
Captive Insurance Structures in Bermuda

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ABSTRACT

The article examines the Bermudian captive insurance model as a tool for corporate risk financing under challenging market conditions and amid the convergence of prudential standards. The relevance of the study is driven by the growth of cascading risks and by the practical dilemma between supervisory harmonization (the Solvency II/International Association of Insurance Supervisors logic) and business demand for proportionate regimes that prevent trapped capital in captives. The purpose of this research is to provide a systematic analysis of captive structures in Bermuda by comparing their regulatory architecture with Solvency II and US risk-based capital, and by identifying factors that enhance capital efficiency. The novelty lies in a comprehensive examination of the bifurcation of the Bermudian regime (Solvency II equivalence for the commercial sector alongside a separate pragmatic framework for captives), in a detailed reconstruction of Bermuda Solvency Capital Requirement/Economic Balance Sheet mechanics based on Bermuda Monetary Authority technical materials, and in introducing an analysis of innovative classes (including digital insurers and the practice of Bitcoin denomination of reserves), as well as the legal construct of Incorporated Segregated Accounts Company as an enhanced form of risk segregation. The findings show that Bermuda's approach makes capital requirements clearer and more closely tied to the risks a company actually takes. However, the reported solvency metrics can move more with market conditions. Bermuda stays competitive because it allows captives to lower their total cost of risk by retaining underwriting profits, earning investment income on reserves, and buying reinsurance more directly. New frameworks such as Incorporated Segregated Accounts Companies and the regulatory sandbox also support the development of new products and technologies in insurance. The article will be constructive for Chief Financial Officers, risk managers, actuaries, regulators, and consultants who work with captives and capital optimization.

Keywords: captive insurance, BSCR, Solvency II, capital optimization, Economic Balance Sheet, ISAC, risk management, Bermuda

1. Introduction

The contemporary global economy is characterized by extreme uncertainty and a series of interconnected risks, including climate change, pandemic diseases, cyber risks, and geopolitical fragility. The commercial insurance

market is cyclical and currently in a challenging market characterized by rising premiums, tightening terms, and a reduction in reinsurance capacity [1]. Under such conditions, multinational corporations are compelled to revisit risk-management strategies, moving the emphasis from straightforward risk transfer to risk retention and financing (risk retention/funding).

A central instrument within this paradigm is the captive insurance company, a subsidiary structure established to insure the risks of the parent group. The Bermuda Islands, historically regarded as the cradle of the captive industry since the 1960s, continue to hold the status of a global leader, concentrating more than 630 active captives with aggregate assets exceeding USD 142 billion [2]. However, the present-day relevance of the Bermudian model is determined less by historical legacy than by the distinctive regulatory transformation the jurisdiction has undergone over the past decade.

Bermuda became the only offshore jurisdiction to obtain full equivalence to the European Solvency II regime for the commercial sector, while preserving a separate, pragmatic regime for captives [3]. This creates a unique environment for studying how regulatory regimes influence corporate capital efficiency. Understanding the mechanisms of the Bermuda Solvency Capital Requirement (BSCR) and the principles of the Economic Balance Sheet (EBS) becomes critical for Chief Financial Officers (CFOs) and risk managers seeking to optimize capital structures amid global convergence of prudential standards.

The scientific problem of the study lies in the tension between the need to unify global standards of financial resilience (under pressure from the IAIS, the Organisation for Economic Co-operation and Development (OECD), and the EU) and the business need for flexible instruments of capital management [4]. Standard regimes, such as Solvency II in Europe, are often criticized for their excessive administrative burden and conservatism, which can lead to trapped capital in captives and reduce their economic efficiency [5]. Conversely, the American Risk-Based Capital (RBC) regime, being rules-based and grounded in historical cost, frequently fails to capture the actual economic nature of complex risks [6].

The Bermudian BSCR model, positioned as a hybrid (combining risk sensitivity with proportionality), requires detailed academic scrutiny to substantiate its effectiveness. It is necessary to determine whether the transition to an economic balance valuation (EBS) generates incremental value for captive owners or merely increases reporting volatility. The applicability of Bermudian innovations (such as ISAC and digital captives) for a broad range of global insurers also remains an open question.

