

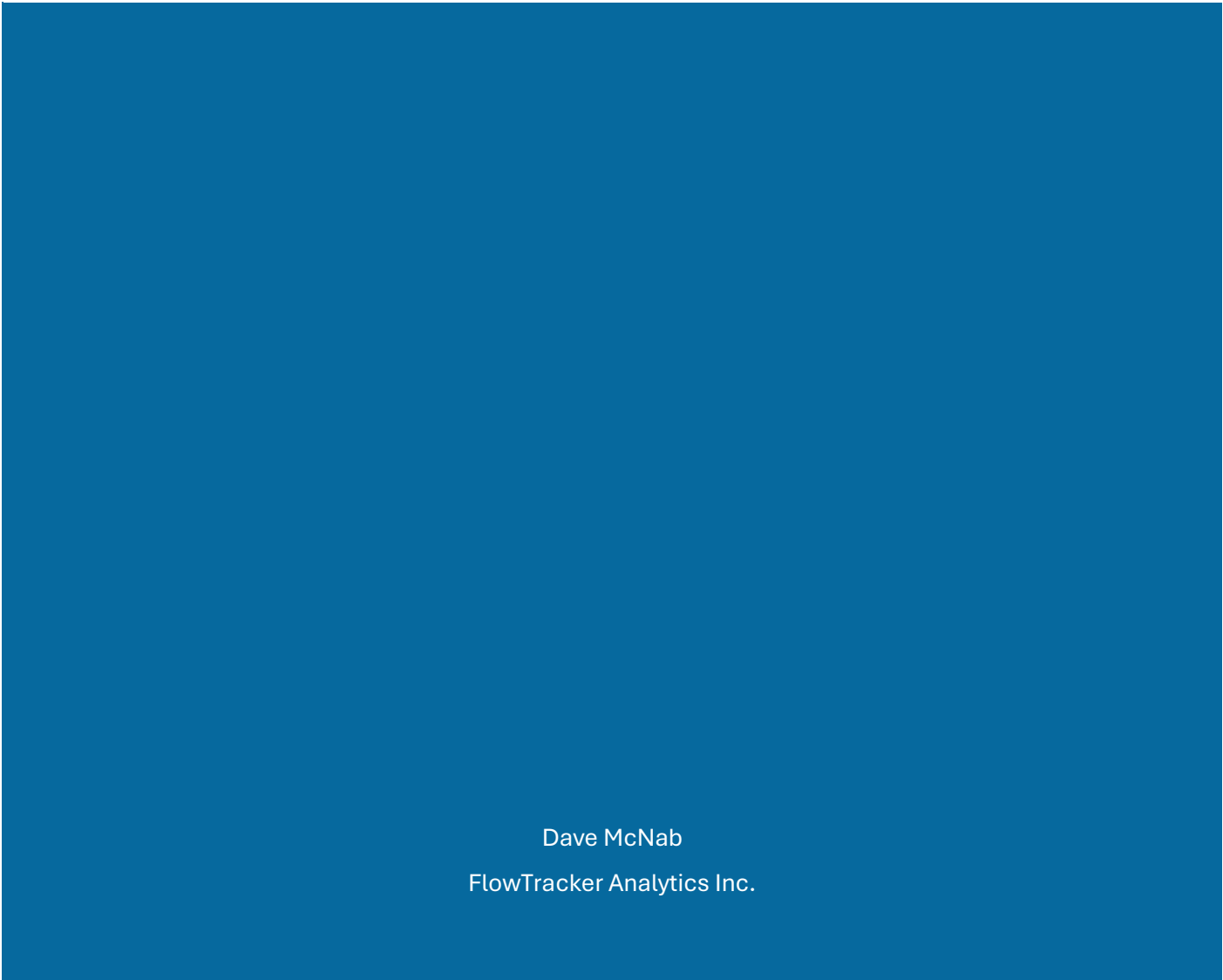


Consumer Deposits

Optimizing Decision Spaces

Where Portfolio Management and Customer Decisions Meet

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Consumer Deposits

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Executive Summary

Financial Institutions and Customers are solving different optimization problems.

Financial Institutions traditionally manage deposit portfolios through product categories, balances, rates, and campaigns. This approach is operationally familiar, but it does not fully reflect how Customers make decisions.

Customers do not merely hold products. They move money through Decision Spaces. They accept, reject, renew, switch, park, wait, re-enter, and leave. Their observed behavior reveals where decision Boundaries exist, where thresholds are crossed, and where the Financial Institution has practical opportunities to influence outcomes.

This paper proposes a **framework, operating model and path to optimization** of Customer decision response for Consumer deposits. The central idea is simple:

Customers optimize their own decision problem. They progressively expand the array of actionable options until they find an acceptable solution, or the cost of acquiring more options is unacceptable.

This is not just theory. Every behavior described in this paper is observable in data. The facts exist in your own data. We have simply organized them into a coherent framework.

This is practical. We have included steps that can be taken with little to no investment to help you prove applicability in any Financial Institution and generate value immediately.

The set of actionable options available to Customers defines what we call a Decision Space. Decision Space Boundaries must be crossed to add more options. Different Decision Spaces create different response functions, and different response functions create different distributions of funds across products, terms, and destinations.

Those distributions reshape the portfolio's term structure, growth, attrition and the Financial Institution's cost of funds, liquidity, and profitability.

The value lies in precision and control. Eight separate Decision Spaces and Boundary transitions enable strategic and tactical actions to be operationally targeted and optimized.

A Financial Institution can improve portfolio management by understanding Decision Spaces, identifying the Boundaries that Customers cross, and aligning price options, feature options, and product-array design to those Boundaries.

The goal is not merely better pricing. The goal is better deposit portfolio management.

