, employees, and ideas.

⁴ GLOSSARY & DEFINITIONS. Both games and science depend upon definitions and defined terms. Indeed, rules are 100% definitions. Not having a shared definition makes meaningful communication impossible. Definitions must be **objective** - independent of culture, politics, and opinion polls. Some persons, notably practitioners of post-humanism, the cancel culture, and cultural relativism, tend to avoid definitions and attack their use in order to perpetrate fallacies, including economic fallacies. *"Sometimes what is missing in a fallacy is simply a definition. Undefined words have a special power in politics, particularly when they invoke some principle that engages people's emotions. ... While the fact that the word is undefined is an intellectual handicap, it is a huge political advantage. People with very different views on substantive issues can be unified and mobilized behind a word that papers over their differing, and sometimes even mutually contradictory, ideas."* -Thomas Sowell, *Economic Facts and Fallacies*, 2011.

Lofstrom Loop
Monetizing
Bernal





5A1. Module 5 Components

a. 1 Drawer Box.

b. 1 Rules Booklet. You are reading it.

c. Stock Market Board. This matrix indicates share values in Aqua/Isotopes.⁵ Company funds are shown on the vertical axis, capital equipment on the horizontal axis, and product prices in the diamonds in the bottom row.

d. Companies Placard holds the Isotopes stored in the isovault of each player and of the speculators.

The other side contains the political assembly for the *alternative solitaire game*, see (4G3) or (5L).

e. 24 Cubes (2/player color plus 2/player spectral factory cubes). Starts as a *hedge fund* (5B8) that expands your *cube limit* (17f) to 9. Choose to use either the plain cubes or the spectral factory version in a game.

f. 42 Shares (7/player color). Mushroom-shaped tokens. Each player is limited to 5 shares as a token limit, but can gain a 6th or 7th as a *hedge fund* (5B8).

g. 1 Phasing Player Token. Passed to the player whose Turn it is. Turn it so that the indented side is facedown after you expend your *transaction* per 5Ca. Then pass it to the next player when your Turn is finished.

h. 10 Gold Plastic Beads, for Isotope FT.

i. 1 Punchout Sheet containing the following chits:

- **8 Company Chits.** These come in 4 shapes: 2 squares, 2 triangles, 2 circulars, and 2 hexagons. Each has a White-Side and a Black-Side.

- **4 Malf Chits.** Ballerina, rocketplane, Flyby, and buggy road.

- **Default Chit.** The game uses only one; the same as the double-sided chit provided in Module 4 (4B6). See 5A4j.

- **1 Inflation 2X Chit.** Place this on the market if a *monetizing Bernal* is Anchored; see 5A4e.

- **Starship Chit.** This chit is provided in Module 4 (4A2i) to indicate the isobank location. The image of the starship *Exodus* is a reminder that the isobank can convert into a desperation starship with enough isofuel.

- **14 Aqua/Isotope Chits.** Use these chits to represent 10 Aqua (faceup) or 10 Isotopes (facedown).

- **Asteroid Jormungandr (Optional, Module 4).** During setup, place this tile anywhere that it fits in the Mars (♂) zone. A successful prospect of this asteroid with a Colonist implants one *augmentation* (4C4) of your choice.⁶

⁵ COMMON STOCK is the stock type in which shareholders have voting rights on management decisions, and dividends are not guaranteed.

⁶ It is the stock type represented in the game. The other major stock type is the **preferred stock**, which offers no voting rights but stable dividends. They also afford some protection in that they are paid first in the event of company liquidation.

⁶ BONILLA OBSERVATION was an astronomical event in 1883 in which hundreds of unidentified flying objects were observed and photographed by Mexican astronomer José Bonilla. In 2011 the photographs were interpreted as fragments of an exploded comet. See footnote 11.

5A2. Company Chit Anatomy

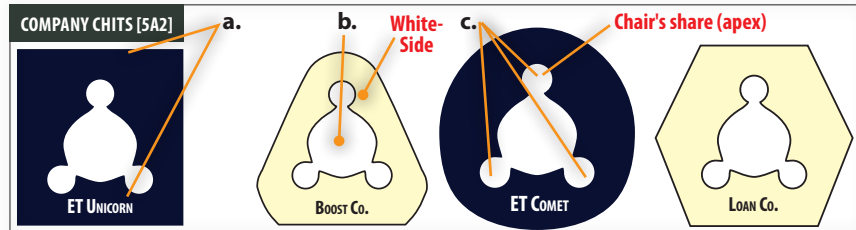
Each **company** has a chit with these features:

a. Company Shape & Name:⁷

- **Square** = Patent Co./ET Unicorn,
- **Triangle** = Boost Co./ET Alchemy,
- **Circular** = FINAO Co./ET Comet,
- **Hexagon** = Loan Co./ET Express.

b. Share Window. The center hole is for viewing the *share value* (5B4b).

c. Share Holes (3). Each chit has 3 holes for placing shares. The upper one is reserved for the chair (5B1).



5A3. Module 5 Setup (for solitaire see page 43)

Setup is per Core (C), (plus Modules 0, 1, 2, 3 & 4 if used), with the following additions:

a. Company Chits. Place the 8 *company chits* (5A2) in the Pool.

b. Stock Market. Place this placard in a public area on its "STOCK MARKET" side.

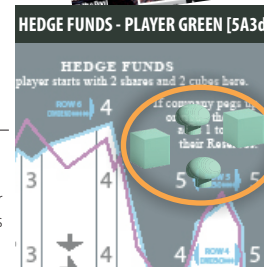
c. Companies & Malfs. Place the companies placard in a public area, and place the 4 malf chits into the 4 spaces provided on the companies placard.

d. Hedge Funds. Each player places two shares and two cubes into the upper right corner of the stock market marked HEDGE FUNDS and adds their remaining 5 shares into their Reserves.

e. Seniority Disks (C1). Companies increase both the game's pace and the time per Turn, so it is suggested that *Module 5 Economy* be played with from 1 to 4 seniority disks: 1 cycle = short, perhaps 3 hours for a 4-player game, 2 cycles = medium, 3 cycles = long, or 4 cycles = Futures, see 4A1. In the 2- to 4-cycle games, *Jump start* (High Frontier 4: All Tools 1 Pack) is recommended for a quicker play time.

MODULE 4: May add the asteroid *jormungandr*, see 5A1i. [5A3]

MALF SPACES [5A3c]



⁷DIVISION-OF-LABOR. Economics is the science that optimizes values produced by a division-of-labor. Division-of-labor as a society's dominant form of productive organization is a recent phenomenon in history, going no further back than 18th century Britain. The Industrial Revolution and the Enlightenment continue to transform a world of largely self-sufficient farming families into the specialists and occupations so necessary for the cooperative ventures called businesses. Division-of-labor allows individuals to concentrate on the kind of work that they are best suited for. This allows geniuses to flourish, who would otherwise expend their time on producing their own food, clothing, and shelter. "What a division-of-labor society represents is the organization of the same total sum of human brain power in a way that enables it to store and use vastly more knowledge than would otherwise be possible." –George Reisman, *Capitalism*, 1990.

MODULES 5 & 4 COMPARED:

The use of default and starship chits is the same. Isotope monetization is similar: FINAO costs are the same (but in Module 5 require a FINAO company to exist) and Aqua becomes less useful. In Module 5 the traditional ways to acquire cards and boost are supplemented by company services (see table on last page). After the market flips, players are motivated to deliver isotopes to the isobank to pay for these services. [5A4]

EASILY MISSED: Aqua costs doubled by inflation include customer prices, share values, Lobby, research grants, costly weapons, Futures, & the value of each debt cube. Aqua income doubled by inflation include income/fundraising, free market op., mishap insurance!, Bernal profits, paleoconservative directive, faction privilege, free trade act, & dividends. [5A4e]

5A4. Core/Module 0-4 Rules Changes

- a. **Board Meeting (new event).** After the *Event Roll* and its resolution (K2), a new event called the **board meeting** occurs, in which the chair of each company makes a *board decision*, see 5D1, 5D2.
- b. **Bank Panic (5G3)** additionally occurs during an *Anarchy* event (K2e), *War* (3C), and *desperation starshot* (4D3).
- c. **Bank (clarification).** This term refers to the Space on the map where you store your Aqua and/or gold beads. Your Bank is located in LEO, a *Home Bernal* (2B3), or an *ET Home Bernal* (3F1), whichever is farthest from Earth. You may only have one Bank at a time. *The isobank is not necessarily the Bank for the isobanker (5F1).* If the stock market is *flipped* (5E), your Bank always has Aqua, but all payments and receipts for dividends, customer services, and buying/selling shares are done at an isobank, not your Bank.
- d. **FINAO (change).** You cannot pay to avoid a Hazard or Epic Hazard Roll by "Failure Is Not An Option" (FINAO), unless a FINAO Co. is *float*ed and you become a paying customer on your Turn (5B3e). This is possible during War. Use the company *price* (5B2b) instead of 4 Aquas. Abilities that halve FINAO prices are handled per 5B3e.
- e. **Monetizing Home Bernals (Module 2).** A **monetizing Bernal** is either "*Lofstrom Loop*" (2B4f) or "*GEO Space Elevator*" (2B4i), Anchored as a Home Bernal. The latter must be at GEO to be considered a monetizing Bernal, otherwise it is an ordinary Bernal. Like Space Elevators, they are Anchored by the *epic hazard operation* (1A6c) in lieu of the normal Anchor Operation. This puts the Bernal's supports at risk.
 - **Inflation.** Anchoring instantly causes **inflation** (place the inflation chit), doubling all payments (including *transactions*) and earnings in Aqua. However, there is no inflation for the Boost operation (cost = mass, or 2X mass to boost to a non-monetizing Bernal), cost advances & late fees of contracts, or spending FTs at a Site (delivery op, 2nd Bernal costs, acetylene rocketplane liftoff, etc.). *All inflation halts after the market flips (5E).*
- f. **Blue/Gold Exchange (change to 4D1d).** If the stock market flips (5E3c), Isotopes cannot be purchased with Aqua.
- g. **Isobanker (change to 4D2a).** The isobank location and the isobanker changes to the Bernal with the highest isototal per 4E2f or 5F6, or when a desperation starship exits. The new isobanker receives the *isobanker medallion*.
- h. **Isovaults (change to 4D2e).** Beads can be transferred to or from the speculator's isovault per 5F4a,b, and may be *withdrawn* from the isobank per 5F3c.
- i. **Cash Advance of Gold-Side Contracts (change to 4B3h,i, Post-monetization).** The cash advance of a contract on its gold-side is both in the Aqua specified plus one or two Isotopes:
 - **Aqua.** Place the specified amount to any single Stack you own.
 - **"When Fulfilling" Aqua.** When complete, this Ability places the specified amount to any single Stack you own.
 - **Isotopes.** The number of Isotopes received is 1 isotope for a cash advance up to 10 Aqua, and 2 Isotopes for >10 Aqua. There is no *finder's fee* (4B3i). Place all "advance" and "when fulfilling" Isotopes to your isovault from the Pool.

EXAMPLE [5A4i]

Player Yellow wins the auction for "Highest Cliff". They deposit 2 Isotopes from the Pool into their isovault, and additionally receive the 15 Aqua which they decide to place in their outpost on Hygeia.

j. Default Chit (4B6). This chit, held by just one player at a time, is awarded for *debt rollover* (5B3g) and *insolvency* (5B6), as well as (Module 4) failing to pay *contract late fees* (4B5d, 5A4k) and *endgame mutinies* (4D3h).

- **Transfer.** If another player is afflicted by one of the above calamities, transfer the chit to them. It also is transferred by *tort litigation* (5B7). If transferred after the market flips, it flips to its gold-side. Also see 4B6 & 5B8c.
- **Effects.** If you are not a *chair* (5B1), possessing this chit allows a chair to refuse to provide customer services to you (5B2a). Moreover (Module 4), you are never allowed to bid on manned contracts (4B6c).

k. Late Fees of Contracts (change to 4B5b,c,d,e). Each Turn that you are late for a contract (either blue-side or gold-side) during post-monetization, you must choose one of the following:

- **Pay Late Fee.** Pay 1 bead to the speculator's from your isovault. You may dump a share for this, assuming the speculators have a bead to pay you.
- **Contract Discard in Default.** Discard the contract with its payments, pay one bead or dump one share (if you have any), and remove your timepiece from the Sunspot Cycle. Obtain the *default chit* (4B6) from wherever it is.

EXAMPLE [5A4k]

You successfully bid for the "Search For Life" blue-side contract, with a 20 Aqua advance. Unfortunately the destination (echedus) is in the Saturn Zone, and your solar-powered Spacecraft can get there with the solar oberth, but has insufficient thrust for the return. Furthermore, the market flips before the contract is due. The first year after the due date, you pay from your isovault 1 Isotope in late fees, paid to the speculators. On the second year, you pay the late fee again, dumping a share in order to pay. On the third year, you decide to Discard the contract. You receive the default chit, banning you from manned contracts and may restrict your transactions.

l. Desperation Starship (4D2 clarification). If the Isobank becomes a starship, form its Stack (4D3d) next to the *companies placard* (5A1d). If it exits the map, Discard its *fiduciary media* (5F5) and see 5F6e for new Isobank.

m. Unfulfilled Contract VP (change to 4E2c). After the market flips (5E), each unfulfilled contract is -3 VP.

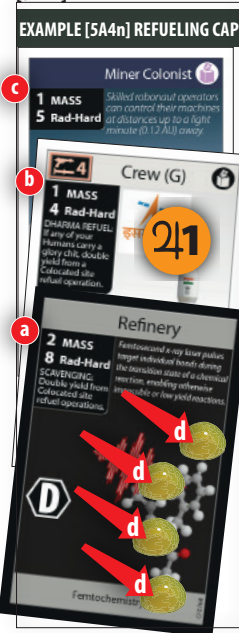
n. Aqua & Isotope Refueling Cap (change to Core and Module 4 (4A8)). A single *site refuel operation* (either factory or ISRU, see 15) is capped at 14 FTs Aqua or 4 FTs Isotopes regardless of Abilities, specialties, augmentations, and privileges.

EXAMPLE [5A4n]

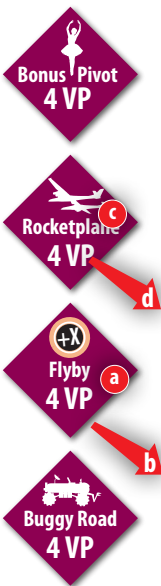
(This is the same as Example 4A8.) You perform a site refuel using the "Femtochemistry" refinery (2X site refuel (a)) and the Dharma Refuel privilege (2X site refuel with glory chit (b)). The combination of the two yields 4 Isotopes. If you have a miner Colonist present (allows two site refuels in a site refuel operation (c)), each site refuel yields 4, for a total of 8. However, the cap reduces this to 4 Isotopes (d). If refueling water, the above would be capped at 14 FTs.



EASILY MISSED: Before the market has flipped, place beads on your late contract (4B5b), which eventually forces its Discard. After the market flips, no beads are placed on a late contract, and it is not Discarded as long as late fees are paid. [5A4k]



EXAMPLES [5A5a,b] Malfs



SPECIAL: If you fail the malf Hazard Roll after using a buggy road, Decommission only the buggy card & supports. [5A5]

MODULE 4: Malf Hazards do not count as "Hazard Space destinations" listed on some contracts. [5A5]

5A5. Malfs (new Hazards for Module 5)

Module 5 introduces four new Hazards, called **malfs**,⁸ which force a Hazard Roll any time a Stack uses ballerina for a Bonus Pivot (**H4c**),⁹ makes an *acetylene rocketplane liftoff* (**H6c**), enters a *flyby* (**H8**), or uses a *buggy road* (**B7f**). If you are a paying customer to the FINAO Co. (**5B3e**),¹⁰ your payment does not avoid the Hazard Roll but instead claims the corresponding *malf chit* (**5A1i**), whether or not you survive the roll. Store the malf chit on your playmat in the space labeled "Glory", where it is worth 4 VP in the endgame. A malf chit does not count as a glory chit.

a. FINAO Customer. A malf chit can be claimed only by a FINAO customer that is actually performing the Hazard.

EXAMPLE [5A5a] Your contract requires entering the solar oberth flyby,¹¹ but it has a Hazard icon and the malf for the flyby (**a**) is unclaimed. Therefore your Spacecraft would make 2 Hazard Rolls upon entry. You pay the FINAO Co. its price (4 Aqua) to claim the flyby malf for 4 VP (**b**). Your Spacecraft survives the first but explodes with the second Hazard Roll, but you keep the malf and its VP.

b. Malf Hazard deactivated. Once a particular malf chit is claimed by a FINAO customer, its Hazard becomes inactive for all players.

EXAMPLE [5A5b] Your Factory on Mars builds a acetylene rocketplane (**H6c**) to move martian product back to LEO. This liftoff requires Factory-Assist, which entails a Hazard Roll (since you do not have powersat and your Factory is not colonized). The rocketplane malf (**c**) has not been claimed, so this is a second Hazard Roll. You roll for the Factory-Assist Hazard (successful) and then roll for the 2nd Hazard (rocketplane malf, also successful) (**d**). Since FINAO wasn't paid, the rocketplane can occur again.

⁸ MALF is short for "malfunction" in aerospace jargon. Conceptually, malfs are unexpected novel problems, Apollo 13 style. So subsequent missions have the hindsight advantage of knowing the problems the pioneers faced.

⁹ BALLERINA. This icon designates constant operation high specific impulse propulsion, such as photon sails. These huge surfaces of aluminum are only atoms thick, and maneuvering with them, or recovering from fluttering, will require exquisite programming.