The purpose of the work is to conduct an in-depth systemic analysis of captive structures in Bermuda, identify the fundamental drivers of their effectiveness relative to alternative jurisdictions, and develop recommendations for capital optimization based on Bermudian methodology.

To achieve this purpose, the following tasks are addressed:

1. To decompose the licensing structure of the Bermudian insurance market, determining the specific capital requirements for each class (from Class 1 to Class 4 and Life Classes).
2. A comparison of the capital models BSCR, Solvency II and US RBC and the differences between these in terms of their mathematical approaches, timescales and shocks.
3. To unlock the technical detail of the construction of the Economic Balance Sheet (including the calculation of the Best Estimate Liability (BEL) and Risk Margin).
4. Review available market statistics for 2023-2024 to identify captives that have formed recently and whether they are diversifying.
5. To investigate how the legal and regulatory framework for ISACs and regulatory Sandbox may impact InsurTech and crypto-insurance innovation and growth.
6. Lessons for global insurers, regulators, and supervisors in emerging markets based on experience with the

BMA.

The scientific novelty of the study lies in its comprehensive approach to analyzing the bifurcation of the Bermudian regulatory regime. BMA technical documentation on BSCR calculation and stress testing is examined in detail and compared with real-world capital optimization cases. The work introduces into scientific discourse an analysis of the newest classes of digital insurers (Class IIGB) that use cryptocurrencies to denominate share capital and reserves, representing a paradigmatic shift in currency-risk management. The study also proposes an original interpretation of the influence of BMA macroprudential policy on reducing the total cost of risk (TCOR) for corporations.

2. Materials and Methodology

The research combines qualitative and quantitative methods typical to the fields of financial, economic and legal analysis such as comparative legal and regulatory analysis, actuarial modeling and risk analysis, systematic analysis of technical documentation, case studies and statistical analysis.

A comparative legal and regulatory analysis was undertaken of the legal and regulatory framework of the Bermuda regime with those of the European Union and the United States, including consideration of the Insurance Act and BMA prudential standards, the Solvency II Directive and the National Association of Insurance Commissioners (NAIC) RBC standards. The analysis included outcomes based on the words of the legislation as well as the logic behind the regulation, i.e. the difference between principles and rules. Documents governing the recognition of regime equivalence were analyzed separately.

Actuarial modeling and risk analysis were employed to understand BSCR mechanics through the principles of risk theory. The work analyzed risk aggregation formulas, in particular the Square Root Rule used in the BMA standard model, and compared Value-at-Risk and Tail Value-at-Risk risk measures. This enabled an assessment of the degree of conservatism across regimes in capturing tail events, including catastrophic scenarios, which is of fundamental significance for the Bermudian market.

A systematic analysis of technical documentation was conducted through a content analysis of Bermuda Monetary Authority materials for the period 2023–2024. In particular, technical guides were studied in detail, including instructions for completing capital matrices and conducting stress tests. Based on these documents, the logic of capital requirement calculation was reconstructed in a bottom-up approach.

The case-study method was used to illustrate practical applications of theoretical provisions. The paper considers examples of ISAC structures for asset segregation, as well as the case of Meanwhile, presented as an example of innovative use of a captive for life insurance in bitcoins.

Statistical analysis was employed to process quantitative data from BMA annual reports and analytical reviews by insurance brokers. This processing enabled the identification of trends in registration dynamics, premium volumes, and captive asset structure.

The empirical and theoretical foundations of the study comprise three groups of sources, selected based on relevance (predominantly from 2020 to 2025) and authority criteria. The first group includes primary regulatory documents that form the core of the work and ensure technical accuracy. It includes Bermuda Monetary Authority materials, including BSCR instructions, rules for economic balance valuation within the EBS Framework, captive market reports, and consultation papers on legislative changes.

The second group comprises academic studies and theoretical works aimed at deepening the conceptual foundation. To substantiate views on the cost of capital and the effect of captives on firm value, works published in specialized academic journals were used.