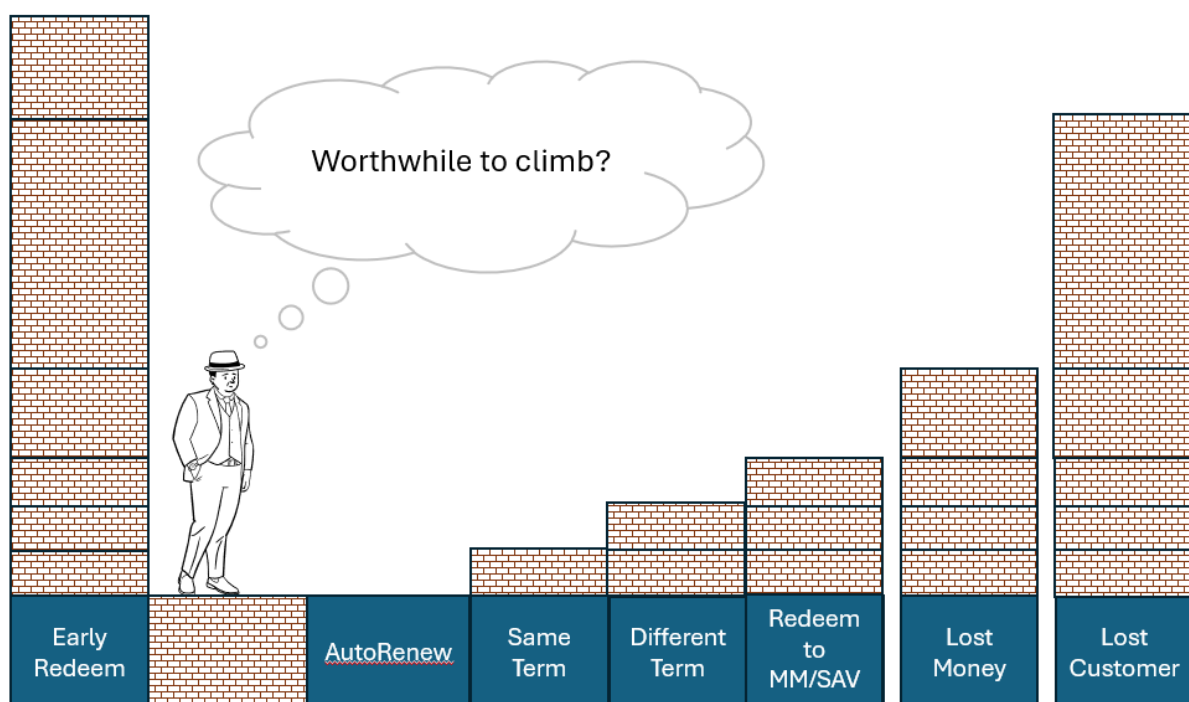
PART I: The Customer Decision System

Customers as Decision Makers

Financial Services organizations often speak as though products, rates, channels, or campaigns drive outcomes. In our view they influence choice, but they do not control it. Customers have agency over their decisions. Customers are the decision makers that determine outcomes.

That does not mean Customer behavior is random. It means the Financial Institution must observe decision behavior directly rather than infer it from product labels alone.

Figure 1 - Deposit Choices from a Customer Perspective



A Customer whose CD matures is not simply a CD renewal opportunity. The Customer is standing at a decision point. The Customer may:

- renew the same term,
- renew a different term,
- move to Money Market or Savings,
- move money to Checking,
- move money outside the Financial Institution,
- bring additional external funds into the CD portfolio,
- or do something else entirely, such as spend the proceeds.

Each outcome represents a different decision, and each decision occurs within a particular Decision Space.

The management opportunity begins when the Institution stops asking only:

What product did the money move to?

and starts asking:

What Decision Space was the Customer in, what Boundary was crossed, and what Option Sets were considered, accepted or rejected?

Investors as a Distinct Consumer Segment

The first foundation of this framework is the recognition that CD Investors are not merely Customers who happen to own CDs. They appear to behave collectively as a distinct consumer segment.

A CD Investor is defined simply as a Customer who holds CDs. The definition does not require demographic assumptions, income assumptions, age assumptions, or psychological assumptions. CD ownership is an observable marker.

The distinction matters because CD Investors appear to use the deposit franchise differently from non-CD holders. The difference is visible not only in CD-related behavior, but also in Money Market and Savings behavior.

Figure 2 – 9% of Customers, 60% of interest-bearing deposits

Interest Bearing Deposits x Segment				% Total Dollars	Q2 2026
Segment	Certificates	Money Market	Savings	Total	Customers
CD Investors	33.7	19.1	6.9	59.7	9.0
Others	-	20.7	19.6	40.3	91.0
Total	33.7	39.8	26.5	100.0	100.0

Observed areas of difference cross the entire array of interest-bearing products:

- CD ownership and CD-related flows, including New Money, Lost Money, maturities, renewals, and switches.
- Money Market activity, including New Money, Lost Money, and switching behavior.
- Savings activity, including New Money, Lost Money, and switching behavior.

This means we need to consider Money Market and Savings products as an integral part of the Investor's portfolio. Analysis of the CD portfolio should include MM/SAV to enable a more holistic understanding of Investor behavior.

Figure 3 – Money Market and Savings Belong in Investor Decision Analysis

Investor Product Use (ex-CD)		% Total Dollars			24 Months
		Inflows to			
Outflows From	Lost Money	Checking	Money Market	Savings	Total Inflows
New Money	-	20.2	16.0	7.2	43.4
Checking	16.8	0.4	5.5	2.3	25.0
Money Market	14.9	3.6	0.4	0.6	19.5
Savings	6.6	2.0	2.9	0.6	12.1
Total Outflows	38.3	26.2	24.8	10.6	100.0

Non-Investor Product Use		% Total Dollars			24 Months
		Inflows to			
Outflows From	Lost Money	Checking	Money Market	Savings	Total Inflows
New Money	-	27.4	7.8	10.0	45.2
Checking	25.2	0.3	2.5	3.0	31.0
Money Market	7.5	1.6	0.1	0.2	9.4
Savings	10.3	2.4	1.3	0.5	14.5
Total Outflows	42.9	31.7	11.7	13.7	100.0

Checking and payments products are a different case. At this point, no meaningful difference is asserted between CD Investors and non-CD holders in Checking behavior; these products may be used similarly by both populations.

CD Investors may or may not disproportionately hold their Primary Checking Relationship with the Institution. A practicable behavioral definition of Primary Checking Relationship is the regular and dominant use of an account for means-of-survival activity, such as income deposits and food, shelter, clothing, and basic-needs payment streams. While this remains an open question, it could further differentiate the Investor Customer segment if future research discovers an observable relationship difference.

The immediate management implication is straightforward:

CD Investors and non-CD holders should be segregated for behavioral analysis.

Blending the two populations risks obscuring meaningful differences in product use, decision hierarchy, investment relationship, surplus-capital behavior, and optimization horizon.

Decision Spaces, Boundaries, and Thresholds

Once Investors are recognized as a distinct behavioral Customer segment, the next question becomes: how do they make decisions?

The answer proposed here is that Investors operate within Decision Spaces. Unlike a conventional decision tree or flow diagram, this is a model of how investors progressively expand the set of options available for action. In other words, it is a model of how Investors optimize their own decision problem.

A Decision Space is defined by the set of options available to the Investor to act on. When an Option Set is evaluated and rejected, the Investor's decision process crosses a Boundary into a different Decision Space. The Option Sets available expand progressively in each Decision Space, until a satisfactory outcome is selected, the decision is made, and the Investor acts.

An Investor begins in a narrow Decision Space and moves into broader Decision Spaces only when the current Option Set becomes unacceptable.

Crossing a Decision Space Boundary also has a cost. Incremental costs to the Customer may include acquiring information, effort required to make comparisons, effort to change term, change products or change Institutions. These costs can be thought of as the friction or the height of the wall that must be climbed over to reach the next Decision Space.