¹⁰ MASCON is a concentration of denser material below the surface, causing a local increase in gravitational pull. Mascons likely indicate the location of a buried metallic asteroid, and are significant flyby hazards. As I write this (August 2023), the Russian water prospector Luna-25 crashed into the lunar south pole during a routine flyby, the possible victim of a mascon. Superior robust programming might have saved the mission. Days later, the ISRO spacecraft Chandrayaan-3 landed safely in the same region. For another flyby hazard, see the "billion euro gamble" (footnote 36 in the *High Frontier* core rules).

¹¹ JORMUNGANDR. In Sept. 2023, the office where I work - Ion Game Design in Stockholm - was chosen as the location of a model of the asteroid Jormungandr in the Swedish Solar System, the world's largest scale model of our Sol System. It is centered around the Globen Arena, a hemispherical building 110 meters in diameter. It is 2 km distant from where I sit, and at a scale of 1:12 million, this puts me at about the location of the Solar Oberth on the map. The asteroid Jormungandr, which is about 1 km in diameter and an official Earth hazard, is at this location near its perihelion (at its aphelion it is far beyond the orbit of Mars). So if you are in the area, come see the Jormungandr model at Allhelgonatan 5, Stockholm.

5B. Companies & the Stock Market

Eight **companies** are represented by chits that start unfloatated in the Pool. You can float a chit in the Pool by purchasing its first share and moving it to the FLOAT spot on the stock market. Thereafter the chit moves per **5B5**, thus gaining or losing **share value** (the cost to purchase a share).¹²

5B1. Chair

The **chair** of a company is the player whose share is uppermost (in the **apex** of the triangle) of a company chit. If you *float* a company, your share is placed into the apex making you the chair. During the *board meeting* after every event (**5D**), the chair of each company chooses if and how to spend that company's resources, making a decision for either *dividends* (**5D1**), *reinvesting* (**5D2**), or passing.¹³ There are several ways a chair can change:

- a. Majority coup.** If ever you have more shares in a company than the chair does, you become the chair. Exchange your share with the share in the apex location.
 - **Partiality.** If 3 players have 1 share each in a company and the chair sells, this chair selects the new chair.
- b. Ticker tape coup.** If both you and the chair are tied at one share each and you perform a *ticker tape parade* (**La**), you may choose to become the chair of all such companies where you are tied.
- c. Trustee or Proxy Fight coup.** If both you and the chair are tied at one share each, you can become the chair either by *honor* or *corruption litigation* (**5B7**), or by winning in a *proxy fight* (**5C3**).
- d. Negotiations.** If the chair does not have a majority, a chair can surrender chairship to another shareholder during a Negotiation (**N**).

¹² THE ROLE OF ECONOMICS. "Among the misconceptions of economics is that it is something that tells you how to make money or run a business or predict the ups and downs of the stock market. ... When economists analyze prices, wages, profits, or the international balance of trade, for example, it is from the standpoint of how decisions in various parts of the economy affect the allocation of scarce resources in a way that raises or lowers the material standard of living of the people as a whole. Economics is not simply a topic on which to express opinions or vent emotions. It is a systematic study of cause and effect, showing what happens when you do specific things in specific ways."

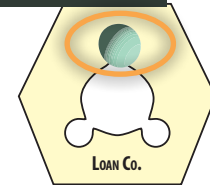
—Thomas Sowell, *Basic Economics*, 2015.

¹³ MANAGERIAL DECISIONS. A chair makes these decisions with the same goals as those of a bank president. "Safe and sound banking relies ultimately on the perceptiveness, prudence, and honesty of bank managers. No amount of financial analysis or regulatory oversight can immunize a bank or a banking system from the damage done by bank managements that are incompetent or fraudulent."

—Richard Salsman, *Breaking the Banks*, 1990.

TIP: Being the chair is useful to lower prices or receive dividends when you need them. But these help others as well. The chair can obtain hedge funds and can boost stock value with e.g. glory. [5B1]

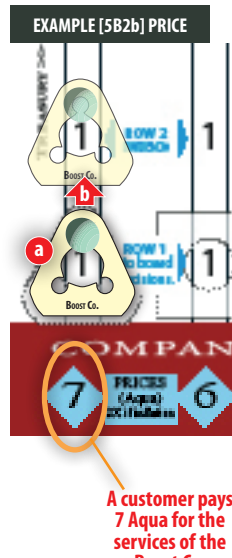
APEX SHARE [5B1]



BOARD MEETINGS [5B1]



EASILY MISSED: A customer does not need to be a shareholder. The chair is just another customer. [5B2]



A customer pays 7 Aqua for the services of the Boost Co.

EASILY CONFUSED: The price is the cost of the service, while the share value is the cost of a share (5B4b). [5B2b]

5B2. Prices & Customers

Any player can buy the company's services. This player, called a **customer**,¹⁴ pays the advertised **price**,¹⁵ indicating the non-negotiable amount of Aqua to be paid for what a company has to offer.

- a. Non-refusal.** A chair cannot refuse services to a paying customer (the board would fire him).¹⁶ There are 2 exceptions:
 - **Default stigma (also see 4B6c).** A chair of a company may refuse services to a player with the *default chit* (5A4j).
 - **Module 3 exception.** During *War* or *Anarchy* (3D), a chair of a company may refuse services to a player in the enemy bloc. As an exception to 3D5e, FINAO is available during War by being a customer to the FINAO Company.
- b. Price.** The price for company *services* (5B3) is shown in blue diamonds just below the stock market according to the column the company chit occupies.¹⁷ The price is always paid immediately after the service is rendered. It is paid by the customer in Aqua to the Pool, which then *elevates* the company chit per 5B5a.
 - **Default Price.** The customer price is doubled if a *monetizing Bernal* is Anchored as Home Bernal (5A4e).
 - **Post-Monetization Price.** After the stock market *flips* (5E), the price becomes 1, 2 or 3 Isotopes/fiduciary media paid to the *speculators* (5F4a).

EXAMPLE [5B2b] The Boost Co. is freshly floated (a), so it has a share value = 1 and a price = 7. On her Turn, an opponent pays 7 Aqua to the Pool to use the Boost Co. to move her 5 Mass 1 cards into LEO. This elevates (b) the Boost Co. chit to ROW 2.

¹⁴ CUSTOMER. A big difference between *Module 5* and other games about stock investments, such as *18XX*, is the role of customers and customer services. The whole purpose of the cooperating group of people called a company is to provide compensated value to others. Every customer is normally also a producer, especially in space where the luxury of parasites and pure consumers cannot be supported.

¹⁵ PRICES "are not just ways of transferring money. Their primary role is to provide financial incentives to affect behavior in the use of resources and their resulting products. Prices not only guide consumers, they guide producers as well... Although the producers are only looking out for themselves and their companies' bottom line, nevertheless from the standpoint of the economy as a whole the society is using its scarce resources more efficiently because decisions are guided by prices."—Thomas Sowell, *Basic Economics*, 2015.

¹⁶ FREE ENTERPRISE is an economic system in which no person is under legal force to buy or sell, and prices are governed by supply and demand rather than by government intervention. Classically, **supply** is the amount of a good or service offered for sale in aggregate, and **demand** is the corresponding amount of expenditure of money. Accordingly, **price** is the demand divided by the supply. For instance, doubling the supply of products halves prices in aggregate, and doubling the quantity of money doubles prices in aggregate. In game terms, if a chair increases the supply by reinvestment, this lowers prices and increases the number of players willing to pay these prices.

¹⁷ PRICES & TECHNOLOGY. Prices for goods or services are limited by the current state of technology, and drop rapidly as technology develops and companies retool for the new technology. For instance, innovations in the semiconductor industry double the number of transistors in an integrated circuit every two years, following Moore's law, an observation by Gordon Moore (co-founder of Intel). This exponential growth in computing power consequently allows the business supply to provide more computing power for lower costs.

5B3. The Companies & their Customer Services

There are 4 shapes of companies, each with 2 identical chits. Each has a **service**, provided as a *transaction* if a customer pays to the Pool the company *price* (5B4c). Start a company by floating it on either its White-Side or Black-Side.¹⁸ *The service of a Black-Side is available only after the market flips (5E).*

- a. Patent Company (White-Side squares).** A patent holding company. A paying customer first (optionally) performs an *insight* (4B2f) (i.e. performs an *inspiration* (K2a) on any single patent deck), and then receives the top card of a patent deck, plus the top card of each of its direct *supports* (J) (if it has any).
 - **Advantages.** This bypasses the auction and the academia hand limit. It costs a *transaction* rather than an Operation.
- b. ET Unicorn Company (Black-Side squares).**¹⁹ A zero-gee refining/manufacturing company. A paying customer performs either a *site refuel operation* (I5) or an *ET production operation* (I8) at their Factory as a *transaction*.²⁰
 - **Engineers & Miners.** Its output can be increased by *miners* or *engineers* as per 2C1.
- c. Boost Company (White-Side triangles).** A booster rocket company. A paying customer boosts a maximum Mass of 9 to LEO/Bank. While this is more costly for lighter payloads than the *boost operation* (I4), it saves an Operation. The price is doubled to boost to a non-monetizing Home Bernal, *even after market flip*. See I4 & 2B3e.
- d. ET Alchemy Company (Black-Side triangles).** Flip a White-Side card to its Black-Side at any BEO (Beyond Earth Orbit) Anchored Bernal (i.e. not a Home Bernal). This can even be at an opponent's BEO Bernal.

EXAMPLE [5B3d]

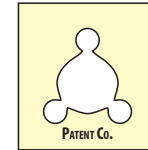
Your Rocket transports a GW thruster (salt-water zubrin) and a light 2-Therm radiator (steel/Pb-Bi pumped loop radiator) (a) to the isobank, a BEO Bernal. For your transaction, you pay ET Alchemy 1 isotope from your Isovault to the speculator's isovault (b).

This elevates the company, and flips your radiator to become a heavy 4-Therm radiator (pulsating heat pipe). With open-cycle cooling (1C2b), your GW thruster is now Operational. As a free action, you withdraw 4 isotopes from your isovault as four FTs in your GW thruster (c).

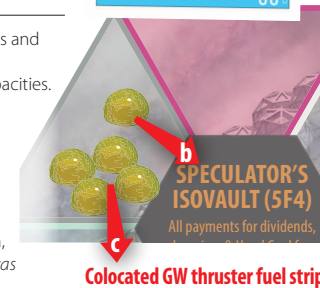
¹⁸COMPANY is a group of cooperating individuals, operating towards a productive goal. Each is individually responsible for their actions and decisions, it is a collectivist fantasy that a company is a unit of reality capable of making decisions as some sort of super-organism. A company or corporation is incapable of having responsibilities or committing a crime, for instance. Only individual persons have such capacities. "Corporation. An ingenious device for obtaining profit without individual responsibility." –Ambrose Bierce, circa 1900. "All rational action is in the first place individual action. Only the individual thinks. Only the individual reasons. Only the individual acts." –Ludwig von Mises, *Socialism: An Economic and Sociological Analysis*, 1922.

¹⁹UNICORN is something highly desirable but difficult to obtain, appropriate for nanotech products ET produced in microgravity.

²⁰SPACE FACTORY. In June 2023, a successful experiment on the ISS in LEO produced laboratory quantities of the cancer drug Keytruda, developed by the Merck pharmaceutical company. Their experiments have shown that "the space-manufactured version of this drug was stable enough to be administered via a shot rather than through an IV infusion. This was because particles crystallize differently at zero-gee." –Paul Reichert, *Pembrolizumab microgravity crystallization experimentation*, Merck Research Laboratories, 2019.

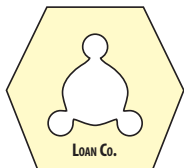


EXAMPLE [5B3d] ET ALCHEMY





EASILY MISSED: An Ability that halves the FINAO price allows you to pay the normal price for deluxe FINAO services. [5B3e]



TIP (MODULE 4): Both loans and contracts provide liquidity. However, loans tie up factories, charge interest up front, and must be paid back, while contracts don't tie up factories, and can be paid back by fulfilling them. However, loans potentially provide more money than contracts. [5B3g]

e. FINAO Company (White-Side circular). A programmer's union (stands for "Failure Is Not An Option").

A paying customer receives FINAO (avoiding a Hazard or Epic Hazard Roll, which may claim a *malf* per 5A5). This customer service can be applied at any point during the movement of any of your Spacecraft, and the deluxe service may be used for all of your Spacecrafts. A *trillionaire* (4B2e) uses their own experts, not the FINAO Co..

- **FINAO Prices.** If this company is not currently floated, FINAO payments are not allowed (5A4d), except that a player with the Open Source faction privilege (B6a) is allowed to pay 4 Aqua (doubled during inflation) for FINAO payments without using the FINAO company. *This privilege is lost after the stock market is flipped (5E).*
- **FINAO Deluxe Prices.** If you pay double the company price, the company service improves to up to four Hazard Roll avoidances in your Turn. See **Example 5B3e** on page 18.
- **FINAO Prices are halved** Certain Abilities (e.g. 4G3f, some Abilities on Colonists & Futures) halve FINAO prices. These Abilities instead pay the customer price for deluxe services.

f. ET Comet Company (Black-Side circular). A nanite-refining company. If at a Synodic Site (in the correct Season), a paying customer automatically rolls a '1' on their Size Roll (per 16, without expending an Operation).

- **Glitch Trigger.** This prospecting *transaction* is a Glitch Trigger.
- **Busted.** Even a busted Synodic Site may be successfully prospected, removing the busted disk.

g. Loan Company (White-Side hexagon). A lending company. A paying customer dedicates spare cubes as **debt cubes** placed 8 Years forward on the Sunspot Cycle. Each debt cube is worth 4 Aqua (8 during inflation), *or (after the market flips (5E))* worth 1 *FM* (fiduciary media, see 5F5). This amount is paid up front from the Pool, as a **loan**. Then pay the company price (which represents the interest on the loan), which elevates that company.²¹

- **Sequence.** Obtain incomes first, then make payments (contract fees / loans), the latter in any order you choose.
- **Fiduciary Media.** The loan amount is paid from the Pool to your isovault as FM (blue beads, see 5F5b).
- **Number of debt cubes.** The customer can place as many cubes as they have available in their color (2 to 7). These cubes are unavailable until reclaimed by repayment of the loan.
- **Repayment period.** Cubes are placed 8 years into the future, or to the last Year of the game if this is sooner, and are due at the start of your Turn the Sunspot Cube has reached it. The amount repaid is 4 Aqua for each cube (doubled during inflation), *or 1 bead for each cube if the market has flipped before it comes due.* Debt cubes cannot be repaid sooner than the Year following the Year that they were assumed.

²¹ **INTEREST RATES.** According to Ludwig von Mises and the Austrian School of Economics, interest rates are driven by an individuals' time preferences, not the rates set by a central bank. As a rule, people assign a higher valuation to present goods versus future goods. The source of economic value is the individual mind, not the labor inputs that went into making them.
—Carl Menger, *Principles of Economics*, 1871.

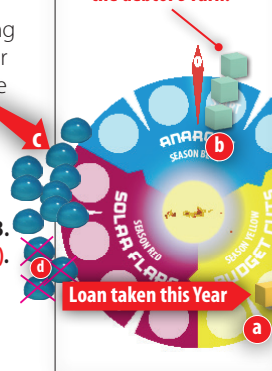
- **One loan limit.** A customer with debt cubes cannot take a second loan (but can rollover).
- **Loan Repayment (free action).** If the Sunspot Cube has moved to the Year with your debt cubes, either repay the loan in its entirety (dump shares if necessary), or rollover (next bullet). You may repay any debt cubes early. All payments go from your Bank to the Pool, *or from your Isovault to the Speculator's Isovault.*
- **Debt Rollover.** As the debtor, if you don't repay the debt cubes that are due, you must postpone your loan. First you must pay the company price as a late fee (if the Loan Co. no longer exists, pay its float price), dumping shares if necessary. If unable to pay (e.g. you have no shares or money in your Bank/vault), all Loan Co (s) lower one row **(5B5b)**. Then you may repay as many debt cubes as you wish back to your Reserves. Finally, claim the *default chit (5A4j)* from wherever it is, and rollover all your unpaid debt cubes forward another 4 years. Rollover is triggered even if you already have the default chit.
- **Debt Restructuring.** As soon as *inflation (5A4e)* is triggered, remove half your debts cubes (rounded up, so that a single debt is forgiven). When the market flips, see **5Ec**.

EXAMPLE [5B3g] It is the 3rd Year of season yellow (a). You use your transaction to borrow 12 Aqua from the Loan Co., currently at a price of 3. You place 3 debt cubes, placed 8 years into the future (b). You receive the 12 Aqua loan (c) and then pay the interest (3 Aqua) (d).

h. ET Express Company (Black-Side hexagon). An interplanetary rocket railway. A paying customer moves a maximum of 4 Mass between any two Anchored Bernal's (even enemies). This is a Spacecraft movement, so no *double moves (H1b)* allowed. The Mass can be stacks, cards (including contracts), or FTs.

EXAMPLE [5B3g] TAKE A LOAN

Loan is due in 8 Years, at the beginning of the debtor's Turn.