The third group comprises industry analytics, represented by reports from international consulting firms and brokers. In particular, the Marsh Captive Landscape Report series was utilized, which contains benchmarking

data on captives and cost-of-risk savings in TCOR terms.

3. Results

3.1. Regulatory Architecture of Bermuda: The Class System

The flexibility of the Bermudian regime rests on a complex, multi-tier licensing classification system. Unlike many jurisdictions that apply a binary division between insurers and reinsurers, Bermuda employs a granular approach based on risk proportionality [2]. This enables the application of different capital regimes to companies with varying risk profiles. Table 1 presents the classification of general business insurance licenses in Bermuda.

Table 1. Classification of General Business Licenses in Bermuda [7]

Licence Class	Target Audience & Description	Nature of Risks	Minimum Solvency Margin	Regulatory Regime
Class 1	Single-parent captives. Owned by one corporation.	Only risks of the parent company and affiliated entities.	\$120,000	Simplified. Not subject to full Solvency II.
Class 2	Multi-owner captives or captives with <20% third-party risk.	Owners’ risks and up to 20% Unrelated Business.	\$250,000	Simplified.
Class 3	Large captives, Rent-a-Captives, structures with Segregated Accounts Companies (SAC).	>20% but <50% Unrelated Business (if net premium < \$50m).	\$1,000,000	Transitional.
Class 3A	Small and medium-sized commercial insurers.	>50% Unrelated Business, net premium < \$50m.	\$1,000,000	Solvency II Equivalent. Full BSCR.
Class 3B	Large commercial insurers.	>50% Unrelated Business, net premium > \$50m.	\$1,000,000	Solvency II Equivalent. Full BSCR.
Class 4	Large reinsurers for catastrophe risk and excess liability.	Direct liability insurance and property reinsurance (Catastrophe Re).	\$100,000,000	Solvency II Equivalent. Most stringent supervision.
SPI	Special Purpose Insurers.	Risk securitisation (ILS, Cat Bonds). Fully funded.	Fully funded (full collateralisation)	Specific regime for ILS.
IIGB	Innovative Insurer – General Business.	Business models based on digital assets; sandbox.	Depends on scale	Sandbox / Innovation Hub.

This table clearly illustrates the bifurcation strategy. Classes 3A, 3B, and 4, which constitute the backbone of Bermuda’s commercial reinsurance market (known as Global Risk Capital), are regulated in complete alignment with Solvency II standards. This ensures their unobstructed access to the EU market. At the same time, Classes 1 and 2 (traditional captives of U.S. corporations) are exempt from these requirements, reducing their operating costs and capital demands while preserving the jurisdiction’s attractiveness for U.S. corporations, for which Solvency II is not a standard.

3.2. The Bermuda Solvency Capital Requirement (BSCR) and the Economic Balance Sheet (EBS)

The foundation of Bermudian insurers’ financial resilience is the BSCR capital model, which is inextricably linked to the Economic Balance Sheet (EBS) concept. Understanding these mechanisms is critical for assessing captive

efficiency.

The Economic Balance Sheet (EBS) concept differs fundamentally from traditional accounting under US GAAP or IFRS, where historical cost may be applied to assets in some instances. Under EBS, all assets and liabilities are revalued at fair market value (Fair Value), establishing an economic rather than purely accounting view of the organization’s financial position [8].

Within EBS, assets are valued on a mark-to-market basis using observable market quotations. For illiquid assets, a mark-to-model approach is permitted; however, such modeling requires rigorous justification and validation to ensure its accuracy. It reduces the arbitrariness of valuation, and measure points in a comparable way.

Technical provisions under the EBS consist of two components: the Best Estimate Liability (BEL) which is the present (discounted) value of the cash flows that arise from the obligations to make the claims payments weighted by their probabilities. As discounting is performed using risk-free yield curves published by the Bermuda Monetary Authority, this standardizes the calculation and reduces the impact of individual assumptions.