Figure 4 – At Maturity Investors Have 5 Decision Spaces Available

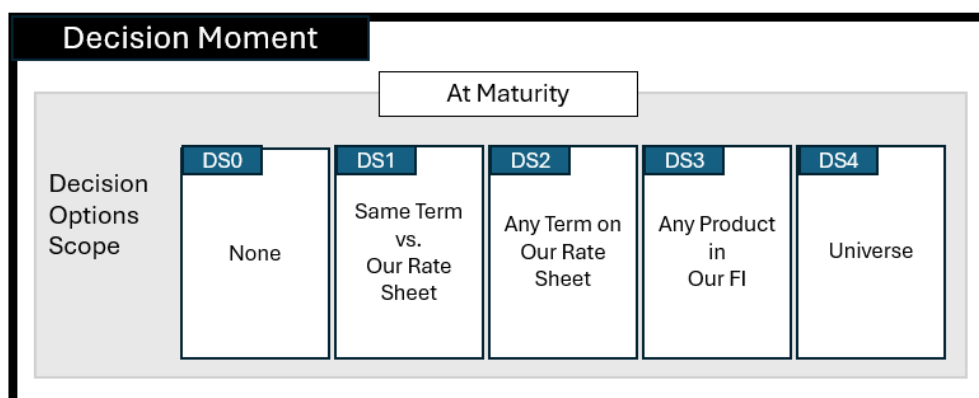
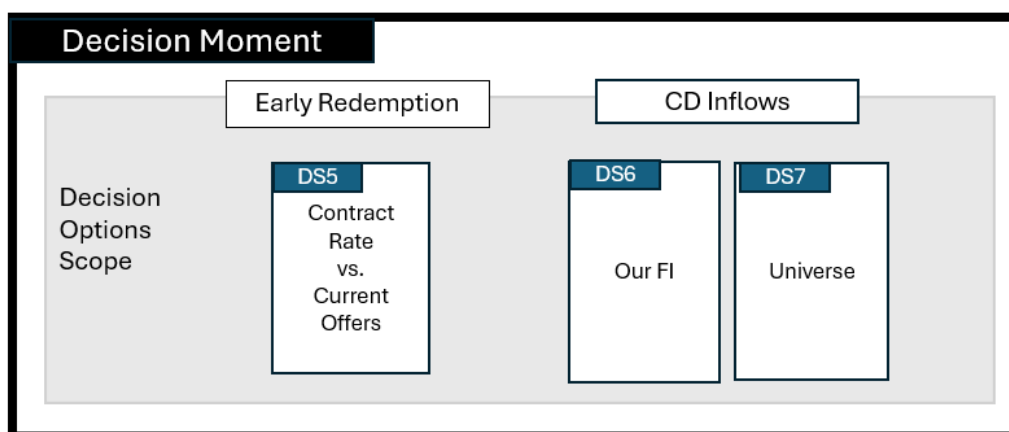


Figure 5 - Early Redemption and Inflows Happen Anytime



The Investor's response function is observably different depending on the Decision Spaces occupied when an offer is accepted or rejected. Different response functions result in different distributions of funds. The distribution of funds reshapes the portfolio Cost of Funds and Term to Maturity structure.

Figure 6 – Different Decisions Shape the Portfolio

Investor Decision Spaces - Relative Portfolio Impact		% Total Dollars							24 Months			
		Certificate							Money Market	Savings	Lost Money	Grand Total
		3	6	9	12	18	24	36				
DS01	Renew Same Term	0.6	4.9	10.4	15.1	0.4	0.7	1.1	-	-	-	33.2
DS2	Renew Different Term	0.1	5.8	12.1	9.6	0.1	1.4	0.0	-	-	-	29.0
DS3	Redeem to MM/SAV	-	-	-	-	-	-	-	9.0	3.8	-	12.7
DS4	Lost Money	-	-	-	-	-	-	-	-	-	6.6	6.6
DS6	To CD from MM/SAV	0.1	4.1	4.1	2.6	0.0	0.2	0.0	-	-	-	11.1
DS7	New Money	0.0	2.0	2.5	2.5	0.0	0.2	0.1	-	-	-	7.4
Grand Total		0.7	16.8	29.1	29.8	0.5	2.4	1.3	9.0	3.8	6.6	100.0

In pragmatic terms, this gives portfolio managers eight distinct Decision Spaces in which COF, term structure, retention, inflow behavior, runoff, or Early Redemption behavior may be influenced more precisely than through broad product pricing alone.

There are 3 categories of Decision Spaces characterized by the timing of the decision and the direction of money flow

- At Maturity,
- Early Redemption, and
- Inbound money to CDs

These categories are a meaningful way to organize the Decision Spaces around known management priorities.

Decision Category 1: At Maturity (DS0-DS4)

The decisions and Boundary walls that occur at maturity are described in this section.

Figure 7 - At-Maturity Decisions and Outcomes

Decision Options Scope	Maturities Decision System				
	DS0	DS1	DS2	DS3	DS4
	None	Same Term vs. Our Rate Sheet	Any Term on Our Rate Sheet	Any Product in Our FI	Universe
Decision	Accept Same Offer		Act on Other Offers		
Decision Outcomes	Same Term Renewal		Different Term Renewal	To MM/ SAV	To CHK/ LOST

DS 0: Autorenewal Wall

The maturity Decision Space with the lowest entry cost (wall) is the option to Renew Same Term, or RST.

Some Investors select Auto-Renew Same Term as their option choice. For these Investors, Renew Same Term is not merely a passive outcome. An automated renewal process is effort-free, and decision-free. That is a product feature (option) that has value to some CD Investors sufficient to avoid entering an active decision process; they simply decide to opt-out in advance.

DS 1: Renew Same Term Wall

Other Investors enter a maturity decision process where Renew Same Term must be accepted or rejected.

The initial Decision Space is:

Renew Same Term versus the Financial Institution's CD Rate Sheet Option Set.

A Decision Boundary exists between accepting Renew Same Term and considering other options. The Boundary existence is known because both outcomes are observed in data. The Boundary behaves as a threshold; the Investor chooses to Renew Same Term until the same-term offer becomes sufficiently unsatisfactory to make the incremental cost of crossing the Boundary into the next Decision Space worthwhile.

The threshold value is variable because differentials in Option Costs presented in the Rate Sheet for any given term vary with time. While each individual Investor may assess the benefits and costs of the Boundary threshold differently, observed data shows clustering around certain levels at any given time.

The RST Boundary must also be understood from the Investor's originating position. Not all certificates have the same option value against a given CD Rate Sheet. The original term of the maturing CD matters. An Investor with a maturing six-month CD may face a very different Option Cost of staying, depending on current offer rates.

If the Option Cost of remaining in the same term is favorable or immaterial, Renew Same Term is likely to be accepted. If the Option Cost of staying becomes materially adverse, the Investor is more likely to cross the Boundary and enter the broader CD Decision Space.

In practice, this means not every original-term cohort of maturities is equally likely to Renew Same Term. Some are, some are not, depending on the currently offered Rate Sheet. This enables Management to focus attention on the specific originating-term flows where differentiated Option Costs are material to the Investor, creating an opportunity to influence term selection at renewal specifically by originating term.