CUSTOMER SERVICES TABLE [5B3]

Company Chit	White-Side service (transaction)	Black-Side service transaction (post-monetization transaction)
Square	Patent Co. - Optional inspire of a patent deck, then take the top card of a patent deck plus the top card of its supports.	ET Unicorn - Perform a <i>site refuel operation (15)</i> or an <i>ET production operation (18)</i> as a transaction.
Triangle	Boost Co. - Boost a maximum mass of 9 to LEO/Bank. Double cost to non-monetizing Bernal's <i>even after the market has flipped.</i>	ET Alchemy - Flip a White-Side card to its Black-Side at any BE0 Anchored Bernal. This can even be at an opponent's BE0 Bernal.
Circular	FINAO Co. - One FINAO (to avoid a Hazard or Epic Hazard Roll). This may claim a <i>malif</i> . Pay the 2X (deluxe) price to avoid up to 4 Hazard or Epic Hazard Rolls this Turn.	ET Comet - When prospecting a Synodic Site (including busted), you automatically roll a '1' in your Size Roll. This is a Glitch Trigger.
Hexagon	Loan Co. - Make a loan from the Pool using your unused cubes placed on the Sunspot Cycle, due in 8 years. Each debt cube = 4 Aqua (8 Aqua if inflation) <i>or 1 FM</i> from the Pool.	ET Express - Move a maximum number of 4 Mass between any two Anchored Bernal's. This can be stacks of cards or FTs.

EASILY MISSED: NASA (Player White) gets no launch fees if a customer uses the Boost Company. [5B3]

TIP: Since a company's price is paid immediately after the service is rendered (5B2b), you can use ET Express to move Isotopes to your Isovault and pay from these funds, assuming that the isobank is a Bernal. [5B3h]

EASILY MISSED: The square company chit can be one of two companies: Patent Co. (White-Side) or ET Unicorn (Black-Side). Either can float at a price of 6 Aqua and a share value of 1 Aqua. [5B4]



TIP: The price decreases as a company chit moves further right, simulating that a company that invests in capital goods can maintain profits while offering its services for less. [5B4c]

5B4. The Stock Market

If a company is first *float*ed (5C1a), its chit starts in the space in the bottom row indicated by the dotted lines. As company chits move, they may stack on each other.

- a. **Shares** are the mushroom-shaped tokens.²² Each player starts with 5 of their color, and may invest them by buying and placing it into a vacant spot in a company.
- b. **Share Values.** The "1", visible through the chit window, indicates that shares can be *purchased* (5C1) or *sold* (5C5) for 1 Aqua. The share value changes by *company chit movement* (5B5).
 - **Inflation.** The share values are doubled if a *monetizing Bernal* is Anchored as Home Bernal (5A4e).
 - **Post-monetization (5E).** Inflation (if any) ends and the share values are in *beads* (Isotopes/FM).
- c. **Prices.** The number in the bottom of the column indicates how much Aqua customers need to pay for the services that the new company provides per 5B2b. The price changes by *company chit movement* (5B5). The price is paid just after the service is rendered.²³ As with share values, prices are also doubled during inflation.
- d. **Exchanging shares.** You may buy, sell, or exchange shares with another player at any time that you can perform a *negotiated transfer of hand cards* (N2). This negotiation must swap out the share color without creating or filling a hole in the company chit, and the company chit remains static.
- e. **Debt assumption.** Also by negotiation, you may assume the *loan* (5B3g) of another player by swapping one of their debt cubes with one of your color. See **Example 5B6**.

22 ET SHARES. The number of consumers in space is infinitesimal compared to the billions on Earth. According to a common consumptionist thesis, this means that spacefarers have an insufficient demand for goods compared to the need and desire to consume, and that a source of prosperity would be a baby boom in space. The extra persons would increase demand as pure consumers, increasing the demand and thus the economy. Common sense tells us that additional persons increase the economy in their role as producers, not parasites. Like all economies, the space economy is driven by imported goods and not by exported goods. Both on Earth and in space, it is the goods that are scarce, and not the demand for the goods, which is essentially infinite. "...the desire of food is limited in every man by the narrow capacity of the human stomach; but the desire of the conveniences and ornaments of building, dress, equipage, and household furniture seems to have no limit or certain boundary."

—Adam Smith, *The Wealth of Nations*, 1776.

23 FALLING PRICES IS NOT A RECESSION. Technological progress is indispensable to the growing supply of capital goods. Companies that introduce such capital ahead of their competitors can increase their supply and thus lower their prices. Perhaps the greatest error in the science of economics is to confuse falling prices due to technological progress with falling prices due to defaults on fractional-reserve-based loans, and the resulting bank failures and contraction of the money supply as their fiduciary media are removed from circulation. The former features economic prosperity, while the latter is a **recession** (or depression as it was called prior to WW2) featuring the sudden reduction of business profitability and the increased difficulty of repaying debts. "By committing itself to an inflationary or deflationary policy a government does not promote the public welfare, the commonweal, or the interests of the whole nation. It merely favors one or several groups of the population at the expense of other groups."

—Ludwig von Mises, *Human Action: A Treatise on Economics*, 1949.

5B5. Company Chit Movement

The chit of a floated company moves in five ways and can stack on other chits as it moves.²⁴

a. Move Up by 1 (elevation) for the following instances (that thematically elevates its reputation or treasury):²⁵

- **Paying Customer.** The company's price is paid by a customer on their Turn, who may only pay for a service actually performed (e.g. boosting, card acquisition, or FINAO). A *trillionaire* (4B2e) uses their own experts, not the FINAO Co..
- **Each Company Share Purchased (5C1)** that fills in a hole. In other words, shares that exchange hands without leaving a hole leave the company chit static.
- **Glory**, if the chair flips a glory chit in a *ticker tape parade* (La).²⁶
- **Chair claim jumps (G4).**
- **Chair Anchors a Bernal.**
- **A '1' is Rolled in a Hazard Roll (each FINAO company).** This includes Epic Hazard Rolls.

However, ignore this if it is the chair of a FINAO company that rolls a '1'.

EXAMPLE [5B5a]

**For your move, you return the Ceres glory chit to LEO. As chair of the Boost Co., this elevates the company chit by one (a).
For your transaction, you pay the company price to boost some Hand Cards, elevating the chit again (b).**

²⁴CHIT MOVEMENT. This game mechanism owes homage to games such as the 18XX series of train games, starting with *1829* by Francis Tresham (1974). I have improved it by emphasizing objective standards of increasing net worth, with increases in capital on the horizontal scale and increases of funds on the vertical scale. There are subjective elements such as glory, and random events such as pad explosions. Unlike *18XX*, in which dividends increase share value (moving to the right), here dividends lower the company's funds and thus move 1 down. This reflects the basic managerial dilemma between keeping the shareholders happy and improving the company. The American transcontinental railways of the 19th century were funded in two very different ways: public subsidies or private profits. The public ones (Central Pacific, Union Pacific, and Northern Pacific), were *de facto* nationalized, run by politicians in order to grab land (the owners evicted at gunpoint leading to Indian and range wars), suffered corruption scandals, and operated continuously deep in the red propped up by taxpayer subsidies (only the CP did not go quickly bankrupt). In contrast, the privately-owned transcontinental (The Great Northern Railway run by James J. Hill), paid for its land, courted settlers and Indians alike as customers, never accepted a dime of taxpayer money, and proved to be efficient, long-lasting, and profitable.

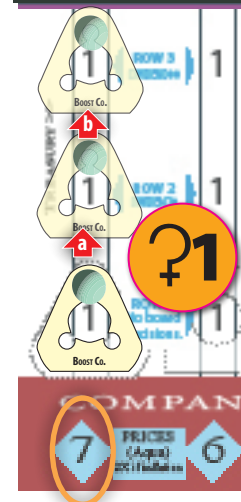
²⁵INCOME "is compensation derived from the provision of services to others. People earn income by helping others."
—James Gwartney & Richard Stroup, *What Everyone Should Know About Economics And Prosperity*, 1996.

²⁶PONZI SCHEME is any investment strategy in which the source of funds are from later investors rather than a sustainable business activity. It is fraudulent to the extent that potential investors are led to believe that the enterprise offers valuable goods or services to customers and are not told that other investors are the main source of company funding. In *Module 5*, purchases of shares, glory, and claim jumping are examples of elevating perceived share value through notoriety, hype, and investor's money, rather than objective value.

EASILY MISSED: A company chit may end up on top of another company chit. [5B5]

EASILY MISSED: A chair of multiple companies elevates all of them when getting ticker tape, claim jumping, or Anchoring a Bernal - or decreases all of them with Default or unanchoring a Bernal. [5B5a]

EXAMPLE [5B5a] CHIT MOVEMENT



EASILY MISSED: A casus belli future is not a Declaration of War, thus the company chit is not affected by it. [5B5b]

- **Each Company Share Sold or Dumped (5C5)** that leaves behind a hole. In other words, shares that exchange hands leave the company chit static.
- **Dividend Transaction (5D1)**. Down 1 for each dividend dot chosen by the chair for a payout.
- **Default**, if the chair receives the *default chit* (5A4)).



- **Chair Unanchors a Bernal.**

- **Failure to pay loan late fee.** The loan payment moves forward 4 more years and all Loan Co(s) move down, see **5B3g**.

EXAMPLE [5B5b]

c. Move Down by 1 then Right by 1 if during a board meeting the chair decides to *reinvest* into the company per 5D2.²⁸ (Thematically, its treasury is depleted to buy human or machine capital).

- **Insolvency.** Reinvest may not drive the company into *insolvency* (5B6). See **Example 5D2**.

EXAMPLE [5B5c]

d. Pegged Up. A chit at the topmost row cannot move farther up. If elevated, it doesn't move, but instead the chair claims one of their *hedge funds* (5B8b), if any remain. See **Example 5B8**.

e. Recession. The Loan Co. (only) is moved up to two columns left during a *recession* after a bank panic (5G3c).

27 INFLATIONARY DEPRESSION. Inflation due to credit expansion always (*ceteris paribus*) causes share values (and wages) to fall behind the rise in the prices of consumer's goods. This is because the demand for common stock depends on the availability of savings, which falls if savings fail to keep pace in the demand for consumer's goods. Indeed, inflation can eliminate savings altogether. —George Reisman, *Capitalism*, 1990.

28 REINVESTMENT. *"Not all investment projects will create wealth. (To enhance wealth) the value of the additional output derived from the investment must exceed the cost of the investment...to realize its potential, it must have a mechanism capable of attracting savings and channeling them into wealth-creating investment projects. In a market economy, the capital market performs this function."*

—James Gwartney & Richard Stroup, *What Everyone Should Know About Economics And Prosperity*, 1996.

5B6. Insolvency

If a company chit moves down into the red (bear) arena,²⁹ or it loses its last share, it becomes **insolvent**:

- a. Default Chit.** Unless he rescues it as an *angel* (see below), the chair of a company that goes insolvent receives the *default chit* (5A4j) from wherever it is. This chit is on its blue-side, or gold-side if post-monetization.
- b. Chapter 7.** All existing shares must be Discarded.³⁰
- c. Angel.** Any player (even outside their Turn) can pay double the minimum share value to buy one share. This refloats the company which is placed into the lowest row of the same column with 1 share.
 - **Archangel.** There can only be one angel. If more than one player offers to be the angel, the chair decides.
 - **Strawman.** You cannot be an angel for a company that you forced into insolvency by *dumping* (5C5c).
- d. Insolvency Effects.** Assuming no angel, the insolvent company becomes unfloated, so that any player on their Turn may expend a *transaction* to float it again by purchasing one of its shares.³¹

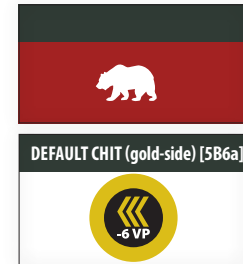
EXAMPLE [5B6] Patent Co. is in the bottom row of the last column, with a share value of 3 Aqua (a). On her turn, Player Red dumps her share, receiving 3 Aqua but putting the company into Chapter 7 (b). This forces you and another shareholder to Discard your shares. You have 5 Aqua, which is short 1 Aqua to become an angel, so you plead with Player White to supply the last Aqua. He accepts on the condition that you assume his debt on his loan, by changing his debt cube to your color (c). Saved by you the angel, Patent Co. returns to the same place in the market, with yours as the only share (d), and you avoid the default chit.

29 BULL & BEAR MARKET refers to upward and downward trends respectively in the overall share values in the stock market. The terms come from London's Exchange Alley in the early 18th century. The red and black colors are also historical. The phrases "in the red" describes being in debt or losing money, while the phrase "in the black" describes being solvent or accumulating money.

30 CHAPTER 7 is part of the USA bankruptcy code. Those assets of a debtor that are not exempt from creditors are collected and liquidated (reduced to money), and the proceeds are distributed to creditors. This frees the creditor from debt.

31 GREAT DEPRESSION. "Ben S. Bernanke and Milton Friedman are both economists who studied the Great Depression closely. Indeed, Bernanke admits that his intense interest in that event was inspired by reading Milton Friedman and Anna Jacobson Schwartz's Monetary History of the United States, 1867-1960. Bernanke agrees with Friedman that what made the Great Depression truly great, rather than just a garden-variety depression, was the series of banking panics that began nearly a year after the stock market crash of October 1929. And both agree that the Federal Reserve was the primary culprit by failing to offset, if not by initiating, that economic cataclysm within the United States. As Bernanke... put it in an address at a ninetieth-birthday celebration for Friedman: 'I would say to Milton and Anna: Regarding the Great Depression. You're right, we did it. We're very sorry. But thanks to you, we won't do it again.' This seeming similarity, however, disguises significant differences in Friedman's and Bernanke's approaches to financial crises, differences that have played an enormous yet rarely noticed role in the recent financial crisis. Not only have those differences resulted in another Fed failure... but they have also resulted in a dramatic transformation of the Fed's role in the economy. Bernanke has so expanded the Fed's discretionary actions beyond merely controlling the money stock that it has become a gigantic financial planner. In short, despite Bernanke's promise, the Fed did it again."

—Jeffrey Rogers Hummell, *Ben Bernanke Versus Milton Friedman, Boom and Bust Banking*, 2012.



EXAMPLE [5B6] INSOLVENCY

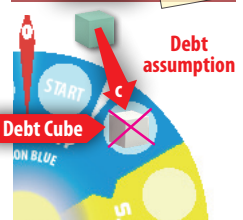
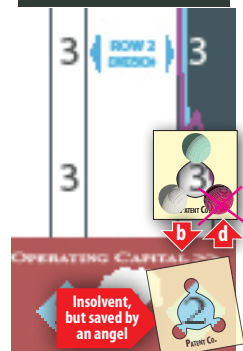


TABLE 5B7 LITIGATION

Law	Additional effects of a lobby
Individuality	Lawsuit. Move any delegate into any Ideology.
Freedom	Constitution. No litigations for the rest of the Year.
Honor	Trustee. If tied for chair in a company, become chair.
Unity	Tort. Move your default chit to another player.
Authority	Corruption. Swap 2 shares.
Equality	Antitrust. Move 1 company a column to the left.

5B7. Litigation (Addition to the Lobby Free Action, Module 0)

Per **O4**, as a once-per-turn free action, you may pay 1 Aqua (payment waived after the market flips) and Discard one of your delegates in any inactive Ideology to optionally use its **Law (O5)**. In **Module 5**, a lobby performed in an active or inactive Ideology may additionally perform **litigation** per **Table 5B7**, depending upon the Ideology lobbied.³²

a. Space Empire (3F4c). This makes litigations impossible (**Module 3**).³³

b. Disgrace. If you have the Default Chit, you cannot use *trustee*, *corruption*, or *antitrust*.

c. Entitlement. An isobanker is immune to *trustees*, and cannot use *corruption*.

EXAMPLE [5B7] On your Turn, you pay an Aqua and Discard your delegate in Individuality in order to lobby it. You ET produce using an opponent's Factory (freedom to roam), then use lawsuit litigation to move her delegate out of your Ideology. For your transaction, you Discard one of your delegates (the tender offer) in a proxy fight for the chair of her Loan Company (see 5C3). She is no longer able to defend.

EXAMPLE [5B3e] CIRCLE DELUXE



EXAMPLE [5B3e] On your move, you drift from LMO to the martian aerobreak (a). You expend your transaction at the FINAO Co., paying the company price (currently 4 Aqua). The FINAO Co. goes up one row (b). Your Operational Rocket stops at the aerobreak with two cards: a reactor with the pac-man icon and a thruster (c). You expend your Operation to air-eater refuel (15c). Your fuel consumption is 2, so you gain 3 FTs of water (d). You decide to pay 4 more Aqua (thus paying the deluxe FINAO price) to avoid the Hazard Roll for this operation.

REMINDER: If the Active Law is UN General Assembly (yellow), there is no lobbying and thus no litigation. [5B7]

³² SOCIALISM is replacing the open market, including the stock market, with regulated prices and services under central governmental control. "A system in which property rights in agriculture, commerce, and industry may be assigned or reassigned only by political authorities, rather than transactions in the marketplace." –Thomas Sowell, *Knowledge and Decisions*, 1996.

³³ MARTIAL LAW. "From 1935 through 1940, with Roosevelt and the ardent New Dealers who surrounded him in full cry, private investors dared not risk their funds in the amounts typical of the late 1920s. ... most business executives expected substantial attenuations of property rights, ranging up to 'complete economic dictatorship'. ... In 1945 and 1946, with Roosevelt dead, the New Deal in retreat, and most of the wartime controls being removed, investors came out in force." –Robert Higgs, *Depression, War, and Cold War*, 2006.

