GLOBAL FINANCIAL ENGINEERING, INC.

A Machine With a Charter

The Machine States, Paper I · The Doctrine of Machine States

Document GFE-PUB-MST-20261118-A · Dr. Glen Brown · Public Doctrine Series · 18 November 2026

A book is more than its balance

A trading book is ordinarily described by two numbers, its balance and its equity, and by the distance between them. Those numbers say where the book stands this minute. They do not say what kind of standing it is. A book whose equity sits a little below its balance may be a young book carrying the ordinary cost of its open positions, or it may be a book one bad week from impairing the capital it was given. The figures can be identical while the conditions are opposite.

In building our own trading machines I have come to describe a book by its states. A Machine State is a named condition of a book, defined by an inequality that can be read from the account at any moment, entered when the inequality holds and lost when it ceases to hold. I call them states because they can be lost. This paper sets out the doctrine: the fixed line against which the states are measured, the states themselves, the proof that they are ordered, and the single measure that locates a book among them.

Chartered Capital

Every state is measured against one fixed line, which I call Chartered Capital: the capital a house commits to a book and establishes the book to protect. A further contribution raises it. Income taken out of the book does not lower it. That asymmetry is essential. Were the line to fall with each withdrawal, a book could improve its standing by paying money out, and the measure would reward the act it exists to govern.

The balance in excess of Chartered Capital is the Retained Harvest: what the machine has banked, net of its losses and its costs, and has not paid out.

The states

In what follows K is Chartered Capital, B is the balance, and c is the commitment ceiling: the largest share of its balance that the machine's own law permits it to have at risk at once.

State	Condition	Meaning
Under Carry	Equity below K	The open book carries a floating loss larger than the harvest retained. The ordinary condition of a young book.
Cover	Equity at or above K	What has been banked covers what the open book is carrying.
Full Sail	Equity above balance	The open book itself is in profit. A passing state, since a machine that banks its winners cannot hold it.

State	Condition	Meaning
Immunity	Balance less the risk at the stops, at or above K	Were every open position to close at its stop, the capital would remain whole. A property of the positions now open.
Immortality	B x (1 - c) at or above K	Were the book to commit the most its law permits and lose all of it, the capital would remain whole. A property of the law.
The Distribution State	Immortality Multiple at or above 3	The harvest is three times what Immortality requires. Only here may income leave the book.

The Machine States. The risk at the stops is the sum, over open positions, of the loss each would realise at its stop.

Under Carry is the state most easily misread. A machine that banks its winners at a short distance removes them from the book; what remains open is, by construction, the part that has not yet banked, and every new position pays its cost of entry before it has moved. Such a book spends its early life Under Carry. The state is evidence of youth and of nothing else until the rate of banking and the rate of loss say otherwise.

The states are nested

These are not separate tests. A position cannot ordinarily lose more than the distance to its stop, so the floating loss of a book cannot exceed its risk at the stops; and the ceiling admits no new position that would carry that risk beyond the share c of the balance. It follows that a book in Immortality is in Immunity, and a book in Immunity is in Cover. One measure therefore governs them all.

The single measure

That measure is the Immortality Multiple: the Retained Harvest expressed in units of the harvest that Immortality requires.

$$m = (B - K) \times (1 - c) / (K \times c)$$

Immortality is a multiple of one. The Distribution State is a multiple of three. Every term is a ratio, so the same law judges a small book and a large one. What differs with size is the ceiling, and a sound capital law lowers the ceiling as capital grows; the target therefore moves toward a book as it climbs.

Ceiling	Balance at Immortality	Balance at the Distribution State
10%	1.11 x K	1.33 x K
25%	1.33 x K	2.00 x K
50%	2.00 x K	4.00 x K
100%	Not attainable	Not attainable

What the formula asks at each ceiling. Arithmetic, not a forecast.

A book permitted to risk the whole of its balance can never be immortal, whatever it has earned. The formula says so without a special rule, and I regard that as a point in its favour.