Figure 8 - Renewal Rates Hide Differences That Matter

DS0-2 Response Function (Renewals)		% Row Total Dollars							24 Months	
		Certificate							Total	% Total Renewals
		3	6	9	12	18	24	36		
DS01	Renew Same Term	1.7	14.7	31.5	45.5	1.2	2.1	3.3	100.0	53.3
DS2	Renew Different Term	0.2	20.0	41.5	33.0	0.4	4.7	0.1	100.0	46.7
										100.0

DS 2: Renew Different Term / CD Wall

When an Investor has rejected Renew Same Term, the maturing funds are no longer bound to their term-at-issue identity. Conceptually, the money has returned to:

Term Zero.

The Investor must choose a new term offering or choose a different destination for their money.

The Decision Space becomes:

Renewal to Different Term within the Financial Institution's CD Rate Sheet Option Set.

This is the Renew Different Term, or RDT, Decision Space.

A critical fact anchors this wall:

Approximately 75% of all CD maturity dollars are usually renewed within the CD portfolio through RST plus RDT. The observed CD renewal rate tends to be stable over time.

This means that rejecting the same term is not the same as rejecting CDs. Many Investors reject the current term while remaining within the CD universe, and perhaps even more importantly, within the same Financial Institution.

DS 3: MM/SAV Wall – Other Interest-Bearing FI Offers

When an Investor rejects all CD offers on the Rate Sheet, the Decision Space expands to other interest-bearing offers from the same Financial Institution.

This is the MM/SAV wall.

The relevant internal alternatives are not all Financial Institution products in every possible sense. The tighter definition is:

Other interest-bearing same-FI offers, especially Money Market and Savings Option Set.

At this wall, the Investor has rejected all CD solutions presented on the Rate Sheet but has not necessarily rejected the Financial Institution's other offerings.

Another critical fact anchors this wall:

Approximately 90% of all CD maturity dollars remain within RST plus RDT plus other same-FI offers. Observed data indicates a consistent preference for same-FI offers.

The Investor may cross the CD wall without crossing the Institution wall.

Figure 9 – Money Market & Savings are Important Parts of Investor Decision Space

DS3-4 Response Function (Outflows)		% Row Dollars			24 Months
		Money Market	Savings	Lost Money	Total
DS3	Redeem to MM/SAV	70.4	29.6	-	100.0
DS4	Lost Money	-	-	100.0	100.0

DS 4: Exit / All Alternatives Wall

If no internal interest-bearing offer is selected, the Decision Space expands to all remaining alternatives, internal and external. This Decision Space encompasses the universal Option Set the Investor has considered.

This is a very high wall. The cost of researching and evaluating decision options is significantly higher than in any other Decision Space. Lost Money flows from this Decision Space, but Lost Investor Relationship is relatively infrequent.

This final Option Set is not limited to competitor alternatives. It includes:

- money leaving the Financial Institution,
- money moving into Checking,
- or money being used for other internal or external purposes.

Checking belongs here because it is not being treated as an investment or interest-bearing surplus-capital destination. It is primarily an operating and payments destination.

Decision Category 2: Early Redemption (DS5)

Early Redemption is a distinct Decision Space because the Investor is not standing at a normal maturity decision point. The certificate has not matured. The Investor is still inside an existing contract.

DS 5: Early Redemption Wall

In the maturity Decision Spaces, the existing CD contract has reached its scheduled end, and the Investor must decide what to do with the proceeds. In Early Redemption,

the original contract is still alive. The Investor must first decide whether it is worth breaking the existing contract before any ordinary destination decision occurs.

This creates a different Option Set. The decision is: continue existing CD contract versus break the contract and reallocate the money.

This is the Early Redemption wall.

The distinctive feature of this wall is that the current instrument rate enters the decision directly. In most maturity Decision Spaces, the existing instrument has already ended.

In Early Redemption, the existing instrument remains part of the Option Set. The Investor is comparing the value of continuing the current contract against the value of redeeming early, paying any applicable friction or penalty, and selecting another option.

This makes Early Redemption fundamentally different from all other Decision Spaces.

The Option Set includes:

- continuing the current certificate,
- redeeming early and
 - selecting a new CD,
 - moving to Money Market or Savings,
 - moving funds outside the Financial Institution, or
 - redeeming early for another internal or external use.

The first decision is not where to redeploy funds. The first decision is whether to break the current contract.

Early Redemption therefore has its own response function. The Investor must overcome not only the economic comparison between current and available alternatives, but also the friction created by penalty terms, effort, uncertainty, administrative steps, and the fact that the current contract is already in force.

The observable trigger condition is not simply that available market rates are higher. Early Redemption pressure appears when any available alternative is sufficiently better than the current instrument, after considering the current instrument rate, any redemption penalty, and the effort or friction required to act.

That is a remarkably high wall to climb. Consequently, Early Redemptions tend to have disproportionately negative outcomes, including elevated ratios of Lost Money and relationship loss. They have a unique response function compared to other Decision Spaces.

Figure 10 - Early Redemption Disrupts Funding and Relationships

DS5 - Response Function (Early Redemption)		% Row Total		24 Months	
	Renew Same Term	Renew Different Term	To MM/SAV	Lost Money	Total
Ongoing Customer	5.1	23.9	17.7	52.4	100.0
Lost Customer	-	-	-	99.7	100.0

This is why Early Redemption is most visible when current market opportunities are materially better than the rate embedded in the existing certificate. Early Redemptions may occur at any time, but the proportion of redemptions can rise sharply when Investors are sitting in contracts that have become meaningfully unattractive relative to current alternatives.

Early Redemption is not a maturity decision. It begins with a contract-breaking decision, not a destination decision. Early Redemption is the only Decision Space where the current certificate rate is directly part of the active Option Set.

This distinction is critical for management. If Early Redemption activity is combined with ordinary maturity movement, the Institution may misread the behavior. A maturity outflow and an Early Redemption outflow may have the same destination, but they do not arise from the same Decision Space. They do not have the same Option Set, the same friction, or the same response function.

Early Redemption also has a different portfolio consequence. Ordinary maturity behavior affects reinvestment, runoff, term distribution, and same-FI retention at scheduled decision points. Early Redemption can accelerate repricing risk, disrupt expected maturity schedules, and pull balances forward out of planned cash-flow structures. It therefore belongs in funding risk, optionality, and ALCO analysis as a separate source of Customer-controlled option exercise.

The management question is not merely: where did the money go?

The better question is:

What current-contract disadvantage was large enough to cause the Investor to break the contract before maturity?

That question is different from all other decision-space questions in this framework.

Early Redemption reinforces the central principle of this paper: Decision Spaces are defined by Option Sets, not product labels. The same money can appear to move to the same destination as an ordinary maturity flow, but if the Investor first chose to terminate an active contract, the observed event belongs to a different Decision Space.

Early Redemption is therefore a separate Decision Space unlike any other.

Decision Category 3: Inbound Money to CDs (DS6-7)

Maturity money is only part of the framework. Inbound money entering the CD product line also appears to arrive through more than one Decision Space.

Two inbound Decision Spaces are especially important.

DS 6: MM/SAV-Sourced Money Moving into CDs

When money moves from Money Market or Savings into CDs, the Decision Space is different.