The second additional cost is a Risk Margin, which is added to the liability value. It reflects the cost of holding capital for a third party to take over the liabilities. This is measured by the Cost of Capital method, which usually is 6% of SCR for non-hedgeable risk, multiplied by the duration of the liabilities. The risk margin quantifies the price of risk transfer and ensures the liability has been fully valued at the balance sheet date.

As a result, the approach eliminates the effect of hidden reserves and enhances balance-sheet transparency, while also increasing volatility. This is due to the sensitivity of fair value estimates and discounting to market parameters, which can change instantaneously in response to changes in interest rates.

BSCR is a factor-based risk model calibrated at a 99.0% Tail Value-at-Risk (TVaR) confidence level over a one-year horizon [2]. Under this logic, the model focuses not on average fluctuations but rather on the underlying patterns that drive them. Still, regarding the behavior of the loss distribution in adverse regions, specifically what occurs in the tail, where rare yet potentially most destructive outcomes are concentrated.

The mathematical architecture of BSCR is built around aggregating individual risk modules into a single capital requirement. Total required capital, denoted as Basic BSCR, is calculated by combining modules while accounting for correlations among them, thereby reflecting incomplete synchronicity of risk manifestation and diversification effects. This uses the square root of the sum of squares formula with covariance terms, i.e., the Square Root Rule, which formalizes the transition from a set of partial risks to an integrated capital assessment. A schematic of the BSCR structure is presented below.

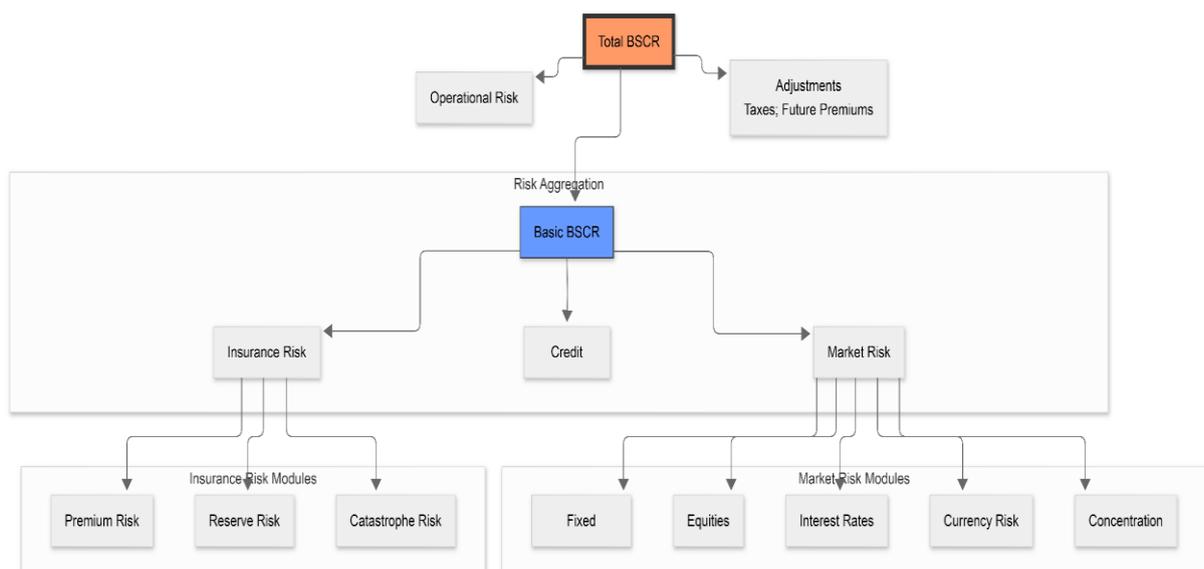


Fig. 1. BSCR structure diagram

The use of correlation matrices enables captives to achieve material capital savings through diversification. For example, if a captive underwrites property risks (Catastrophe Risk) while simultaneously investing in high-quality bonds, the correlation between hurricane losses and bond default is close to zero, reducing the overall capital requirement compared with a simple sum of risks [10].

3.3. Comparative Analysis of Regimes: Bermuda, the USA, and Europe

Table below illustrates comparative characteristics of capital regimes.