5B8. Bull Companies & Hedge Funds

A company that moves into the black arena of the stock market is a **bull company**.³⁴ This has 2 advantages:

- a. Impunity.** A bull company is immune to *proxy fights* (5C3).
- b. Hedge Funds.** If a company chit can't move up because it is at the top of a column, it is **pegged** up and doesn't move. If it can't move right and down because it is too far to the right, it is *pegged* right and moves down by one. If either pegged up or right, the *chair* (5B1) takes his choice of a share or a cube from his available tokens in the HEDGE FUND arena into his Reserves (5A3d). These tokens are strictly unavailable until claimed during pegging, whereupon the chair has their *cube limit* (17b)³⁵ or their *share limit* (5A1f) raised.³⁶
- c. Forgiveness.** Instead of taking a hedge fund, a chair may Discard the *default chit* (5A4j) from wherever it is.

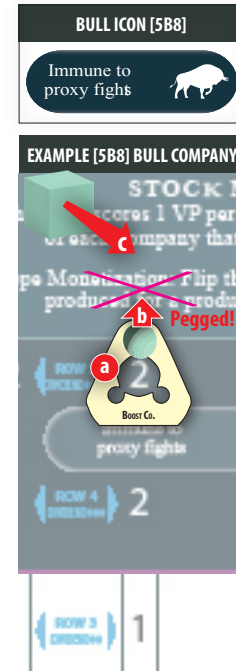
EXAMPLE [5B8]

Someone pays to be a customer for a company in the top row (a). You are the chair, and this pegs the company (b). The company stays in place but allows you to claim your cube in the HEDGE FUND arena into your Reserves (c).

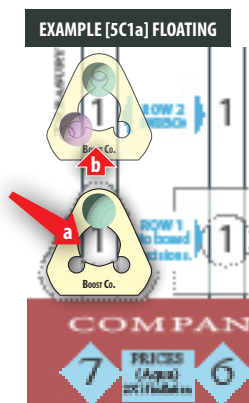
34 BUSINESS DURING THE U.S. FREE-BANKING ERA. "Before 1913, there was no widespread inflation. Business cycles were contained and there were no profuse breakdowns in the banking system or prolonged depressions, as have occurred under central banking. Banking practices were prudent because of the discipline of market forces such as the potential for deposit withdrawals or loan losses. When these occurred they were borne directly by individual banks which adjusted their policies accordingly, instead of being foisted upon unrelated parties. As a result, the capital ratio of the free banking system was 40% and never declined; whereas it has fallen continuously under central banking, under 5% today. Bank liquidity ratios were in excess of 40%, four times the figure under today's central banking system. The ratios were so high because reserves were decentralized - controlled by bankers, not politicians." —Richard Salsman, *Breaking the Banks*, 1990.

35 LIMITS TO GROWTH. One of the great unsung economists was Julian Simon, who statistically demonstrated that resources are created rather than used up. In his book, he made a public offer to "stake \$10,000 that mineral resources (or food or other commodities) will not rise in future years, adjusted for inflation. You choose any mineral or raw material (including grain and fossil fuels) that is not government controlled, and the date of settlement." The Malthusian environmentalists Paul Ehrlich and John Holden took this wager for a 10 year period - choosing the metals copper, chrome, nickel, tin, and tungsten - but lost when in 1990 the prices for all five had fallen, not risen. —Julian Simon, *The Ultimate Resource 2*, 1996.

36 HEDGE FUNDS. These investments are free of the heavy regulatory burden imposed by most governments, but are legally limited to those of high net-worth. Because regulators are authorized "to adjust the net worth and income standards for individuals as it deems appropriate", political insiders are favored. "The world benefits from the innovations brought to market by the companies that develop new medical treatments, safety features, communication technologies, and other products and services that make modern life as safe and comfortable as it is. These companies, both in the United States and abroad, rely on the U.S. capital markets to fund their work. Capital markets exist to funnel resources to their best use. When functioning properly, the markets ensure that companies with the best ideas and best business models will attract the most resources. Regulation, however, can snarl these processes, leading companies to waste resources in complying with inefficient or even counter-productive rules. During the roughly 100 years since the introduction of government-directed securities regulation, the securities laws and implementing rules have needlessly encumbered and often profoundly distorted the proper functioning of the capital markets. Those who advocate for increased regulation typically invoke the need for improved "investor protection" or, since the 2008 financial crisis, "financial stability". But many of the existing rules, at best, have no bearing on investor protection and, at worst, harm investors by limiting the amount of risk (which includes the opportunity for gain) they may take on." —Jennifer J. Schulp, *Cato Handbook for Policymakers*, 2022.



EASILY MISSED: On your Turn, you have both a single Operation and a single transaction. You also have free actions and Spacecraft moves. [5C]



WARNING. Although a Black-Side company can be floated either pre- or post-monetization, it provides no services until post-monetization. [5C1a]

5C. Transactions & Dumping

During your Turn, you have 1 company **transaction** which you can use to *purchase a share* (including *floating* a new company), *splinter a company*, gain a share in a *proxy fight*, become a paying customer, or liquidate shares.³⁷

a. Sequence. A *transaction* can be made in addition to your Operation and Spacecraft moves, in any order.

• **Phasing Player Token.** You receive this token (5A1g) when it is your Turn. As a mnemonic, turn the indented side facedown when and if you perform your *transaction*. Pass it to the next player when you finish your Turn.

5C1. Purchasing a Share & Floating (transaction)

As a *transaction*, you may purchase a single share. The 8 **company chits** (5A3a) start unowned, sitting in the *Pool*. Each has holes for three shares. To purchase a vacant hole, pay the *share value* (5B4b). Then place one of your shares into the hole purchased. This either **floats** the company, or **elevates** it if it is already floated:

a. Floating a Company. If the company is not yet floated, first pay for its first share, then float the company by placing its chit into the bottom row of the stock market, covering the appropriate dotted-line shape (triangle, circle, square, or hexagon). See **Example 5D2**.

• **Floating the second Company of a shape.** If a company is already floating in the market and its second copy is available, float this second company either per **5C1a** (above) or as a *splinter* per **5C2**.

• **White-Side or Black-Side faceup.** When floating, you choose which side of the company chit will be faceup, its White-Side (an Earth-based company) or its Black-Side (ET-based company).

EXAMPLE [5C1a] It's the 2nd cycle and you and your opponents are ready to boost. During your Turn, you float the Boost Co. by paying an Aqua (a). An opponent on their Turn also pays 1 Aqua to buy a share, which elevates the company to ROW 2 (b).³⁸

³⁷TRANSACTION ZERO-SUM FALLACY. "Many individual fallacies in economics are founded on the larger, and usually implicit, fallacious assumption that economic transactions are a zero-sum process, in which what is gained by someone is lost by someone else. But voluntary economic transactions—whether between employer and employee, tenant and landlord, or international trade—would not continue to take place if both parties were not better off making these transactions than not making them. Obvious as this may seem, its implications are not always obvious to those who advocate policies to one party to these transactions." —Thomas Sowell, *Economic Facts and Fallacies*, 2011.

³⁸BLITZSCALING is an emphasis on sales growth rather than profits during startup. The reason a company does not go under even if it continues to lose money is because it has access to investor's money, who expect future growth and profitability.
—Reid Hoffman & Chris Yeh, *Blitzscaling: The Lightning-Fast Path to Building Massively Valuable Companies*, 2018.

b. Elevating a Company. First pay the *share value* seen in the window (doubled if there is inflation), then move the chit up one per 5B5a.

• **Sell High, Buy Low.** You are not allowed to dump and buy from the same company in a Turn.

c. Negotiated Purchase. See 5B4d.

d. Post-monetization (5E). After the market is flipped, the numbers on the stock market reflect the share value in Isotopes (see Core Game glossary). To purchase a share, move this number of beads from your isovault to the speculators (5F4a). Newly floated companies start where indicated by their dotted outlines.

5C2. Splintering (transaction)

A **splinter** is a new company that includes disgruntled employees of the old company.³⁹ As a *transaction*, you may splinter a company you have a share in, as long as the second copy of that shape has not yet been floated.

The procedure is:

a. Remove your share. This leaves a hole, which per 5C1b moves the parent company chit down one. If this moves it into the red, or all of its shares are now unowned, it becomes *insolvent* per 5B6.

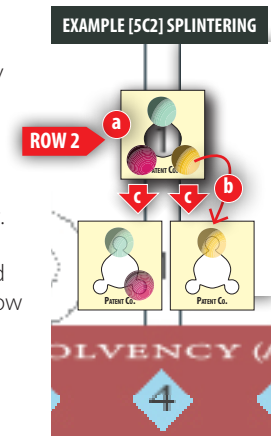
b. Terrestrial or ET. Obtain the company chit of the same *shape* (square, triangular, circle, or hex) as its parent. It may be floated on its White-Side or Black-Side. Add your share in the *chair's position* (uppermost hole).

c. Starting Reputation. The splinter floats starting in the same column as its parent (because the disgruntled employees have reproduced its capital equipment) but at the lowest row (because the splinter starts with low reputation).

EXAMPLE [5C2]

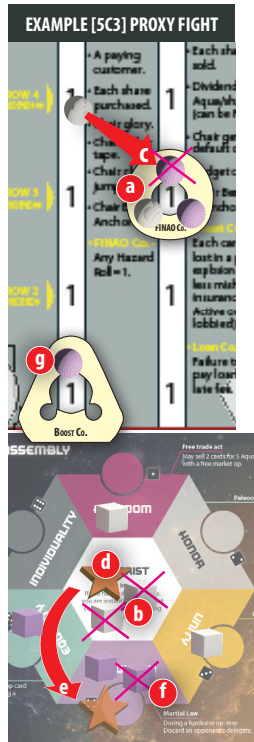
During your Turn, you decide to splinter your share in the Patent Co., currently in ROW 2 at price = 4 (a). The other square chit is available. Your share is moved from the parent, leaving a hole, to the chair's (apex) position of the splinter (b).

Both company chits end up in the bottom of the price = 4 column (c). Note that if you had splintered the company to its Black-Side (5C2b), its services would not be available until the market flips.



³⁹SPLINTERS. In my decades in the aerospace industry, I dealt with many splinters. Splintering problems arise as managers become conservative as their startups mature, riding upon the success of their youthful ideas so heavily invested in. Managerial decisions also become more risk-averse and accordingly less nimble as they increase their workforce, with the assumed responsibility of providing for them. This stagnation in the midst of rapidly changing technology motivates talented but disgruntled employees and shareholders to opportunistically start a new company, taking their knowledge, experience, and ideas with them. Contrary to popular opinion, large corporations do not become monopolies, they simply fail (unless propped up by the government as "too big to fail"). In my callow days, I was told that all the big companies then dominant would become monopolies swallowing up the smaller ones. Those companies are long gone, replaced by record numbers of brash new companies.

EASILY MISSED: Winning a proxy fight will make you the new chair if at least tied in shares, see 5B1c. [5C3]



5C3. Proxy Fight (transaction, Module 0 only)

As a *transaction*, you may attempt a **proxy fight**, i.e. changing an opponent's share in a company into your color.⁴⁰ You must have a share available to make a proxy fight. Proxy fights remain possible during *War* or *Anarchy*. Follow this procedure:

- Proxy Fight.** Specify the share and shareholder under attack.
- Tender Offer.** Discard a number of delegates of your color equal to the printed share value (do not double for inflation if present). Delegates in the Ideology of your faction color count double.⁴¹
- The defender counters or steps down.** If the defender Discards a single delegate that is in your Ideology, they retain their share, and both you and they lose delegate(s). If they don't, they Discard their share to their Reserves, replaced by your share.
- Vote Tally.** Perform this per **O3a** after the proxy fight to see if the Active Law changes. If playing Module 3, vote tally is not performed during *War* or *Anarchy* (**3C**).
- Bull Company immunity.** A proxy fight is not allowed against a company in the bull arena of the stock market.
- Module 3.** You are free to use or Discard delegates of your color in a proxy fight, including corrupted, in the enemy block, or extremists. A *space empire* (**3F4c**) shuts down Module 0, however proxy fights are allowed with *Age of Piracy*.
 - Age of Piracy variant.** Use **3D9c**, but instead of taking POWs, may swap an opponent's share for your available share.

EXAMPLE [5C3] As Player White, you own 1 share of a company and the chair (Player Purple) owns the other two (a). In order to become the chair, you use your transaction to initiate a proxy fight. Since the current share value is 1 Isotope, you Discard 1 delegate from centrist (b). Player Purple cannot counter and so the top purple share is replaced by a white one (c). Since you are now the majority shareholder, you become the chair. The Active Law is centrist (d), but the post-fight vote tally moves the Active Law to authority (e). On her Turn, Player Purple can make a retaliatory proxy fight as a transaction. Or she could Discard a purple delegate in authority (f), litigate *corruption* (5B7), and swap her share in the Boost Co. (g) with your chair position in the FINAO Co.

40 PROXY FIGHT is an attempt by shareholder activists attempting to gather enough shareholder proxy votes to win a corporate vote, often to replace the business management or the board of directors. They may be unhappy about the chair's use of company funds which causes its stocks to be undervalued. "The effect of poor management, or the abuse of the stockholders, is a low price of the firm's stock relative to the value of the firm's assets. This situation invites an outside takeover of the firm, the firing of the present management, and, very often, the sale of some or all of its assets to other firms which are capable of putting them to better use." –George Reisman, *Capitalism*, 1990.

41 POLITICAL KICKBACKS. Government regulators in non-freedom regimes have the absolute power to strangle or break-up any business using a variety of political, economic, antitrust, or environmental excuses. These regulators are under a constant temptation to use this power to demand favors or bribes. They may also show their muscle in proxy fights. In 2009, United Kingdom's business secretary, Lord Mandelson, threatened government intervention in the hostile takeover of the famed British confectioner Cadbury PLC by the CEO of Kraft Foods Inc..

5C4. Customer Service (transaction)

You become a paying customer by using your *transaction* and paying the company price for its service offered. This transaction *elevates* (5B5a) the company used, either the *Patent Co.* (5B3a), *ET Unicorn* (5B3b), *Boost Co.* (5B3c), *ET Alchemy* (5B3d), *FINAO Co.* (5B3e), *ET Comet* (5B3f), *Loan Co.* (5B3g), or *ET Express* (5B3h).

- a. **Conditions.** The company must have been *float*ed (5C1) and the service must actually be performed.
- b. **Post-monetization (5E).** The listed company price is moved from your *isovault* to the *speculator's isovault* (5F4b).

EXAMPLE [5C4] An exotic reactor is on the top of the patent deck. To get it, you can either start a research auction, or pay the Patent Co. its price of 4 Aquas. The chair of the Patent Co. offers a 1 Aqua discount, and you accept. You pay 3 Aquas and she pays one for you to take the reactor. This frees up your Operation to boost the reactor to your Rocket in LEO, and move it this Turn, one Year early.

5C5. Dumping (New Free Action)

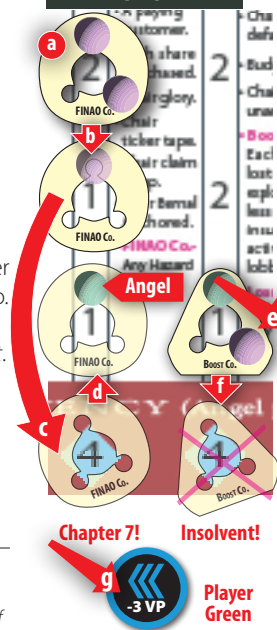
As a *free action* (G), you may sell any or all of your shares in any or all of your companies for their share value.⁴² You immediately receive the *share value* (5B4b) of each share sold.

- a. **Timing.** Additionally, dumping can occur at any time that you need to spend Aqua or *Isotopes/FM*, e.g. if you win an auction, need to repay contracts (Module 4), or pay during negotiations. However, you cannot dump and purchase from the same company in the same Turn.
- b. **Multiple Dumping.** If you dump more than 1 share in a company, receive the share value for the first sale, lower the company by 1 row, and then receive the new share value for the second sale. Share values in the red are zero.
- c. **Company Chit Descent.** Each hole created lowers the company by 1 row. If lowered into *insolvency*, all its shares are dumped per 5B6b and the player who was the chair just prior to the dumping gets the *default chit*.
- d. **Post-Monetization (5E).** Dumping a share is not allowed unless the speculators have enough beads to buy it. The speculators preferentially pay with FM if they have it. See 5F4d.

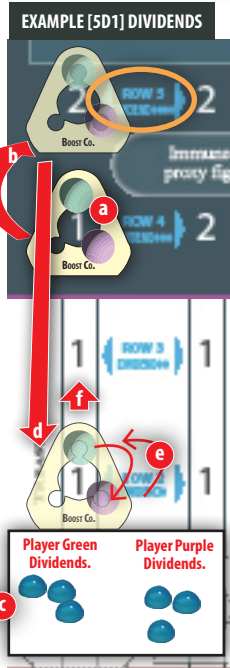
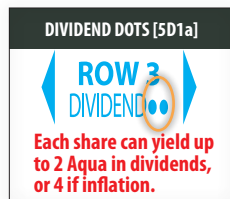
EXAMPLE [5C5] During your Turn, you dump both your shares of the FINAO Co. (a), receiving 2 for the first sale (b), and 1 for the second (c). It becomes insolvent, but an angel saves it by paying double its cheapest share (d). However, to pay for this, the angel dumps her share in the Boost Co. (e), which goes insolvent. No angel appears, and you are forced to Discard your share (f). Player Green (the angel), being the last to have their business go insolvent, receives the default chit (g).