The Investor is already inside the Financial Institution's interest-bearing product universe. The Investor is deciding whether to move from demand-accessible interest-bearing money into term-committed interest-bearing money.

The Decision Space is CD versus MM/SAV Option Set.

This evaluation involves both:

- rate differentials,
- and the Accessibility Option embedded in Money Market and Savings products.

The distribution of funds to CD term options sourced from MM/SAV is not the same as External money, Renewal Same Term, or Renewal Different Term.

That difference matters because it indicates that MM/SAV-sourced CD money should not be collapsed into a generic CD inflow category; it can be managed separately.

DS 7: External or Checking-Sourced Money Moving into CDs

When money moves into the CD product line from external sources, the Investor is not merely selecting a CD term. The Investor is selecting the Financial Institution's CD offering in preference to all other available offers and options they have considered.

The Decision Space involves:

Other offers and other options in the Investor's option space versus the FI CD portfolio. The same Option Set as the decision to Exit.

Several facts matter here:

- The FI's offers are selected in preference to other offers and options because the money enters the FI's CD product line.
- Most externally sourced CD money comes primarily from ongoing Investor relationships; a small fraction comes from new Customers to the FI.

- The distribution of externally sourced CD money across term selections is nearly identical to Renew Different Term.

This creates an important distinction between New Money and new Customers.

New Money is largely an Ongoing Customer phenomenon. It should not be confused with New Customer acquisition.

New/Lost Money Is Not New/Lost Customer

A recurring source of confusion in Financial Institutions is the casual use of terms like New Money, Lost Money, new Customer, and lost Customer.

This framework treats them as different events.

New Money: An ongoing Investor allocates additional money to the Financial Institution.

Lost Money: An ongoing Investor allocates money previously within the Financial Institution elsewhere.

New Customer: A new Investment Relationship has been created.

Lost Customer: An Investment Relationship is terminated.

This distinction is critical because new and Lost Money appear to be overwhelmingly ongoing-Customer phenomena. The main observable traffic system is not constant creation and destruction of Customer relationships. It is the allocation behavior of ongoing Investors.

That does not mean new-Customer acquisition or lost-Customer attrition are unimportant. It means they are different problems and should not be blended with investment money allocation behavior.

The Institution wall appears substantial. To attract a true new Investor Customer, the Institution must overcome a large relationship hurdle. Most externally sourced CD money appears instead to come from ongoing Investor relationships.

Figure 11 – 90% of New and Lost Money Involves Ongoing Relationships

Investor New Money		% Total		24 Months	
Customer Status	Certificate	Money Market	Savings	Total	
Ongoing	12.7	40.9	37.7	91.3	
New	1.5	2.4	3.7	7.6	
Lost	0.2	0.4	0.5	1.1	
Total	14.4	43.7	41.9	100.0	

Investor Lost Money		% Total		24 Months	
Customer Status	Certificate	Money Market	Savings	Total	
Ongoing	11.4	39.2	38.4	88.9	
New	0.8	1.7	3.2	5.7	
Lost	2.0	1.7	1.7	5.4	
Total	14.1	42.7	43.2	100.0	

This supports a major management conclusion:

The biggest management opportunity may be managing allocation behavior inside ongoing Investment Relationships, not just new Customer acquisition. Customer acquisition remains important, of course, but it is not the main driver of deposit portfolio volume or term structure.

Decision Criteria

The next foundation is that Customers do not evaluate products as Financial Institutions label them. Investors evaluate the expected benefits of available options subjectively, according to what matters to them and how much it matters at any given point in time. Price is often a consideration, but so are liquidity, predictability, product features and entitlements. That is the benefit side of the equation.

On the cost side, the amount of effort required to climb a Decision Space Boundary wall is important. The cost of acquiring information, making comparisons, deciding and acting on a decision all make up part of the cost to cross from one Decision Space to another.

When perceived benefit of crossing a Decision Space Boundary outweighs the cost of climbing the Boundary wall decisions become actions. In other words,

Perceived Benefit > Perceived Cost => Action

Perceived Benefit < Perceived Cost => No Action

At a portfolio level, patterns are evident in data. We can observe clustering around Decision Space threshold values. We can observe decision thresholds over time. We can measure the response functions. And when we can measure thresholds and response functions, we can start to optimize our offers in each Decision Space.

Decision Responses Change Over Time

Decision response functions are not static. The precise values of the outcome distributions change over time.

The table below shows outcome distributions in selected time periods to illustrate the significance of this variability across time and Decision Spaces.

Figure 12 – Response Distributions Change Over Time

Response Distribution x Decision Space								% Row Total Dollars		Selected Periods	
	Certificate							Money Market	Savings	Lost Money	Grand Total
	3	6	9	12	18	24	36				
Q2 2024											
DS01	2.2	5.0	19.4	63.4	3.9	2.0	4.1	-	-	-	100.00
DS2	0.5	2.5	20.3	76.2	0.0	0.3	0.3	-	-	-	100.00
DS3	-	-	-	-	-	-	-	62.9	37.1	-	100.00
DS4	-	-	-	-	-	-	-	-	-	100.0	100.00
DS6	0.4	3.3	34.0	62.0	0.1	0.1	0.2	-	-	-	100.00
DS7	0.9	2.7	28.2	65.7	0.8	0.2	1.5	-	-	-	100.00
Q2 2025											
DS01	2.6	21.2	31.1	38.6	0.6	3.3	2.6	-	-	-	100.00
DS2	0.4	8.7	75.6	0.9	1.5	12.7	0.2	-	-	-	100.00
DS3	-	-	-	-	-	-	-	73.4	26.6	-	100.00
DS4	-	-	-	-	-	-	-	-	-	100.0	100.00
DS6	0.5	20.2	74.2	2.8	0.2	2.0	0.1	-	-	-	100.00
DS7	0.8	14.2	69.1	11.0	0.2	2.8	1.8	-	-	-	100.00
Q4 2025											
DS01	1.6	22.2	28.6	34.9	4.3	2.0	6.5	-	-	-	100.00
DS2	0.1	61.3	0.5	35.1	0.0	2.9	0.0	-	-	-	100.00
DS3	-	-	-	-	-	-	-	66.4	33.6	-	100.00
DS4	-	-	-	-	-	-	-	-	-	100.0	100.00
DS6	0.1	76.7	0.5	20.2	0.0	2.6	0.0	-	-	-	100.00
DS7	0.3	63.3	2.0	31.4	0.2	2.4	0.4	-	-	-	100.00
Q1 2026											
DS01	1.0	24.2	42.6	28.7	0.4	0.9	2.1	-	-	-	100.00
DS2	0.6	11.6	3.0	83.4	0.2	1.2	0.0	-	-	-	100.00
DS3	-	-	-	-	-	-	-	76.2	23.8	-	100.00
DS4	-	-	-	-	-	-	-	-	-	100.0	100.00
DS6	0.6	29.9	9.5	58.1	0.3	1.4	0.0	-	-	-	100.00
DS7	1.9	20.3	8.5	65.6	0.5	2.4	0.9	-	-	-	100.00

This means solving for decision response is not a “one and done” process. Investor decision response needs to be measured, monitored, and managed as change progresses.