The discipline borrowed from the pension fund

The design borrows the discipline of a well-run pension fund, and only the discipline. Such a fund is judged by a funded ratio, requires each new contribution to be matched by assets, and pays benefits from what it has earned while continuing to grow. The machine is held to the same three ideas. Its funded ratio is the balance after the worst loss its law permits, set against Chartered Capital. A contribution raises Chartered Capital and so lowers the multiple until the new capital has earned its own cover. And nothing leaves the book below the Distribution State.

Above that threshold the share of a period's realised harvest that may be distributed is the share that the surplus bears to the whole Retained Harvest, which is 1 - 3/m; the remainder stays in the book. The rule contains no discretionary number. It pays nothing at the threshold and rises smoothly beyond it, it always retains something, and it suspends itself when losses carry the book back below the line.

The comparison stops there. These books have no beneficiaries, no members and no outside participants. The capital is the house's own, and a distribution is a movement of the house's own money from a trading book to its treasury.

The Case

The following case is an illustration built from operating data. The figures have been altered and it reports no account's results.

A book is chartered at 100 units under a ceiling of one quarter. Early in its life its balance is 100.4, its equity 99.8, and its risk at the stops 9. Equity is below Chartered Capital, so the book is Under Carry; its harvest of 0.4 covers two thirds of a floating loss of 0.6. Its floor, the balance less the risk at the stops, is 91.4, so it is far from Immunity, which would require a harvest of 9. Immortality asks for a harvest of 33.3 and the Distribution State for 100. The Immortality Multiple is 0.012. Nothing in the reading is alarming and nothing in it is an achievement. It is the description of a book at the beginning of its charter, stated in terms that will still apply when it is ten times the size.

What the states are not

A state confers no authority over any position. It closes nothing, narrows no stop and delays no entry; every exit continues to belong to the position that owns it. Nor is a state a promise. Immortality rests on the assumption that a stop is honoured at its price, and markets can gap through a stop, trade at prices once thought impossible, or offer no bid at all. The name records what the law protects on the assumptions the law makes, and the word state is there to remind the reader that it can be lost.

What would falsify this doctrine

The doctrine makes claims that can fail. If a book in Immunity were to see its capital impaired in ordinary trading, without a gap or a failure of the venue, the nesting argument would be wrong. If the risk carried by a book were found to exceed its ceiling as a matter of course, the multiple would overstate every book's standing. And if a book that reached the Distribution State were routinely thrown back below Immortality, the threshold of three would be shown to be too low. Each of these can be checked against the record, and the record is where the doctrine should be judged.

Dr. Glen Brown
President & CEO
Global Financial Engineering, Inc. · Global Accountancy Institute, Inc.

ABOUT THE AUTHOR

Dr. Glen Brown is President & CEO of Global Financial Engineering, Inc. and Global Accountancy Institute, Inc. He is the architect of the GCPIAUT framework and the broader GATS-native proprietary capital doctrine. His work focuses on sovereign capital governance, algorithmic trading architecture, reserve-first compounding systems, and institutional financial engineering within closed proprietary environments.

BUSINESS MODEL CLARIFICATION

Global Financial Engineering, Inc. and Global Accountancy Institute, Inc. operate as closed-loop proprietary institutions. They do not offer public investment products through the doctrines described herein, do not invite retail participation into their proprietary capital architecture, and do not present the GCPIAUT framework as a public collective investment scheme. The concepts discussed in this article are part of the firms' internal intellectual and operating doctrine.

RISK DISCLAIMER

Trading and investment activity across foreign exchange, equities, futures, commodities, and digital assets involves substantial risk. Market conditions may change rapidly, and losses may occur. This article is provided for intellectual, institutional, and educational discussion only and does not constitute investment advice, an offer, a solicitation, or a recommendation to buy or sell any financial instrument or to participate in any investment structure.