PAYING FINAO: Make the decision to pay or not the FINAO Co. just before entering the Hazard. [5C4a]

EXAMPLE [5C5] DUMPING



⁴²SELLING SHARES. "...the ability of stockholders to sell their shares provides a major inducement to the purchase of those shares in the first place. If it were not for the existence of the stock market and its continuous trading in already issued stock, any purchaser of newly issued stock would be faced with the prospect of not being able to sell...discourage the initial purchase of stock from the issuing corporations and would greatly reduce the availability of capital to those corporations."—George Reisman, *Capitalism*, 1990.



5D. Board Meeting (new event after the Event Roll)

Immediately after each *Event Roll* (K2) has been resolved, a new event, the **board meeting**, is held. In this event, the chair of each company either passes, or makes a **board decision**: *dividend* (5D1), or *reinvest* (5D2).

a. Order. A decision is made for each company, from the bottom to top row, from right to left. The 1st Player breaks ties.

EASILY MISSED: No board meeting decisions are possible for a company in the bottom row (ROW 1). [5Da]

5D1. Dividend Payout (Board Decision for a company)

If the chair chooses to pay **dividends**, each share pays a number of Aqua from the Pool to its shareholder.⁴³ This number depends upon the row of the company chit, and is not possible in the first row.

- a. Dividend Dots.** The maximum amount of Aqua paid per share is equal to the number of dots (•) shown after the word DIVIDEND in that row (doubled if there is *inflation* (5A4e)). The chair can choose any number up to the max.
- b. Chit Down.** After payment, move the company chit down equal to the number of dots chosen. Thus the number of rows is not doubled for inflation. (Simulates reduced operating funds in the company's treasury).
- c. Post-monetization (5E).** The dividend payout is in beads per share, taken from the *speculator's isovault* (5F4b). If it contains both gold and blue beads, FM is issued first. If both FM and Isotopes are issued, the chair decides distribution. If there are insufficient beads, additional *fiduciary media* (blue beads per 5F5) must be added from the Pool to make up the difference. Thus the dividends for each share must be fully paid in beads.

EXAMPLE [5D1] You sail your crew to nyx and return, claiming glory in a ticker tape parade. You own a share in Boost Co. (a), and the ticker tape parade elevates it from ROW 4 to ROW 5 (b). As chair, during the board meeting you declare dividends of 3 Aqua per share, less than the maximum (DIVIDEND****) in this row. You receive 3 Aqua and the other shareholder receives 3 Aqua (c). The company descends to ROW 2 (d) due to the depletion of its treasury. On his Turn, Player Purple also brings back glory. This scores a *ticker tape coup* (5B1b), and his share swaps positions with yours (e). As the new chair, the parade elevates the company to ROW 3 (f).

⁴³ DIVIDEND is the distribution of a company's earnings to its shareholders and is determined by the company's chair. According to the "bird in hand" theory, investors prefer dividends over potential capital gains from reinvestment because of the uncertainty associated with the latter.

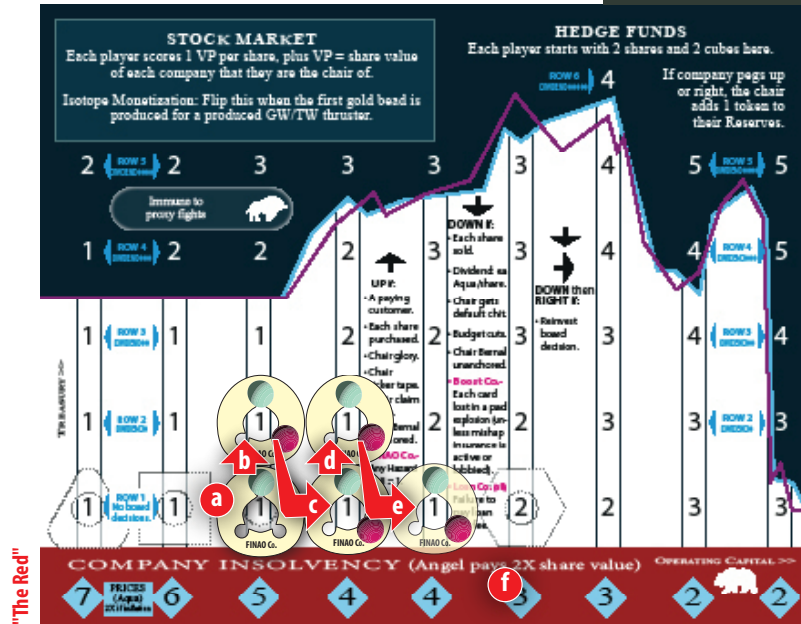
5D2. Reinvest (Board decision for a company)

If the chair chooses the **reinvest** board decision, move the company chit one step down (representing depleted treasury), then one step to the right (representing increased capital) per **5B5c**.⁴⁴ Reinvest is not possible if it puts the company into the red (**5B6**).

a. Modernize (post-monetization). After the market has *flipped* (**5E**), the chair may decide to flip a White-Side company to its Black-Side immediately after reinvesting it.

EXAMPLE [5D2]

- a.** As Player Green, you float the FINAO Co. by purchasing a share for 1 Aqua.
- b.** On their Turn, Player Red buys a share for 1 Aqua, elevating the FINAO Co. to ROW 2.
- c.** During the board meeting, as chair you choose to reinvest the company. The company chit moves down one row, then one to the right.
- d.** On their Turn, Player Red spends 4 Aqua as a paying customer to claim a malf on their Rocket Stack. This elevates the FINAO Co. by one row.
- e.** During the next board meeting, you perform a reinvest. The company chit moves down a row, then one to the right.
- f.** Another reinvest is not possible because this would put the FINAO Co. into the red.



⁴⁴ **FALLING PRICES.** In any free economy, supply rises and prices fall due to improvements in technology and business organization. However, prices can rise due to inflation of the money supply. The net change to the CPI (consumer price index) is the difference between these two effects (the supply of money and the supply of the products). In the USA since 1960, the annual rate of change in the CPI is 3.8%, while the average annual rate of change in the money supply (M2) is 7.1%. If the Federal Reserve had not bloated the money supply, prices would have fallen, not risen.

TIP: When the market flips, only a company's row is preserved. Reinvestment is not recommended close to market flip. [5D2]

EASILY MISSED: The amount of Aqua produced in a site refuel remains unchanged during post-monetization. [5Ef]

TIP: Post-monetization is an Isotope economy, and you can only produce Isotopes at a Factory on a Spectral Type matching your GW Thruster. Therefore, your choice of GW thruster is often decisive. There are single examples of types D, M, and V fusion GW thrusters. There are 2 type S fission GW thrusters, since S worlds are often dry you will need a robonaut of ISRU 2 or lower to accomplish this. Finally, there are 2 type H fusion GW thrusters, and these Factories are only likely on Luna or the surfaces of the gas giants. However, if the market has flipped, ET Comet provides access to H Comets such as halley's, bee zed, or kreutz sungrazer. [5E1a]

5E. Flipping the Stock Market (Modules 1,2)

Flip the stock market to its post-monetization side if *isotope monetization* (5E2) occurs. This is permanent.

- a. **Move companies** to the same row that they were previously, but in the first column. They retain their shares.
 - **Loan Co.** Any hex companies move to the fourth column instead of the first column, as shown by the hex icon.
- b. **Transfer hedge funds** (shares & cubes) to the same arena on the new side.
- c. **Settle/Transfer Debts.** Players may pay off any debt cubes (4 Aqua per cube, doubled if inflation). Remaining debt cubes stay on the Sunspot Cycle, but each is now a debt of 1 bead (gold or blue) rather than 4 Aqua.
- d. **Inflation Duration.** Inflation - the doubling of expenses and incomes (5A4e) - persists until the stock market flips, and not earlier, even if the monetizing Bernals that caused it are unanchored or Decommissioned.⁴⁵
- e. **Isobank founded.** The isobank with its 7 isovaults is founded per 5E3. This adds fiduciary media into the speculator's isovault per 5E3b and fiduciary media/Isotopes into the player's isovaults per 5E3c.
- f. **Aqua Crash.** Each player Discards all leftover Aqua in their Bank (it has been rendered worthless by an Aqua glut in LEO caused by space elevators and terrestrial railguns).
- g. **Default Chit (5A4j)** remains on its blue-side but will flip to its gold-side the next time it is transferred.
- h. **Ongoing contracts** remain in place but late fees are now 1 Isotope/FM per 5A4k.



5E1. Isostandard & GW Thruster (expands upon 4D1 in Module 4)

If you have ET produced a GW/TW thruster (1C), you may *factory-refuel* (1C1a) gold beads (Isotope Fuel) at Factories matching the Spectral Type of this thruster. This introduces gold beads into the game from the Pool. This Spectral Type is called your **isostandard**. Once you have established this, it can be changed only if you ET produce a new GW thruster after selling, trading your original (1Cb). You may only add fuel to GW/TW thrusters of your isostandard.

REMINDER (MODULE 4): The Promotion of a GW thruster to a TW thruster (4C7e) additionally needs the presence of Colonists with at least 4 different augmentations, plus a completed contract - either gold-side (4B1b) or Exodus (4B1c). These requirements are similar to the Promotion of Colonists, Freighters, & Bernals. [5E1]

⁴⁵ INFLATION. Politicians routinely find scapegoats for inflation caused by their massive money supply stimuli. "From January 2020 to January 2022, the U.S. public federal debt increased by 7.2 trillion USD. The resulting treasury securities were purchased by the Federal Reserve, adding 3.3 trillion USD into circulation. During this time period, the monetary base increased from 3.44 trillion to 6.10 trillion (+77%). The CPI (Consumer Price Index) increased by 8.98% over those two years. American President Joseph Biden blamed this inflation on supply chain issues and greedy corporations." –Matthew Rozanski, 2023.

5E2. Isotope Monetization (modifies 4D1a in Module 4 & 3B5 in Module 3)

Isotope monetization flips the stock market to its **post-monetization side**.⁴⁶ It happens when the first gold bead of Isotope Fuel is produced (1C1a).⁴⁷ This requires that the player (who becomes the isobanker) has produced a GW/TW thruster (not necessarily Operational).⁴⁸ Isotope monetization activates *post-monetization rules* (5G).

EXAMPLE [5E2]

In order to boost your “Lofstrom Loop” Bernal plus a generator (a), you first dump your share in the Boost Co. (gains 4 Aqua (b) & lowers the company 1 row (c)), then spend 14 Aqua to perform the boost operation. Finally, you load the Bernal with 3 Aqua and move it and the generator to the cyclor Home Orbit. On your next Turn, you use the epic hazard operation to Anchor it (1A6c). Since you have no more Aqua to pay the FINAO Co., you must make the Epic Hazard Roll. Fortunately, you do not roll a “1” (which would drop the supports for the 2000 km launch loop shown on the box cover into the ocean). This success causes inflation, doubling all costs and incomes (5A4e). Shortly after that, you ET Produce the Dense Plasma H-B Focus Fusion GW Thruster at your Factory on badenia. When/if you mine 1 Isotope there, the market flips and the Aqua market crashes (5E). This remonetization ends inflation (since Aqua is no longer money).

TIP (MODULE 4): Flipping the market gains access to the Exodus contracts and their bonus Isotopes. This helps with Futures. [5E2]

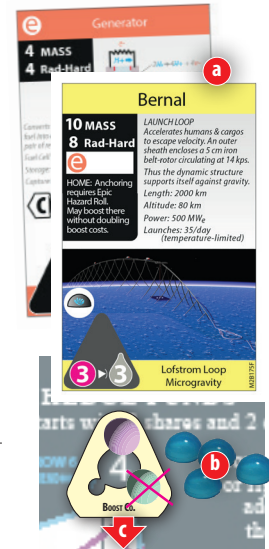
⁴⁶ MONETIZATION is the process of converting something into **money**. The government may or may not be involved. Money is one of the greatest inventions in human history, not just as a tool of exchange, but also for tracking savings and debts. It does not need further utility (such as being a rocket propellant). But to be valued and accepted, it should be durable, rare, fungible, easily stored, and not subject to wide fluctuations of value. An example occurred in the early days of the Industrial Revolution, when the Royal Mint failed to produce enough small denomination coins for factory owners. As the currency shortage threatened to derail industrial progress, private manufacturers began to mint custom-made coins, called “tradesman tokens”. From the 1787 Druids to the 1811 Birmingham workhouse silver, unofficial currency proved successful and cast doubt on the claim that governments can and must be relied upon to supply coins and currency. –George Selgin, *Good Money*, 2011.

⁴⁷ ISOTOPE PRODUCTION. Isotopes are everywhere, but normally in concentrations too low to be useful. Even under optimal assumptions, refining them to purity is a long and expensive process. Isotope production is by far the biggest bottleneck for any starship program.

⁴⁸ HIGH FRONTIER ISORUSH can be compared to the California Gold Rush of 1849. Jastram (1977) analyzed more than 4 centuries of gold and price data from Great Britain and the United States and found that gold’s purchasing value has remained relatively constant over time. The key requirement is that a dollar or any other unit of account always holds its weight in gold and be convertible. However, when the USA and UK defaulted on the gold standard, beginning with the first interjections of forced government monies in the 1900s and culminating in brazen seizures in the 1930s, the resulting depressions and inflations showed that the resort to incontrovertible paper money was unsound. Any standard is better than no standard, and money backed only by the willpower of bureaucrats is equivalent to no standard at all. Prosperity cannot be printed.

–Richard Salsman, *Gold and Liberty*, 1990.

EXAMPLE [5E2] MONETIZATION



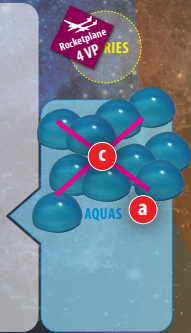
EASILY MISSED: After the Aqua crash, Isotopes are useful for:

- (1) fuel for GW/TW thrusters,
- (2) payment for company services,
- (3) bids in research auctions,
- (4) boosting payloads of Mass 10 or more. [5Gf]

STARSHIP CHIT [5E3a]



EXAMPLE [5E3c] STARTING BEADS



5E3. Isobank Founded (expands upon 4D1 & 4D2 in Module 4)

Flipping the market founds the **isobank**, a central repository that accumulates all the Isotopes mined in the Sol System for the purpose of fueling a starship for a future starshot. The isobank is the Factory where the first gold bead was produced. The owner of the Factory is called the **isobanker**. Only one isobank can be founded (or two if playing with **Module 4**). The isobank is divided into 7 *isovaults* to hold money.

- a. Isobank location.** Place the *starship chit* under the factory cube that caused *isotope monetization* (5E2a,b).
- b. FM starting in the Speculator's Isovault.** The hex-shaped area in the companies placard is divided into 7 repositories called **isovaults**.⁴⁹ The central one is the *speculator's isovault* (5F4). It starts with a number of fiduciary media (blue beads) equal to the number of companies in the game.
- c. FM/Isotopes starting in the Players' Isovaults.** The other 6 isovaults are *player's isovaults* (5F3), where players can hold money in addition to their Banks. The isovault of each player starts with a number of fiduciary media equal to the number of domes of their color on the map (Colonies and Anchored Bernal's). In addition, the isotope mined to found the isobank is placed in the isobanker's vault.

EXAMPLE [5E3c] You have 10 Aqua in your Bank (a) and 6 Aqua at an Outpost when the stock market is flipped. There are 2 companies floated, so the speculators receive 2 FM (b). You Discard the 10 Aqua (c), but keep your outposted Aqua. Both you and the isobanker have one Colony dome on your Home Bernal's, so you both receive one blue bead (fiduciary media) from the Pool (d). Finally the isobanker receives one gold bead (Isotope) (e) in their vault - the one mined to found the isobank.

- d. Isototal.** The sum of Isotopes (but not FM) in all 7 isovaults of the isobank is called its **isototal** (4E3a). If there are two isobanks (5F6), each has its own isototal.⁵⁰

⁴⁹ISOVAULTS. The currency in *High Frontier* is digital currency backed by possession of a useful and scarce commodity - water in the early game and fusion fuels after isotope monetization. The Isotopes in the isovaults of the isobank are not physically moved as they change hands, everything is handled electronically towards the day that the isobank is converted into a starship. A bank's ledgers show demand deposits on the **liabilities** side and loans on the **assets** side, with the difference being its **equity** (proportional to the game's vertical scale representing the company's treasury). Each gold bead in the isovaults represent a demand deposit of 40-tonnes of fusion-fuel Isotopes. Each blue bead in the isovaults represents a commercial loan of 40-tonnes of Isotopes. In the isobank's ledgers, loans appear as assets, but because these are physically fiduciary media rather than actual isotopes, they are of poor **liquidity** (the ability for them to be turned into cash on short notice).

⁵⁰ISOTOTAL. In the isobank modeled here, the supply of isotopes can only be increased by mining and refining and only reduced by rocketry. This differs from the central government bank of most modern nations, whose chairman can inflate the money supply with just a phone call. From early 2020 to today (mid-2023), the U.S. Federal Reserve directly added 3.9 trillion USD to the money supply (additional fiduciary media added another 1.6 trillion USD). Banking cash assets went from 1.7 to 3.3 trillion USD, and the total M2 money supply went from 15.4 to 20.9 trillion USD.