The Decision Spaces are always there. The Boundaries between them are always there. Thresholds are always there. The precise values of decision responses change over time.

Self-Segmentation Through Choice

Customers choose the products and features they value. We do not know how each individual Investor perceives value and cost, and those perceptions can change over time, as conditions and personal situations evolve. But we can observe the outcomes of their choices.

Those choices are observable, in every Financial Institution’s data.

A Customer who repeatedly selects accessibility to cash, monthly income, laddering, or auto-renewal is revealing something about the option values they care about.

The Financial Institution does not need to invent every segment in advance.

Customers can segment themselves through their choices.

This creates a powerful form of micro-segmentation:

Customers who elect different choices should be expected to have different response thresholds within a Decision Space, because they evaluate the benefits of options and features from their own personal perspective.

This is segmentation by revealed preference, not demographics.

PART II: The FI's Control Levers

To implement and ultimately optimize management of the decision functions we need tools.

Every Financial Institution has a variety of available tools (control levers) that help align Investor decisions with the Institution's funding needs and objectives. These levers are well known, and highly developed.

An exhaustive list of control levers is both impractical to compile and unnecessary to illustrate the application of control levers to Decision Spaces. Accordingly, we have elected to focus on the most powerful as control levers of interest:

- Pricing,
- Product, and
- Offer Eligibility.

A brief description of these control levers follows:

Pricing

Pricing alters the economic value of the product or offer. Examples include Posted Rates, Premium Pricing, Bonus Interest, and Cash Incentives. Pricing is both a familiar and powerful control lever for influencing Investor response.

Product

A product is a set of attributes that persist over time. They include the terms and conditions of a contract.

A helpful method of organizing product attributes into a matrix of product possibilities is product array. The power of the product array is that it exposes missing combinations; gaps where value combinations do not exist.

Product array dimensions include:

Cash Flow Structure defines how and when money moves. Examples include Term, Interest payment frequency, Amortizing cash flows, and Bullet maturity.

Repricing Structure defines when and how the rate can change. Examples include Rate type: Fixed v Floating, Indexed, and Top-up; Rate options: Guaranteed rate period, and Forward commitments.

Calculation Mechanics define how value is calculated. Examples include Compounding frequency, accrual conventions, and Early Withdrawal Penalty terms,

Operational Mechanics define how the product can be used. Examples include Autorenewal, Laddered maturity, Laddered rate, and Withdrawal entitlements.

Offer Eligibility

Offer eligibility determines availability of an offer. Examples include Everyone, Customers, Groups of Customers, New Customer, and New Money.

The availability of offers has one of the largest impacts on implementation cost of any pricing or product strategy. For example, a Premium Price offered to ongoing Investment Customers with a specific maturing term focuses expenditure narrowly. Making the same offer to the general public would be far more costly, in terms of both the impact on Cost of Funds and the marketing and communications expenses required to communicate the offer.

PART III: Operating Model and the Path to Optimization

Equipped with a set of control levers and an understanding of Investor Decision Spaces and Boundaries, the next step is to define a practical operating model, and a roadmap leading to optimization.

Operating Model

The operating model defines how Investor Decision Spaces align with Management Objectives and Control Levers.

Management Objectives

The most important input to the operating model is the Financial Institution's balance sheet management objectives. The theory and practice of how those objectives are established is well documented in Industry literature and outside the scope of this paper.

Two objectives illustrate the operating model for applying control levers to Investor decisions:

- **Funding Objectives:** maintaining sufficient funding to support growth and stability of the Institution, and
- **Term Structure Objectives:** managing the timing of cash flows to control Interest Rate, Liquidity and related risks within policy and regulatory limits.

Once the objectives are known, the operating model defines how Investor Decision Spaces align with Management Objectives and how Control Levers can be used to improve the precision and efficiency of management actions.

Decision Spaces x Business Objectives x Control Levers

The next two pages contain charts that align Investor Decision Spaces with the Business Objectives and Control Levers introduced earlier. This is a suggested operating model that can be adapted to any Financial Institution.

The first chart is an At-Maturity Operating Model, which covers all the Decision Spaces identified that occur at scheduled maturity dates; renewals, transfers to money market or savings, and Lost Money.

The second chart is a Time-Independent Operating Model which covers all the Decision Spaces that can happen at any time; Early Redemptions, transfers from money market and savings, and New Money.

The best way to consume these charts is column-by-column, reading down the page.

Figure 13 - At-Maturity Operating Model

		DS0	DS1	DS2	DS3	DS4
		AutoRenew	Renew Same Term	Renew Different Term	Redeem to MM/SAV	Redeem to Lost Money
Investor Decision Spaces	Actionable Option Set	None	Current Term Offer	Rate Sheet	All FI Offers	Universe
	Boundary Exit Decision	Reject AutoRenew	Reject Current Term Offer	Reject Rate Sheet Offer	Reject All FI Offers	-
	Time Frame	At Maturity	At Maturity	At Maturity	At Maturity	At Maturity
Management Objectives	Strategic Opportunity	Preserve passive retention	Minimize restructuring cost	Shape term redistribution	Retain balances within FI	Reduce Balance Attrition
	Funding Objective	Retain in CDs	Retain in CDs	Retain in CDs	Retain in FI	Retain in FI
	Term Structure Objective	Retain Structure	Controlled Restructuring	Reshape to Market	Controlled Restructuring	-
Control Levers	Price	Market Price	Premium, Cash Bonus	Market Price	Market Price	Market Price
	Product	AutoRenew	Add non-cash features	-	Investor MM/SAV Product	-
	Eligibility	Has AutoRenew Flag	Desireable Renewal Terms	Maturing CDs	Maturing CDs	Maturing CDs

Figure 14 - Time-Independent Operating Model

		DS5 Early Redemption	DS6 MM/SAV to CD	DS7 New Money to CD
Investor Decision Spaces	Actionable Option Set	Universe	Rate Sheet	Universe
	Boundary Exit Decision	Reject Current Cert. Rate	-	-
	Time Frame	Before Maturity	Anytime	Anytime
Management Objectives	Strategic Opportunity	Preserve contractual funding	Convert Demand to Fixed Term	Acquire desired term funding
	Funding Objective	Retain in FI	Grow	Grow
	Term Structure Objective	-	Controlled Restructuring	Reshape to Market
Control Levers	Price	Proactive Reprice	Premium, Cash Bonus	Market Price
	Product	-	Investor MM/SAV Product	-
	Eligibility	Large Gap Current > Contract Rate	Has MM/SAV Balance	General Offer

Path to Optimization

In addition to the Operating Model, we now outline the path to optimization of Investor deposits starting with things you can do immediately to better understand and discover Investor behavior in your Institution, and the path to full optimization of the behavioral approach to deposit management described in this paper.

Phase 1: Foundational Discovery

These are actions you can take today that lay the foundation for understanding and discovery with little to no investment.

Step 1 - Segment the Customer population into Investors and others.

Prerequisites: Customer database, existing reports

Requirements: Flag all Customer Records indicating if they have ever had a Certificate of Deposit in their holdings. Segregate analysis of Investors and other Customers.

Benefits: Observe differences in portfolio holdings, product usage and responses to management actions within your Institution. First proof point for behavioral approach.

Step 2 - Tag Investor history with New, Lost and Ongoing Relationship Status.

Prerequisites: Customer database, existing reports

Requirements: Tag each Customer Record with a Relationship Status Indicator each month indicating if the relationship is New, Lost or Ongoing in the period. Segregate analysis of Investors by status.

Benefits: Observe the impact of Relationship Status on portfolio growth and attrition within your Institution. New and Lost Investors provide market signals about competitiveness. Second proof point for behavioral approach.

Step 3 - Redefine Investor Product Scope to Include CD, MM, SAV

Prerequisites: Investor flag, Existing reports

Requirements: Modify reporting and analysis of product performance to include Certificates, Money Market and Savings in reporting of Investor segment results.

Benefits: More holistic understanding of Investor product use within your Institution. Deeper understanding of differences between Investor and Other Customer segments. Third proof point for behavioral approach.

Phase 2: Measurement and Observation

To progress beyond the first phase of the path to optimization, it is necessary to measure classified money inflows, outflows and inter-product flows across the deposit portfolio to reveal Investor behavior throughout the Decision Space network.

Implementation Considerations

Implementing this phase does not need to be a long, expensive, complex undertaking. Typical time, cost and scope parameters:

- Implementation is typically completed within approximately 45 days.
- Subscription costs are generally under US\$100,000 annually.
- Data requirements are minimal: month-end snapshots of account balances, plus the date, and five basic account-identifier fields, e.g. product code.
- No Personally Identifiable Information is needed.
- No transaction data is needed.
- No CAPEX investment is needed.

We created the FlowTracker Money Flow Analysis methodology described in this paper and have provided these data services to major US Credit Unions for more than a decade. Many of the observations and examples presented throughout this paper were made possible through that work.

Step 4 - Measure and Forecast Decision Space Boundary Behavior

Prerequisites: Historical data

Requirements: Money Flow Analysis Solution

Benefits: Visibility into Investor Decision Space behavior within your Institution. Fourth proof point for behavioral approach.

Step 5 - Quantify Decision Space Response Functions

Prerequisites: Historical Data, Money Flow Analysis Solution

Requirements: Statistical analysis capabilities.

Benefits: Estimating response functions enables greater precision and predictability of outcomes. Final proof point for behavioral approach.

Phase 3: Optimization

The optimization phase enables projection and scenario modeling of outcomes to solve for an optimal set of actions across the entire Investor Portfolio. Just as Price Optimization current practice models market responses to pricing policy scenarios, the same techniques can be used to optimize response within and across Decision Spaces and consider the expanded set of control levers (price, product, eligibility).

Step 6 - Optimize Control Levers across Decision Spaces

Prerequisites: Money Flow Analysis History

Requirements: Optimization Model Capabilities

Benefits: Optimization of Investor portfolio responses to management objectives.

Phase 4: Micro-Segmentation

Micro-segmentation enables offers to be tailored to highly specific groups, who self-identify by observable actions and the product features they select. This is fact based behavioral segmentation, requiring no external data, unlike demographic, psychographic and other traditional segmentation techniques.

Step 7 – Segment Investors by product feature selections.

Prerequisites: Money Flow Analysis History, Product Feature data

Requirements: Statistical analysis capabilities

Benefits: Reduced cost and increased effectiveness of strategy implementation through more precise targeting of offers.

Conclusion

Optimizing Decision Spaces is the practice of aligning price options, feature options, eligibility rules and product-array design to Customer Decision Spaces and their associated decision Boundaries.

The optimized Financial Institution:

- does not only manage rates, it also manages choices.
- does not only manage products, it also manages Boundary behavior.
- does not only segment Customers demographically, it also observes revealed preferences through Customer option choices.

The recurring economic engine is Boundary Option Management: using existing price and feature options more precisely at known decision Boundaries.

The innovation engine is Missing Option Discovery: identifying valuable option bundles that do not currently exist.

Both are valuable.

Together they create a practical way to optimize Customer decisions.

Our Point of View

A Financial Institution can improve Investment Customer portfolio management by shifting its focus from products and rates to Customer Decision Spaces, decision Boundaries, and option bundles.

Customers choose options. Every option has value. Price is only one tool, and often a costly one. Feature options also create value because they alter cash flows, repricing, calculation mechanics, and entitlements.

Customers reveal their preferences by choosing option bundles, creating observable micro-segments with potentially different thresholds.

Portfolio optimization then becomes a matter of aligning the right price options, feature options, and product-array designs to the right Customer populations at the right decision Boundaries.

This is the behavioral foundation of Customer Decision Space optimization.

Afterword: Why and How We Did This Work

We acknowledge this work obviates the usefulness of our own product. This paper is in part a handbook for extracting value from the money flow information we create.

We set out to discover what money flow analysis capabilities can teach us about what Customers actually do with their Deposits.

Many of the ideas underlying the proposed framework are not new; for example, decision theory, transaction-cost economics, option costs, relationship theory, and the psychology of money have all been written about before.

This is not an academic paper. We are not proposing a new theory of human decision making. We do not even profess to have studied all those theories. Instead, we set out to discover patterns in facts. Our limited knowledge of the theories helped us interpret and organize what we saw in the data into something sensible. Nothing more.

When a CD matures, there is a moment when a decision must be made. That directed us to consider what options were available to the Customer at that moment. The data itself revealed that there was more than one Decision Space, with Boundaries and Thresholds that are persistent. We observed that those thresholds and the outcomes of Response Functions were different across Decision Spaces and variable over time. Then we considered other decision moments; early redemption, new money, transfers in from other products, and saw the same patterns emerge.

The Customer Decision model was constructed by organizing observations, not fitting data into a theory.

This is a business paper. The goal was not just to discover, organize and describe behavior. The goal was far more practical. We wanted to know how a Financial Institution can gain more control and precision over the management of consumer deposits.

We asked: can Customer Decisions be optimized?

And the answer appears to be that we can influence customer decisions through the management of options, boundaries, incentives, and responses.

Appendix I: Two Product Concepts as Examples

Unitized CD Concept

The Unitized CD is a product idea. It is an example of feature design that emerged from observation of the Auto Renewal / Renew Same Term / Renew Different Term Boundaries, where 75% of the money flows occur.

All CDs in these three Decision Spaces renew by definition.

We asked: why are Investors choosing these different decisions? And we noticed the same Customers also made different choices over time.

We next considered what problem the Investor might be trying to solve.

The choices change with time. What else changes over time? Pricing. Market conditions. Competitive offers. Any of those could be the trigger.

And then we thought about CD ladders. They do not change over time, because they exist precisely to insulate the Investor's yield from variable economic states. They are solving a stability problem that is valuable.