5F. The Isobank (Modules 1,2)

The **isobank**⁵¹ is a central repository that accumulates all the Isotopes that have been refined in the Sol System (the stated purpose is for eventual use as starship fuel in a starshot).⁵² Each player has a repository inside the isobank called an **isovault**, which can hold only *Isotopes* (yellow beads) and *FM* (blue beads). The isobank is founded when the market *flips* per **5E**. Only one (or two, see **5F6**) isobanks can be founded.⁵³

5F1. Isobanker & Companies Placard (unchanged from Module 4 (4D2))

The player owning the isobank Factory or Bernal that flipped the market is known as the **isobanker**.⁵⁴

- a. Bernal Isobank.** If the isobank is a Factory, and a Bernal Anchors (or is already Anchored) using the Factory as a Dirtsides, the Bernal becomes the new isobank and the owner of that Bernal becomes the new isobanker.
- **Isobanker Medallion (Module 4).** This is awarded to the isobanker of a Bernal Isobank, since this Bernal is a proto-starship, see **4A2o**. A rival wildcatter with a greater isototal can seize the medallion (**5F6e**).
- b. Decommission/Unanchor.** The isobank(s) can't be voluntarily or involuntarily Decommissioned. It can be unanchored only as a *desperation starshot* (**4D3**), or if all its Dirtsides are lost. This causes a *bank panic* (**5G3**). Its isovaults continue *transactions* but if unmanned its Isotopes can be robbed by a Felonious Human using cargo transfer.

51 ISOBANK is a privately-owned central bank of private holdings, like the Bank of the United States (BUS, 1791-1811). Its premise is that enormous amounts of isofuel is a valuable asset for a starship. Its central location is driven by the expense of moving around kilotonnes of rocket isofuel.

52 INTERSTELLAR. A manned voyage to another star, assuming a TW starship and a tiny crew in a cramped payload of Mass = 10, will need isofuel of Mass = 65 to 190 due to the tyranny of the rocket equation. This much isofuel would take at least several generations to refine. It will need to burn very clean to reduce radiator mass, which implies it is a mixture of helium-3 and deuterium. The hardships of such a voyage, also lasting several generations, is simulated in *Interstellar*, a cooperative-competitive standalone game best for 1, 2, 3, or 6 players. It features worker-placement, tableau building, and push-your-luck risk taking. It can be played as a successor game to *High Frontier* in combination with *Module 4:Exodus*. It can also be the 5th part of our game series on the evolution of life (*Bios:Genesis*, *Bios:Megaflora/Mesoflora*, *Bios:Origins*, *High Frontier 4 All* and *Interstellar*).

53 ISOTOPE STANDARD is patterned after "the classical gold standard era (1880-1914), when central banks were fewer and those that existed had limited powers, sixty nations had gold-based monies, and the value of money – that is, the goods and services money could buy – was preserved over time. ...Whereas U.S. Treasury bond yields averaged 4 percent or so without much variation, since 1913 they have averaged 5 percent; and since 1971 they have averaged 7 percent... U.S. industrial production increased by an average of 5 percent per year, but has increased only 3 percent per year since the Fed's founding in 1913, and only 2.3 percent per year under the fiat-paper money system in place since 1971. The business cycle has also gyrated more in the past century..." –Richard Salsman, *The End of Central Banking*, 2013. –Selgin, Lastrapes, & White, "Has the Fed Been a Failure?," Journal of Macroeconomics, 2012.

54 CENTRAL BANKING VS. FREE BANKING. "The U.S. banking system formally has been under central bank management for more than 75 years, since the formation of the Federal Reserve System in 1913. ...in the United States there has been a chronological transition from a system of free banking (1838-1863) to national banking (1864-1912) and then to central banking (1913-present). ... Despite attacks on 19th century free banking at the turn of the century, the actual source of agitation for the Federal Reserve was a desire for political control." –Richard Salsman, *Breaking the Banks*, 1990.

HOMELESS ISOBANK: An isobank Factory or the Dirtsides of an Isobank can be destroyed by combat, New Venus Future, sungrazer, or Goldilocks Luna Terraform contract. This causes a bank panic (5G3), and its isovaults can be robbed (F1b), but it continues transactions until another isobank is established per 5F6. This automatically disbands (5F6e) the homeless isobank. [F1b]

STARSHOT: If Module 5 ends in a starshot, it can continue as a campaign into *Interstellar*, the saga of a starship crew in search of a new place to live. [5F]



REMEMBER: Ad Astra Futures require a Spacecraft to exit the map at locations labeled: Jupiter-Sol-Jupiter exit, the Sol Exit Neptune, or Sol Exit Oort (1D1b). Then Decommission the entire Operational Stack. [5F2a]



5F2. Isotopes

The supply of *Isotopes* (gold beads) in the game⁵⁵ starts with those starting in the isovaults placed when the isobank is founded per **5E3**. Remaining gold beads are in the Pool and out of circulation. These isotope fuels (**isofuels**) can be returned to the Pool only by Decommission or being expended as fuel in a GW/TW rocket.

a. Creating Isotopes. There are 4 ways to move Isotopes from the Pool to your Isovault (increasing its isotal):⁵⁶

- **Isotope Site Refuel + Transport to Isovault.** The *site refuel* (Operation **1C1a**) must be at a Factory with a Spectral Type matching the Spectral Type of a GW thruster that you have ET produced (**1Cb**). Transport is possible per **5F3a** or *ET Express* (**5B3h**).
- **Cash Advance of a Gold-Side Contract.** Additional 1 or 2 Pool Isotopes per **5A4i** added to your isovault.
- **Futures** (Epic Hazard Operation **1A6**). All additional Isotopes spent for a Future go to the *speculator's isovault* (**5F4**).
- **Black-Side Card Sale** (Free Market Operation **13a,b**). This sells (Decommissions) your Black-Side Card for one Isotope taken from the Pool to your isovault (**5Gd**).

b. Increasing Isobank Cash Ratio. For each Pool Isotope that anyone adds to the Isobank (see the preceding 4 methods), the isobanker may Discard one *fiduciary media* (**5F5**) from the speculator's isovault (if present).⁵⁷

EXAMPLE [5F2b]

You accept the "Highest Cliff" contract (a). Per **5A4i**, the 15 Aqua advance is added to a Stack, and 2 Pool Isotopes to your isovault (b). Since you added 2 Isotopes, the isobanker chooses to Discard 2 FM from the speculators (c).

55 AQUA CRASH is modeled after the hyperinflation of the German *papiermark*. At the outbreak of WW1 in 1914, the German government abandoned the gold standard, and financed the war by heavy borrowing. To repay this, in 1923 every printing press in Germany was commandeered to spam over sextillion *papiermarks*. This money became less valuable than the paper they were was printed on, and people burned them to stay warm. The misery was ended and the economy was stabilized by issuing a new currency, the *rentenmark*, backed by gold bonds.

56 MINING & REFINING is the only way to increase the supply of real isotopes, the kind that can fuel a starship. Paper or digital currency has objective value in trading only if backed by such a substance. Buying or selling of shares also has value only with real products and services.

57 FRACTIONAL-RESERVE BANKING is a system in which a bank is legally required to hold a proportion of their deposit liabilities in cash as a reserve. If a bank follows a reserve requirement of 10%, it keeps 10% of all deposits in reserve, but they can create money by lending out the other 90%. So, if someone deposits \$100, the bank would keep \$10 in reserve but can lend out \$90. If this \$90 is deposited, the bank can loan out \$81, etc. These loans, in the form of fiduciary media, multiply the supply of money into the economic system, and credit ("easy money") is cheaper. As of 2020, the banks in the U.S.A. no longer have a reserve requirement, yet are still guaranteed by taxpayer money not to fail.

5F3. Player Isovaults

Isotopes (gold beads) and *FM* (blue beads) are transferred between the isovaults of the 6 player colors by *Negotiation* (N), and to/from the speculator's isovault per **4D2e** and **5F4a,b**. Remove Isotopes from the Isobank only to fuel a GW/TW rocket. Remove FM by isobanker's *cash ratio* (**5F2b**), *bank panic* (**5G3**), or *disbandment* (**5F6e**).⁵⁸

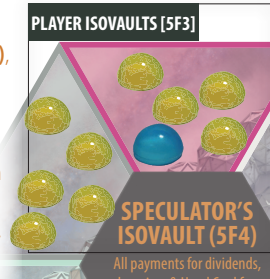
- a. Transporting Isotopes to your Isovault.** If you transport Isotopes (as Cargo)⁵⁹ to the Isobank (e.g. in a GW rocket fuel strip or Freighter, or site refuel at a Dirtside),⁶⁰ store them in the isovault of your color. You also own any Isotopes in your Stacks, but these cannot be used in *transactions* (**5C**) until transported to the isobank.
- b. Debasement (Modified from Modules 3 & 4).** You cannot convert Isotopes into Aqua or vice versa. Per **F4c**, Isotopes can be used as Aqua to activate a Water Thruster.
- c. Withdrawals (Same as 4D2e, Module 4).** You are only allowed to withdraw Isotopes for the purpose of refueling a GW/TW thruster of your *isostandard* (**5E1**), located at the isobank's location. Moving Isotopes to and from a Stack and an isovault per **5F3a,c** is a *cargo transfer* (free action, see **G1**).
- d. Isostandard.** All Isotopes in your Isovaults are automatically considered your *isostandard* (**1Cb**).

58CENTRAL BANK. Today all countries have a centralized (and nationalized) bank, but as little as a century ago, countries such as the United States, Canada, and Switzerland had only private banks. Today central banks enjoy inordinate power and government-sponsored monopolies. The isobank is envisioned as a privately-owned central bank of private holdings, created around the premise that a starship, which requires enormous quantities of isofuel, is a valuable asset. Its central location is driven by the expense of moving around kilotonnes of rocket isofuel. However, any concentration of wealth brings the danger of government seizure, and forced royal "loans" and outright nationalization is a common fate of banks since the inception of private banking during the Renaissance. *"The four basic characteristics that comprise central banking are 1) a government monopoly of money, usually consisting of the nation's currency and bank reserves, 2) a central bank as a 'lender of last resort' of the monopoly money, 3) government deposit insurance, and government regulation of private banking practices, including entry, exit, loan portfolios, customer services, and geographic scope. These characteristics are basic to central banking because such a system could not exist (or would be powerless) if any of them were absent."* –Richard Salsman, *Breaking the Banks*, 1990.

59CARGO. Technically, Isotopes carried as cargo are part of a rocket's Wet and Dry Mass, while isotopes carried as fuel are part of the Wet Mass only.

60FREIGHTER. The transport of isotopes could be by poodle, a radioisotjet thruster powered by the decay of radioisotopes (thus having nothing to do with the fictitious "RE-L10 poodle" rocket in the Kerbal Space Program). The cargo of this freighter would be the same as its fuel: isotopes. The radioactive decay of the isotopes heats propellant, which is exhausted through a nozzle. With a specific impulse of less than 1 ks, it would expend over a hundred tonnes of hydrogen propellant for every Burn. Its low power and high wet mass gives it an acceleration that even an electric rocket would leave in the dust. Its radiation levels are extreme, limiting its cargo to its isotopic power source. Furthermore, a poodle cannot be throttled or turned off, so its power must be safely rejected by radiators when not used to heat propellant. For all of its drawbacks, a poodle is a cheap, rugged, and failsafe rocket with no moving parts.

–Viventi, Neiman, & Zimmerman, *Simulated Radioisotope Thrust System and Component Development*, NASA, 1968.



TIP. What if you are poorly prepared for the Aqua crash? If you have neither a GW thruster nor an isostandard, you will have no Isotopes with which to buy company services! However, the traditional Operations are still open for you. In your auctions, your bids will be zero but you still win if nobody else bids and gain the Isotopes of others if you lose. Your boosting will be limited to 9 Mass. You can use the free market operation or share dumping to gain speculator's Isotopes. If you are a chair, you can also grab speculator's Isotopes with dividends. [5F3]

5F5. Fiduciary Media

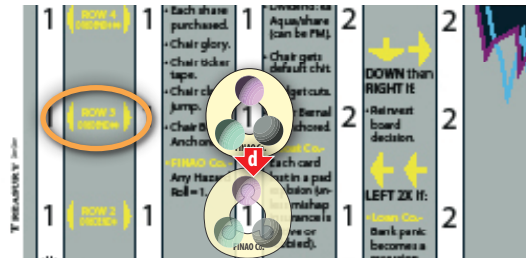
Isovaults can hold blue beads which represent **fiduciary media** (abbreviated **FM**, aka "Fake Money" because it is only electronic and not backed by actual Isotopes).⁶¹ FM is treated as 1 Isotope for all purposes, except it cannot be moved outside the isobank (and thus cannot be used to fuel a GW/TW Rocket) and can be Discarded during a bank panic. FM is created during the isobank *founding* (5E3b) and in 3 other instances (5F5a,b, 5Ge):

- a. Dividend FM Payout.** During the *dividend* decision (5D1b), if there are not enough speculator's beads to pay every shareholder the number of dots chosen, the chair must take FM (blue beads) from the Pool instead.
- b. Bank Loan FM Payout & Repayment.** If you get a loan from a Loan Co. (5B3g), the loan amount (number of debt cubes) is added as FM from the Pool to your isovault. Repayment can be in either Isotopes or FM.
- c. Speculator's Payouts with FM.** If you sell something (5F4b) and receive speculator's beads, the speculators will preferentially pay you with FM if they have both Isotopes and FM.⁶²
- d. Increasing the Isobank's Reserves.**

The isobanker may remove FM from the Isobank if Isotopes are added to it per 5F2b.

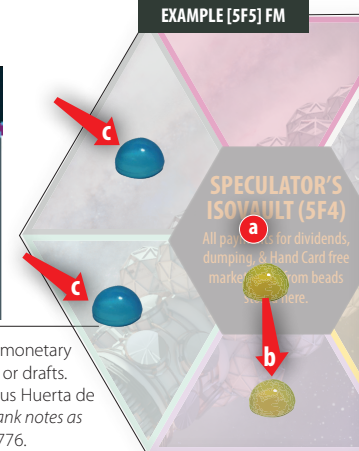
EXAMPLE [5F5]

The FINAO chair declares dividends and the speculator's isovault has 1 Isotope (a). The chair gives this isotope to himself (b) and pays the other 2 shareholders with Pool FM (c). The company drops from ROW 3 to ROW 2 (d).



EASILY MISSED: Fiduciary media can only be created during a loan by the Loan Co., or by a chair while issuing dividends. It can be removed by an isobanker if Pool Isotopes are added (5F2b), or during a bank panic (5G3) or disbandment (5F6e). [5F5a]

EXAMPLE [5F5] FM



⁶¹ FIDUCIARY MEDIA consist of the proportion of perfect money substitutes which a bank issues but does not fully back by physical monetary units (i.e. gold or paper money) in their vaults. Fiduciary media can exist in many forms including electronic, credit notes, checks or drafts. When a bank increases the amount of fiduciary media in an economy, *ceteris paribus*, the purchasing power of money will decline. –Jesus Huerta de Soto, *Money, Bank Credit, and Economic Cycles*, 2006. "(Bankers) subjected to the obligation of immediate and unconditional payment of bank notes as soon as presented, their trade may, with safety to the public, be rendered in all respects perfectly free." –Adam Smith, *The Wealth of Nations*, 1776.

⁶² GRESHAM'S LAW states that "bad money drives out the good". As a child, I remember hoarding silver quarters after the USA Coinage Act debased the silver coins to 40% in 1965, and then to 0% in 1971. I was careful to pay only with debased money. Legally, the government forced me to accept debased "copper sandwiches" at the same face value as real silver coins. If freedom of competition in coinage had been allowed, the reverse of Gresham's Law would have driven out the bad money instead, because rationally people want to accept real money, not fake money.

If playing with **Modules 2 & 4**, you have a second starship placard available and thus a second Isobank, called the **wildcat**, can be founded or Anchored.⁶³ The wildcat must be either a Factory or a BEO Bernal that contains at least one Isotope of the *isostandard* **(1Cb)** of the owner of this Bernal.

- EXAMPLE [5F6]** After your opponent establishes an Isobank, you build your first Factory at the centaur okyrhoe and use it to produce a GW thruster and one D Isotope (a). You receive a starship placard for founding the second isobank at okyrhoe (b). You move the freshly-refined Isotope to your isovault (c) and, since there are 3 companies in the game, 3 fiduciary media for the speculators (d).

63 WILDCAT BANK is one that prints more fiduciary media than it is capable of continuously redeeming in specie. Under central banking and fiat money, all modern banks are wildcats, backed by federal guarantees to print the money needed to keep them afloat. *"As disreputable as were wildcat banks, historians have found that they were not very often associated with bank failures in the free banking era. Bank failures themselves were low compared to those reported under central banking. Recently, historians have found that free bank failures, to the extent they occurred, were attributable not to fraudulent behavior but almost exclusively to decreases in state bond prices that occurred after the banks had purchased them for collateral."*

—Richard Salsman, *Breaking the Banks*, 1990.



5G. Post-Monetization Rules (Modules 1,2)

As the number of water-producing ET Factories floods the supply of water in Banks and LEO, water as a commodity-based currency becomes severely inflated (this is an effect of the game rules, not a rule itself).⁶⁴ At the point of *isotope monetization* (5E), this “aqua crash” causes Aqua to be no longer accepted as legal tender⁶⁵ for company services, shares, dividends, research auctions, boosting, or late fees. Isotopes become the sole currency,⁶⁶ which cannot be purchased for any amount of Aqua (5A4f).

- a. Infinite Aqua at LEO/Bank.** Water becomes so plentiful that rockets at LEO/Bank can cargo transfer any amount of FTs into their Fuel Strip. Adjust your Wet Mass (F3b) to any desired value.
- b. Factory Loading Only.** Freighters with this restriction (1B3b) now treat LEO/Bank as a Factory.⁶⁷
- c. Research Auctions (I2).** The top card of a patent deck plus its primary supports can be taken either by winning a *research auction* (I2), in which all bids are in beads from isovaults, or as a paying customer for a Patent Co. (5B3a). If you lose an auction that you initiate, the winner pays your bid from their isovault to yours.

⁶⁴BOOM & BUST BANKING. “The U.S. housing boom of 2001-06 and the subsequent bust were not the results of *laissez-faire* or deregulation in the monetary and financial system. The boom and bust were the results of the interaction of an unanchored government fiat monetary system with a perversely regulated financial system. Overly expansionary monetary policy fueled imprudent lending that was incentivized by ‘too-big-to-fail’ and other regulatory distortions.” –Lawrence White, *Monetary Policy and the Financial Crisis, Boom and Bust Banking*, 2012.

⁶⁵LEGAL TENDER is money that courts of law are required to recognize as satisfactory payment for any monetary debt. Each jurisdiction determines what is legal tender, but essentially it is anything which when offered (“tendered”) in payment of a debt extinguishes the debt. There is no obligation on the creditor to accept the tendered payment, but the act of tendering the payment in legal tender discharges the debt. –Wikipedia, 2023.

⁶⁶SPONTANEOUS MONETIZATION. A space elevator would cause hyperinflation of Aqua, a serious threat to anyone with their savings in Aqua (similar to the threat for anyone with their savings in fiat money). This would cause a demand for Isotopes as an “inflation hedge”, i.e. as a store of value. Unlike water, so common in the outer Sol System, fusion isotopes are rare and need to be refined from substrates at parts per million, or even parts per billion. Once this demand reaches a certain level, and enough people are willing to accept them for their own goods and services. Conditions are ripe for a spontaneous monetization of isotopes. They become money.

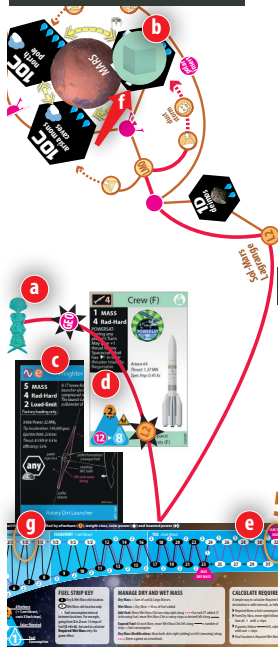
⁶⁷FACTORY LOADING ONLY. Freighters are a type of Spacecraft introduced in **Module 1**. To minimize the mental load on players, Freighters abstract their movement to one Burn per year without tracking propellant and fuel expenditure. Assuming copious and cheap water is available where they are loaded with Cargo, they are assumed to be loaded with just enough water propellant to get them safely to their destination. Because copious water is only available at a Factory, it follows that Freighters with the “Factory Loading Only” Ability can only be loaded with Cargo at Factories, and accordingly Freighters should be envisioned the most massive Spacecraft in the game. They start with a wet mass of hundreds of FTs plus the dry mass, and arrive with a wet mass equal to the dry mass, having used up their ocean of water. Naturally, if space elevator technology is able to supply LEO with copious ocean water cheaply, then LEO becomes the equivalent of a Factory for purposes of “Factory Loading Only” Freighters.

EASILY MISSED: Your Bank starts at LEO, but shifts to your Home Bernal per 2B3a). After the Aqua crash, your Bank contains infinite water. [5G]

EASILY MISSED: Your Bank is either LEO, your Home Bernal (5A4c), or (Module 3) your ET Home Bernal (3F1a). You may never deposit Isotopes or FM at your Bank, but only to the Isobank. You may never pay for anything from your Bank, only from your Isovault. [5G]

TIP: Aqua continues to have value as rocket fuel for rockets using water propellant. Thus Aqua can still be usefully stockpiled in BEO locations. [5Ga]

EXAMPLE [5Ga] MARS ROUND TRIP



EASILY MISSED: After the market flips, the Ability of the paleoconservative directive Law (05b) gains FM instead of Aqua. It also affects political scoring (07b). [5Ge]

d. Free Market Op (Addition to I3a,b). During post-monetization, this Operation gains no Aqua but sells a Hand Card for a speculator's bead (if any), or a Black-Side Card for a Pool Isotope.

• **Free Trade Act (05a).** As an Operation you may sell two Hand Cards for 2 speculator's beads, or two Black-Side cards for 2 Pool Isotopes. During War (Module 3), may petition Freedom to sell a White-Side card for 1 bead.

e. Paleoconservative Directive (05b). During your *fundraise operation*, take from the Pool a number of FM equal to the number of glory chits that you brought back to your Bank.

f. Boost Operations (I4). If the stock market is *flipped* (5E), the cost is zero up to a Mass of 9, 1 bead for a Mass of 10 - 19, and 2 beads for a Mass of 20 or more. Boost costs are now the same to monetizing and non-monetizing Bernal.

g. Summary. See Table 5G (last page).

EXAMPLE [5Ga]

The new PM playing field lets your crew travel to and from Luna or Mars! You have a Bernal at the cyclor (a) and a Factory on Mars (b), where you ET produce a Freighter (rotary dirt launcher, Mass = 5) (c). Now you face the problem of how to get this

Freighter off the red planet. You could build an acetylene rocketplane, but since the market has flipped you have infinite Aqua available at your Home Bernal. You load your 12-8 crew rocket (d) to the maximum Wet Mass = 32 (e). Flying through 2 Burns plus a Lander Burn, it makes a no-parachute rocket touchdown (f). This lowers your Fuel by 24 steps, plus 2 more steps for the afterburn necessary for a net Thrust of 11 (since Mars is Size = 10). You are left with a Dry Mass = 1 and a Wet Mass = 6.5 (g). Taking the Mass 5 Freighter as Cargo increases your Dry Mass to 6 and your Wet Mass to 11. This is enough to liftoff to LMO on your next Turn, and switch to the Freighter for its remaining journey.

5G1. Post-Monetization Payments & Bonuses

Since Aqua has lost value, payments and bonuses previously done in Aqua are now done in Isotope or FM beads.

a. Aqua costs. Everything that used to cost less than 10 Aqua is now free (e.g. Lobby, Launch Fees, research grants, suborn, costly weapons, Futures requiring spending less than 10 Aqua, & Taxes). Everything that cost 10-19 Aqua is now 1 bead (e.g. cost for a *second Bernal* built at your first Bernal (2B1c)), and anything that cost 20 or more Aqua is now 2 beads (e.g. completion cost for uplift future (1D5n)).

b. Aqua bonuses. These are no longer paid (e.g. *income/fundraising* (I1, O2b), mishap insurance, & Bernal profits).⁶⁸

c. FT costs (delivery operation, acetylene rocketplane liftoff, etc.) are unchanged.

d. Advances/Late Fees of Gold-Side contracts. Advances are paid as per 5A4i. Late fees are 1 bead, see 5A4k.

⁶⁸ PROFITS are the difference in the cost of capital (see footnote 3) and the income made by use of that capital. If you can produce human values without spending for capital, your profit rate is 100%. But usually it takes money to make money. Profits drive a beneficial human condition.

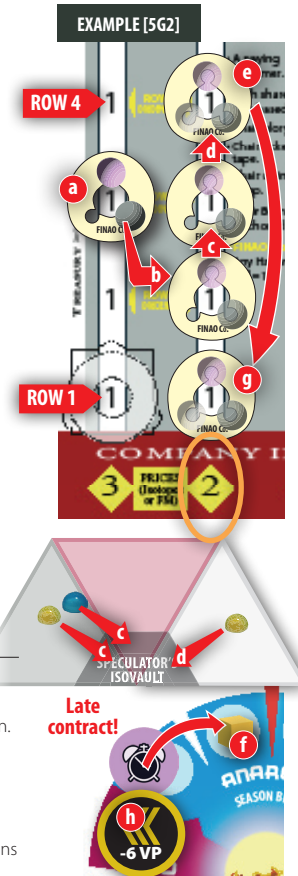
5G2. Post-Monetization Company Chit Movement

Once the stock market has *flipped* (5E), the movement of company chits on the stock market is unchanged. They move in the same way and on the same occasions as it did before the flip, see 5B5.

EXAMPLE [5G2] After the stock market flips, you are the chair of the FINAO Co. which starts in ROW 3 (a). During its board meeting, you reinvest, moving it into the 2nd column (b). During your Turn you pay the speculators 2 beads to avoid a Hazard Roll for your Spacecraft (c). On her Turn, Player White pays the speculators a bead for a share in the FINAO Co.(d). The FINAO Co. ends in ROW 4 (e).

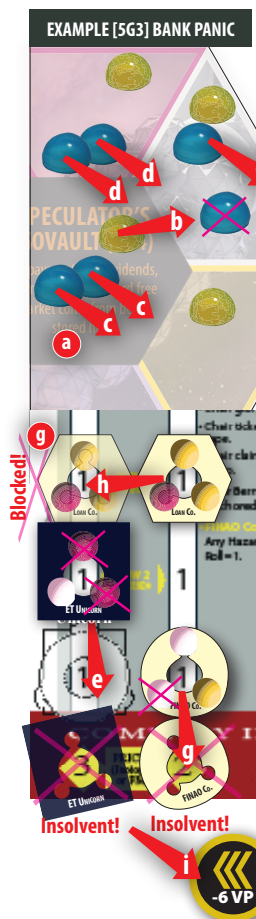
During Sunspot Cycle advance in the next Year, the Sunspot Cube (f) advances past your timepiece for your unfulfilled contract, flipping it to its alarm side and making you deadbeat (4B5a). During the board meeting after the event, you choose to issue dividends. All 3 shareholders take a bead from the speculator's isovault (not shown), and the company descends to ROW 1 (g). On your Turn, you pay the 1 bead late fee using the dividend you just earned. Thus you avoid the default chit (h) and avoid plunging the company into insolvency. But if any of your shareholders should dump their share, your company would go insolvent.

a. Recession.⁶⁹ During post monetization, a special chit movement is possible: the Loan Co(s) is moved two columns to the left for each company that goes *insolvent* without being saved by an angel during a *bank panic* (5G3c). See **Example 5G3** (next page).⁷⁰



⁶⁹ ECONOMIC DOWNTURNS. Recessions are generally longer and more severe under a system of central planning under a central bank than under free-banking. This reflects the difference between bureaucratic planning based on political expediency and private planning based upon economic profit. The money and banking system is too important to our freedom and economic prosperity to be left to political manipulation. The system should be placed on an objective foundation of free market principles based on law and contract.
–Richard Salsman, *Breaking the Banks*, 1990.

⁷⁰ RECESSION is a persistent decline in economic activity; what used to be called a **depression**. In 1977, the United States regime created the Community Reinvestment Act, which tried to make home buying more affordable for low-income people with poor credit history. By motivating banks to lend to riskier and riskier people, it was a factor in the 2007 global financial crash (as well as collapse of entire banking institutions and Wall Street firms). In 2007, banks were under more regulations than at any time in U.S. banking history. –Thomas Sowell, *Basic Economics*, 2015.



5G3. Post-Monetization Bank Panic (new event for Module 5)

If the Event Roll is *Anarchy* (K2e), *Exodus* exits (4D3e), or *outbreak of War* (3C), then all isobanks suffer a **bank panic**.⁷¹

- a. Bank Run.** Starting with the isobanker, players take turns exchanging 1 FM from their vault into 1 speculator's Isotope, continuing until there are no more Isotopes in the speculator's vault or there are no more FM to exchange.
- b. Deflation.** Discard all FM from the Isobank. Then each player must Discard one of their shares for each FM they lost, starting with the 1st Player. They may avoid Discarding a share by lobbying the *centrist law* (O5g) for each share. Each company goes down a row for each share lost.⁷² They stop when they run out of either FM or shares.
- c. Recession.** If any companies became *insolvent* (5B6), Discard all its shares. Unless it is saved by an angel, move all Loan Co. chits two columns to the *left* (5G2a) for each insolvency.

EXAMPLE [5G3] In a 3-player game, the speculators have 2 FM and 1 Isotope (a). The Event Roll is a '6' in season blue, causing a bank panic. The isobanker (Player White) changes a FM into an Isotope from the speculator's (b). Then 2 FM in the speculator's isovault are Discarded (c). The 1st Player (Player Red) Discards 2 FM (d) and thus 2 shares, sliding ET Unicorn into bankruptcy (e). The next player clockwise (Player White) Discards 1 FM (f) and thus 1 share, sliding the FINAO Co. into bankruptcy as well (g). The 3rd player (Player Yellow) is unaffected. There is a recession, so the Loan Co. moves to the left 1 column (but not 2 columns because it runs into the edge of the board (h)). Player White gets receives the default chit (i) since the FINAO Co. became insolvent last. Both Players White and Yellow Discard their shares in the insolvent companies without compensation (5B6b). No angels appear to save either company.

71 BANK PANIC. If a bank fails due to loan defaults, the FM it issued is removed from the economy. This reduction in the money supply causes **deflation**, an increase in the purchasing power of money, which hurts those with fixed contractual obligations. Businesses can no longer afford their payrolls, and debtors can no longer afford their loans and mortgages. This can lead to further bank failures. As I write this (April 2023), three Silicon Valley banks have failed in a rapid domino. One of them, SVB, is the third largest bank failure in U.S. history. The U.S. banking system since the creation of the Federal Reserve in 1913 has been abysmal, with the banking cash ratio falling from 0.17 in 1913 to 0.135 at the onset of the 1929 banking panic. This contrasts with zero panics during the free banking era (1838-63), and 5 mild panics caused by the National Currency Acts of 1863/64. A run on a bank with insufficient money to cover its clients, as in the 1929 and 2023 panics, requires deposit insurance, federal bailouts, and the government's capacity to print more money effortlessly to "solve" the shortfall. In this game, actual money is assumed to be a bullion-standard (isotopes or orbital water). Checking deposits that are not backed by actual money are a liability - a debt - to the isobank. They are a promise to pay isotopes on demand, and circulate as the equivalent of money so long as no one questions the ability of the isobank to meet that promise. If 50% of the beads in the isobank are blue, then half the money is backed by isotopes and the other half by nothing. The isobank becomes a credit institution, not a holder of money. Those who favor banks issuing unsupported fiduciary media include startup chairs seeking a lower rate of interest - "easy money", and Keynesians who favor government control of transactions, banks, and money.

72 CASH RATIO is the ratio of a bank's deposits (gold beads) compared to its loans (blue beads, or fiduciary media). In **Example 5G3**, the standard money is 4 gold beads and the loans are 6 blue beads, so the cash ratio is $4 / 6 = 0.67$. Since this metric is less than one, this isobank has insufficient liquidity to keep it solvent should there be a run on it.

5H. Endgame Scoring

Scoring is per M2, with 3 additions:

- a. Company VP.** Each player scores 1 VP per share token of their color in the market, plus VP equal to the *share value* of each of their companies that they are the chair of (5B4b, not doubled for inflation nor multiplied per share).

EXAMPLE [5H] It is the end of the game, and you have 4 shares. You are also chair of the FINAO Co. (a) and the Boost Co. (b) both with a share value of 3 Aqua (b). Your endgame Company VP is therefore equal to $4 + 6 = 10$.

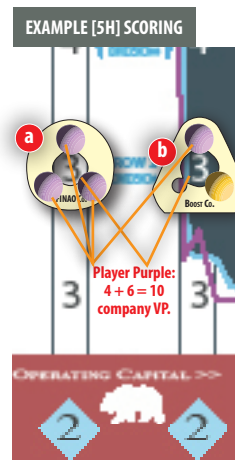
- b. Default, FM, & debt cube penalty.** Even if you are a chair, holding the *default chit* (5A4j) is minus 3 VP on its blue side or minus 6 VP on its gold side. Each *debt cube* (5B3g) you hold is minus 3 VP.⁷³ During *Project Exodus starshot scoring* (4E2f, 5A4I), fiduciary media do not count, but completed *ad astra* Futures count as 4 Isotopes.
- c. Bonus VP (M2b).** This includes malf chits (4 VP each) as well as glory and heroism chits.

5I. Helpful Hints for Investors by Geoff Speare

Besides being endgame VP, companies are useful in the following ways:

- a. Square.** The Patent Co. will get used a lot if the chair chooses to reinvest to bring the price down.
 - **Post-monetization.** If you are the chair, modernize it to ET Unicorn as soon as the market seems sure to flip, as ET production is the primary limiter of the pace of the game once Factories are started.
- b. Triangle.** Boost Co. will get used a lot, so I recommend early investment, as the chair if possible.
 - **Post-monetization.** The Boost Co. is still quite useful. Without BEO Bernals, ET Alchemy isn't useful.
- c. Circular.** Malfs make the FINAO Co. a necessity. Float it if you are flying early.
 - **Post-monetization.** ET Comet is often used by players to set isostandards for their GW/TW thrusters.
- d. Hexagon.** The Loan Co is a high flier, providing consistent dividends. If you lose or dump your shares, it'll be expensive or impossible to get back in.
 - **Post-monetization.** The Loan Co. becomes less useful as time goes on. Without BEO Bernals, ET Express isn't useful.

⁷³ CREDIT CRUNCH is a sudden tightening of the conditions required to obtain a loan from banks. It often follows periods of government measures to encourage easy credit, and subsequent defaults. It is rather independent from the interest rates charged by a central bank. An expansion of the money supply by fiduciary media can cause deflation, which harms borrowers bound to pay their debts in money that is worth more than the money they borrowed. "In a depression men cannot sell their goods or services at pre-depression prices. If they insist on pre-depression prices for goods, they do not sell them. If they insist on pre-depression wages, they become unemployed." –Columnist Walter Lippmann, 1934.