The main problem with a CD ladder is it requires enough capital to spread certificates across a time horizon. Not everyone has sufficient capital to do that. Another problem is it is administratively costly, unless the entire ladder is put into Auto Renewal mode.

We asked: how can we make the benefit more accessible with less administrative cost?

Our answer: Create a Unitized CD that offers a blend of term rates evolving over the portfolio offering horizon, with limited withdrawal entitlements designed to preserve some customer liquidity while maintaining portfolio stability.

That could make participation easier, more divisible, and potentially more accessible than traditional instrument-by-instrument CD ownership.

The management theory says:

If the missing option bundle better matches the Customer's Decision Space, the Boundary may be managed without relying solely on rate.

This may be an idea worthy of exploration.

Zero-Term CD / Investor-MM/SAV Concept

The Zero-Term CD (or CD-Money Market/Savings) concept is another example of product-array discovery. It addresses the space between demand-accessible Money Market /Savings products and traditional fixed term CDs.

The conceptual question is:

Can an option bundle exist that preserves some features of MM/SAV while introducing CD-like investment framing or term-transition behavior?

This belongs at the MM/SAV Boundary because that is where the Accessibility Option (Withdraw on Demand) and term commitment options are being evaluated.

We observed that in recent inverted yield curve scenarios, large amounts of CD money were transferred into Money Market and Savings products. This poses a management problem for Financial Institutions for a couple of reasons:

- Changing interest rates on demand accounts instantly reprices the entire product. There is tremendous impact on Cost of Funds from even small adjustments.
- Deterioration of Term funding coupled with increases in Demand funding raised concerns about liquidity and price sensitivity.

We observed that Investors have about half of the Money Market and Savings balances in Q2 2026 in the data we reviewed. And we observed that these Customers use the products differently than non-Investor Customers, and the money largely stays within the Institution. Perhaps they could be using MM/SAV as a “parking lot” for funds, a kind of Zero-Term CD.

We asked: could it be that there is a product missing here?

Our answer: perhaps there is.

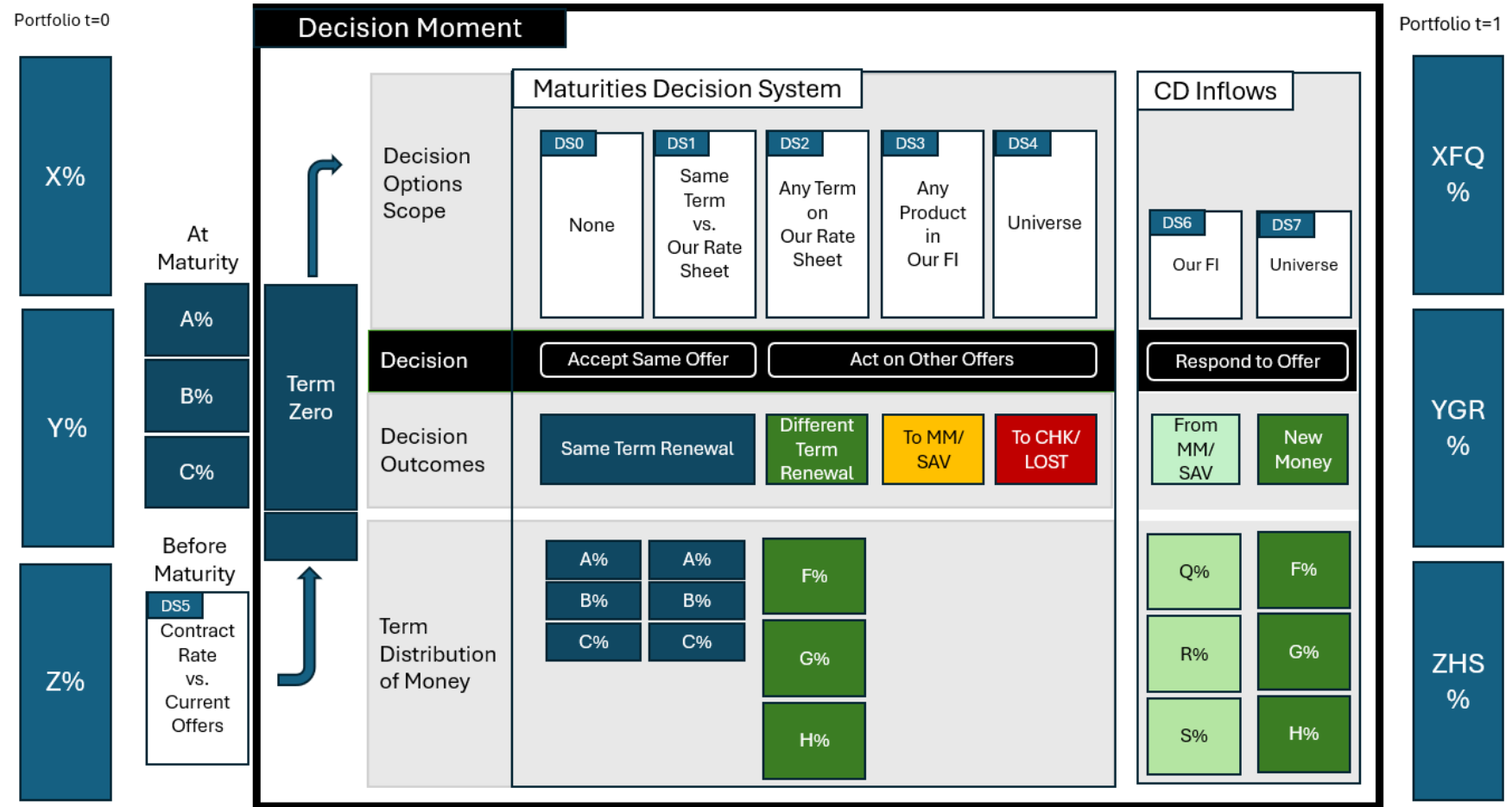
Separate Money Market/Savings products especially for Investor Customers is an intriguing idea. Consider what that could mean for deposit management:

- Specific identification of CD-MM-SAV money flows.
- Potential to split MM/SAV into two parts, segregating pricing control.
- Potential to model liquidity and interest rate risk of Investor Zero Term CD differently than the demand MM/SAV book.

This may be another idea worthy of exploration.

Appendix II: Decision System Reference Diagram

Decision Spaces = Option Sets + Response Functions => Management Strategies



About the Author

Dave McNab is the original founder of FlowTracker Analytics, and creator of the patented (USPTO) Money Flow Analysis method, which has been developed and marketed as the company's DEPOSIT EDGE data service.

He has spent more than 25 years studying deposit behavior, money flows, portfolio management, customer decision systems, and optimization of retail funding portfolios.

This paper summarizes observations and operating practices developed through that work and Dave's extensive experience serving the financial services industry in executive banking and management consulting roles.

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About the Data

The observations presented in this paper are representative of analyses conducted over more than a decade of monthly Money Flow Analysis of more than two million Customer relationships across multiple Financial Institutions and geographic markets.

Specific facts and figures presented throughout the paper are derived from actual observed data.