REMINDER (MODULE 4):
The minimum amount of Isotopes in an isobank for a desperation starshot is:
6 Isotopes (solitaire),
11 Isotopes (2-player),
16 Isotopes (3-player),
21 Isotopes (4-player),
24 Isotopes (5-player), or
28 Isotopes (6-player).
See 4E2f. [5Hb]

MODULE 4: Each unfulfilled contract is -3 VP (5A4m). [5Hb]

5J. Iso Dawn (Post-Monetization Scenario)

This scenario is set immediately after the market has *flipped* (5E). The value of Aqua has crashed and the spacefarers have begun to adopt rare fusion isotopes as money. A new central bank has become the accepted repository for isotopes and isotope transactions. This new dawn augurs a golden era for companies that will help colonize exotic Comets, create ET products, expedite components between Bernals, and many other offers. But there are serious risks if greed and speculation overwhelms the stock market. *Iso Dawn* sets the stage for a full game of *HF4* in the post-monetization era.

a. Number of Players. 2 or more.

b. Modules. Must be played with Modules 0, 1, & 2. Can be played with Modules 3 & 4.

c. Setup. As per Core (C) (plus the Modules used), with the following exceptions:

- **Seniority Disks (C1).** Place 2, 3 or 4 Seniority Disks for a medium, long, or Futures game.

- **Stock Market.** Place this placard in a public area on its "Post-Monetization" side.

- **Companies & Malfs.** Place the *companies placard* in a public area, and place the 4 *malf chits* (5A5) into the 4 spaces provided on this placard.

d. Quick Start/Rapid Start (optional). To start with a Hand of cards, use a *quick start* (V1) or *rapid start* (5K), which, after performing the first Solar Cycle to acquire cards, expends the first Seniority Disk.

- **Setup (in addition to V1b, 5Kb).** Roll 1d6 to determine the starting Factory Location for each Faction color according to row 3 in table 5Jj. Place a Claim and Factory of the faction color on the Site.

- **1st solar cycle (change to V1c, 5Kc).** During the first cycle, you can only take/auction from the 6 Core patent decks or take/auction one Crew card exclusively. If you take a Crew card, immediately complete your Faction setup by executing 5Jf - 5Jj.

- **2nd solar cycle.** Before starting this, players without a Faction complete their setup per 5Je - 5Jj.

e. Faction Selection. Randomly, or by some arrangement, assign each player to a Crew card of a Faction color. If playing *rapid start* (5K), gain a Crew card during an auction, skip this and continue with 5Jf.

- **Space Agency.** Each player can secretly choose either side of their assigned Crew card.

f. Starting Colonist. Randomly, or by some arrangement, assign each player to an earthborn Colonist card (exclude Robots, see 4C).

g. Starting Delegates. Each player starts with one cube in their Faction color in the political assembly, and a second cube in the ideology indicated by their Colonist.

h. Vote Tally. Perform a *vote tally* (O3a) to set the Active Law star.

i. Starting Implants (Module 4). Give each player two random *augmentation chits* (4C3) of differing shapes. Each player decides their Ability (side A or B) and *implants* them into their Colonist (4C3).

TIP: Some faction privileges are obsolete in the post-monetization world. But still useful are *Marketeer/Scrum Troubleshooters* (Player Gray), *Skunkworks* (Player Red), *Dharma Refuel* (Player White), *Blink Telescope* (Player Yellow), *Felonious* (Player Purple), & *Powersat* (Player Green). [5Je]

TIP: With just your Crew thruster, you can get out to any of the starting Factories. Using Solar Oberth or Venus flyby in season blue gets you even further. [5Jj]

j. Factions Setup. Consult rows 1 through 6 on the table below, according to your Faction Color (Row 1):

- **GW Thruster (Row 2).** Receive the specified card into your Hand. Discard unused GW thrusters into their deck.
- **Starting Factory (Row 3).** If playing quick/rapid start (5Jd), this was done during setup. Otherwise, roll 1d6 for the Location of your starting Factory. Place a Claim and Factory of your color on this Site.
- **Starting Home Bernal (Row 4).** Take a Bernal placard and place a Kalpana Bernal topped with a Colony dome in the Home Orbit specified. Your Crew Card and Colonist start in this Bernal.
- **Starting Shares (Row 5).** Start with 2 free shares in the indicated *company chit* (5A2). The first share floats a company, and each additional share raises it one row (5C1). If multiple players have shares in a company, the highest *clout* (C8) is the chair. Place any unused companies into the Pool.
- **Starting Player & Speculator's Beads (Row 6).** You start with no Aqua, but your isovault starts with the FM (blue beads) specified. The speculator's Isovault starts with a number of FM (blue beads) equal to the number of floated companies.
- **Determine Isobanker & Isobank.** Randomly select one player to be the Isobanker, and place 1 Isotope (gold bead) in their vault. The Isobank starts at the Isobanker's Factory. Place the *starship chit* there.
- **Hedge Funds.** Each player places two shares and two cubes into the upper right corner of the stock market marked HEDGE FUNDS and adds their remaining 3 shares into their Reserves.
- **Glory Chits & cleanup.** Discard Glory chits from Heliocentric zones that have Bernals and industrialized Sites. Remove any unused colored tokens placed during 5Jd.

TIP: If your Factory starts on a distant world, consider producing a GW thruster and Freighter there, and ship them to your Bernal to make it Operational. [5Jj]

EASILY MISSED: Iso Dawn starts you with a Hand of a single GW thruster card. Per 5E1, this sets your isostandard. [5Jj]

STARSHIP CHIT [5Jj]



Indicates isobank location.

ISO DAWN SETUP [5Jj]

1. Faction	Gray (individuality)	Red (freedom)	White (honor)	Yellow (unity)	Purple (authority)	Green (equality)
2. Starting GW Thruster	Dense Plasma H-B Focus Fusion (D)	Salt-Water Zubrin (S)	Spheromak ³ He-D Magnetic Fusion (H)	Mini-Mag Orion Z-Pinch Fission (M)	Amat-Catalyzed Fission-Fusion (S)	Levitated Dipole ⁶ Li-H Fusion (V)
3. Die roll for Industrialized Site	1/2 - C. Elst-Pizarro (10:45 ♀) 3/4 - Comet Wild 2 (8:30 ♀) 5/6 - Comet Borrelly (12:00 ♀)	1/2 - Necker (12:00 ♀) 3/4 - Gaspra (10:00 ♀) 5/6 - Eros (12:15 ♂)	1/2 - Comet Halley (10:00 ♂) 3/4 - Kreutz sungrazer (8:30 ♀) 5/6 - Comet Phaethon (8:30 ⊕)	1/2 - Oljato (12:45 ♂) 3/4 - Nysa (11:15 ♀) 5/6 - Lutetia (8:30 ♀)	1/2 - Belenus (9:00 ♂) 3/4 - Karin a (12:00 ♀) 5/6 - Didymos (12:00 ♂)	1/2 - Remus moonlet (10:00 ♀) 3/4 - Kollaa (12:45 ♀) 5/6 - Nyx (3:30 ♂)
4. Starting Home Bernal	Lofstrom loop μgravity (monetizing Bernal in L3)	Tourism cycler (in cycler orbit)	Elevator Bernal (monetizing Bernal in GEO orbit)	Diplomatic (in SSO orbit)	Antimatter factory (in L4 orbit)	Solar cell factory (in L5 orbit)
5. Starting shares	1 share in Patent Co., 1 share in Boost Co.	1 share in Loan Co., 1 share in FINAO Co.	1 share in Boost Co., 1 share in Loan Co.	1 share in Boost Co., 1 share in FINAO Co.	1 share in Patent Co., 1 share in Loan Co.	1 share in Patent Co., 1 share in FINAO Co.
6. Starting Isotopes.	2 blue beads in gray isovault.	2 blue beads in red isovault.	2 blue beads in white isovault.	2 blue beads in yellow isovault.	2 blue beads in purple isovault.	2 blue beads in green isovault.

5K. Rapid Start (Roger's alternative to V1 quick start)

This "faster quick start" can be used for any game with any Modules. It is also recommended for *Iso Dawn* (5J). Like the *quick start* found in the Core appendix (V1), it restricts the first solar cycle of a game to Hand card acquisition. However, instead of 12 Years of card drawing, there are 4 **rounds** of card auctions, starting and ending on season blue. Use the first Seniority Disk placed in a Season to track each round.

a. Number of Players & Length. 2 or more. Three to six Seniority Disks can be played.

b. Setup. As per Core rulebook (C) (plus the Modules used), with the following exceptions:

- **Starting Aqua (C5).** Players start with 9 Aqua each.

- **Module 5 & Iso Dawn Seniority Disks.** Add one more Seniority Disk during setup (5A3e, 5Jc).

- **Sunspot Cube (C8b).** To represent this cube, place the first Seniority Disk somewhere in the season blue area.

c. Sequence of Play (1st Solar Cycle). Randomly choose a 1st Player. Starting with this player and going clockwise, each player makes a *research auction* (I2) of a patent card and its Supports. No other Operations, transactions, or events are performed. After all players have initiated an auction, the first *round* is over and the first Seniority Disk is advanced to the next season. Rapid start is over after the 4th (season blue) round.

- **Insight (4B2f).** On your turn, you may perform an *inspiration* (K2a) on any one patent deck, before choosing any card for auction. This is called *insight* in Module 4 (4B2f).

- **Hand Limit.** *Faction privilege* (B6a) and *academia hand limit* (I2a) are not enforced during this process. However, card limits for GW thrusters, Freighters and Bernal's must be respected (1A4, 2A7c).

- **Iso Dawn (5J).** If playing this scenario, the auctions include Crew cards. Then, at the end of the 4th and last *round* of rapid start, complete setup from *faction selection* onwards (5Je-j) for players who did not acquire a Crew card.

EXAMPLE [5Kc]

You setup the game with the starting Factory Locations (5Jd) to play *Iso Dawn* with Rapid Start. After winning a great S robonaut card on your first turn, you aim to start with the S Factory site on Neckar (randomly determined during setup). So on your second turn you bid and win the red Faction Crew card. This entitles you to complete your *Iso Dawn* Faction setup (5Jf - 5Jj), and take colonists, place delegates, take the Salt-Water Zubrin GW into your hand, anchor the Tourism Cyder Bernal in cyder orbit, place a red share in the Loan Co. and another in the FINAO Co., and add 2 blue beads to the red isovault.

d. Second Solar Cycle. After the 1st cycle (above), Discard the first Seniority Disk and continue as normal. Do not place this disk into the assembly (O6) or perform *baton pass* (O6a).

- **Iso Dawn (5J).** If playing this scenario, add any remaining Aqua to your industrialized Site.

INSIGHT (MODULE 4): This Ability (4B2f) allows you to choose a patent deck after announcing a research auction, and move its top card to the bottom. Then choose the top card of any deck to auction. [5Kc]

QUICK START V1: If playing this variant (see Core appendix) with *Iso Dawn* (5J), additionally use the *Iso Dawn* rule found in 5Kd. [5Kd]

MODULE 4: To play Taurus (next page), use the Sol Political Assembly Solitaire (placard) if available. See 4G3. [5La]

5L. Roger's Taurus (Module 5 solitaire variant) Playtester: Joe Farrell

This allows you to play *Module 5* with any solitaire HF4 game (e.g. CEO) and any Module (M0 mandatory). It is recommended for 2-player games using *Module 5*. The NPC ("Taurus") strives to gain hedge funds as the chair of every company. She acts only during Board Meetings, taking actions based on the Event Roll. *Inflation (5A4e)* is triggered once she gets her first hedge fund. The game ends when the last Seniority disk is Discarded. Company VP scoring will depend if Taurus got all her hedge funds.

- a. Setup per 5A3.** Seniority disks: 3 (medium game) or 4 (Futures game). Include all cards in each Patent deck.
 - **Taurus Faction Color** is the one directly opposite your ideology (e.g. if you are red, she is purple).
 - **Delegates.** Place 1 cube of your color in centrist, and another in your ideology. Put one cube of her color in her ideology (impacts vote tally & can be Discarded through martial law). Use a busted disk for the Sunspot Cube.
 - **Taurus Hedge Funds.** Set aside all her 7 shares and place 3 cubes of her color as hedge funds.
- b. Lobby (O4).** Pay 1 Aqua (free after market flip) to Discard a delegate in an inactive Ideology & use its Law or litigation.
- c. Your Research Auctions (I2).** You pay one Aqua (or 1 bead after market flip) to initiate & win a research auction.
- d. Taurus Proxy Fights.** Roll a die. She wins if the die roll matches the share value shown in the window, unless you defend your shares by Discarding one of your delegates in her ideology..
- e. Your Proxy Fights.** As per 5C3a,b, except Taurus successfully defends by rolling a '1' on a 1d6.
- f. Litigations (5B7).** May be used by you, but Taurus is limited to 5 trustee litigations (5B7).
- g. Insolvency.** If you choose to not angel a company, then Taurus will do so at no cost if she has shares available.
- h. Taurus Board Decision.** Depending on the Event Roll, she makes an action in one company (see table at right).
- i. Your Board Meetings.** For each company that you chair (in order 5Da), after you make or skip your board decision, use the table (right) to see if she *buys* a vacant share (5C1), *proxy fights* (5C3), or *litigates honor* (5B7).
- j. Post Board Meetings.** After all Board Meeting decisions have been performed, for her final action, Taurus will:
 - **Float** a White-Side company (of your choice) that is not currently floated (i.e. no duplicate companies).
 - **Post-Monetization.** *Splinter a Black-Side company chit from a company that she chairs.*
 - **If there are no companies to float or splinter,** she bumps up 1 row the lowest company she chairs (choose one if tied).
- k. Inflation (Module 2).** If Taurus gets her first hedge fund, she anchors a monetizing Bernal in a home orbit ("GEO Space Elevator" if available, otherwise "Lofstrom Loop") triggering *inflation (5A4e)*.
- l. Scoring.** As per M2, including 4 VP per malf, and 4 extra VP if you are the isobanker. Furthermore:
 - **Company VP** per 5Ha,b. However, if Taurus gained all 3 hedge funds, you do not gain company VP.
 - **Victory.** Win if your score is 70+ VP (medium), or 100+ VP (Futures).

CEO SOLITAIRE (Appendix V6):

Use setup 5La and add one Seniority Disk to the demand pile. In addition to V6c, add a fatality disk to the demand pile every time you get the default chit. If Taurus gets a hedge fund, immediately add a Seniority Disk from the Pool to the demand pile. Calculate your KPI as per V6c. (For your first cycle your KPI will be at least 8, but it could raise to 18+ if Taurus gets one or more hedge funds). [5La]

Taurus Board Decision [5Lh]

Event Roll	Her board decision in one company.
1, 2 or 3	She reinvests her topmost company.*
4, 5 or 6	She bumps her topmost company* up 1 row.

*Choose one if tied.

YOUR BOARD MEETINGS [5Li]

She has an available share?	Decision in each of your companies.
Yes	She buys share (if vacancy), or proxy fights otherwise.
No	She litigates honor.

OPERATIONS & TRANSACTIONS TABLE [5G]

DESCRIPTION	OPERATION (orange = post-monetization)	TRANSACTION (orange = post-monetization)
a. Gain an Aqua & a delegate.	Income (I1) or Fundraising Op (O2b) (No Aqua is paid.)	Dividends (5D1) (Aqua or beads paid per share = to number of dots.)
b. Take a card plus its direct supports.	Research Auction Op (I2) (All bids in beads from Isovault.)	Patent Co.
c. Sell a card.	Free Market Op (I3a,b) (Sell a Hand Card for a speculator's bead, or a Black-Side Card for a Pool Isotope, see 5Gd.)	-
d. Boost cards to LEO/Bank.	Boost Op (I4)* (Costs 1 bead for Mass 10 to 19, & 2 beads for more)	Boost Co.* (Mass < 10), ET Express (up to Mass 4 between any Bernals.)
e. Refueling at a Site.	ET Site Refuel Op (I5)	ET Unicorn.
f. Prospect a Site.	Prospect Op (I6)	ET Comet (at a Synodic Site only).
g. Produce a Black-Side Card.	ET Production Op (I8)	ET Alchemy (at a BE0 Bernal), ET Unicorn.
h. Build Space Elevators, Futures, or monetizing Bernals.	Epic Hazard Op (1A6, 2B4f,i, 3F1g) with an Epic Hazard Roll.	FINAO Co. to avoid Hazard Roll or Epic Hazard Roll.
i. Pay FINAO to avoid a Hazard Roll.	-	FINAO Co. exclusive
j. Laws changed in post-monetization. *2X prices & costs if boosting to a non-monetizing Bernal.	Free Trade Act. As on Operation, sell 2 Hand Cards for 2 speculator's beads, or 2 Black-Side Cards for 2 Pool Isotopes. Paleoconservative Directive. Your fundraising operation gains FM equal to the number of glory chits that you hold anywhere. Post-monetization: Lobby, launch fees, costly weapons/Futures, taxes, Bernal profits, & mishap insurance do not give or take Aqua. Industrialize (I7), Delivery (I9), Promotion (1A5, 2A3, 4C7), Nanofacture (1A7), & Anchor (2A5) are unchanged.	

About the cover. The Lofstrom Launch Loop is a proposed maglev cable transport for launching vehicles into various Earth orbits or Earth Lagrange Points.

The loop is levitated to an altitude of 80-km by the momentum of its internal cable, in the same way that a lasso maintains its shape. Its 5-tonne passenger vehicle is shown decoupling from the 2000-km loop after a 3-gravity acceleration for 6 minutes.

This concept was first described by Keith Lofstrom in the August 1982 *L5 News* (at a time when I was actively working for that magazine).

Art by Axel Kani Nilsson.



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