Table 2. Comparative characteristics of capital regimes [11]

Parameter	US RBC (USA)	Solvency II (EU)	Bermuda BSCR
Philosophy	Rules-based.	Principles-based.	Hybrid / risk-based.
Valuation basis	Statutory Accounting Principles (SAP): historical cost, amortisation.	Market-consistent (fair value).	Economic Balance Sheet (EBS): market value.
Risk measure	Regulatory intervention levels (ACL, CAL); static factors.	99.5% Value-at-Risk (VaR); ~1-in-200-year ruin probability.	99.0% Tail Value-at-Risk (TVaR); average loss in the worst 1% of scenarios.
Sensitivity	Low: factors change rarely; limited recognition of complex investments.	High: immediate response to market shocks.	High: especially sensitive to catastrophe risk (fat tails).
Internal models	Rarely used to determine required capital.	Permitted, but approval is a highly complex and costly process.	Widely used (especially for cat risk); approval tends to be more pragmatic.
Burden on captives	Moderate, but can be inefficient for low-risk assets.	High: reporting requirements are often excessive for captives (proportionality works weakly in practice).	Optimized: the bifurcated regime allows captives (Classes 1–3) to avoid an excessive burden.

The choice of the Tail VaR (TVaR) as the risk measure for the Bermudian regime is motivated both by the fact that TVaR is a coherent measure of risk (unlike the VaR, which fails to be subadditive) and the specific focus on risk aggregation and extreme value (catastrophe) exposure for which the Bermudian market is well known.[12] For captives this implies stricter but fairer capital for volatile risks.

3.4. Market Statistics and Economic Efficiency

Market data suggests that the Bermudian model has remained resilient. The number of captive registrations in Bermuda in 2022, 2023 and 2024 was respectively 18, 16 and 17 showing that the jurisdiction's offering remains attractive in the context of globalization [2]. This indicates that the data are relatively stable, with fluctuations within a certain range, and not a structural decline.

Aggregate indicators also reflect the scale and maturity of a sector. The total number of active captives exceeds 630, with a gross written premium (GWP) estimated at approximately USD 31 billion, and total assets exceeding USD 142 billion [13]. These values matter not only in themselves but also as indicators of institutional density, where accumulated capital and operational volume sustain infrastructure, expertise, and regulatory practice.

From the perspective of economic motivation, transferring risks into a Bermudian captive can reduce the total cost of risk (TCOR) [14]. The savings mechanism arises from several interrelated channels. First, retention refers to the profit margin that, under an alternative scenario, would be retained by a commercial insurer. Second, investment income is generated from investment return on loss reserves, i.e., on float, and under high interest

rates, this component becomes an especially significant value driver. Third, direct reinsurance access enables entry into the wholesale reinsurance market without intermediaries, reducing transaction costs, including fronting commissions, and making the risk-transfer structure more efficient.

The distribution of captive assets by classes (Classes 1 and 3) also shows pronounced differences in investment strategies within the Bermudian segment [2]. For Class 1, i.e., pure captives, a high share of intra-group investments, in the form of intercompany loans, is typical, reaching approximately 65%. These arrangements enable capital to be returned to the parent and generate additional liquidity within the group. Class 3 captives, which are larger than Class 1 and 2 captives, also tend to have a more diversified portfolio of assets, such as a greater proportion of bond (21%) and quoted investments (24%), as they need more liquidity and asset quality relative to third party liabilities.

3.5. Innovative Structures: ISAC and Digital Assets

As an industry Bermuda continues to define the future of its models and further define the progression in its legislation with the evolution of structures that create and package risk and capital on a single platform with greater precision, and no longer in the segregated-cell form, but in more legally separated structures for better liability isolation and managerial and operational independence.

However, customary segregated accounts, e.g., a special account company (SAC) or a protected cell company (PCC), can achieve some degree of asset protection by segregating accounts in one legal entity. The ISAC Act 2019 altered the rules by introducing a model of incorporated segregated accounts in which each cell receives the status of a separate legal entity [15]. This implies that segregation becomes not merely accounting-based and contractual, but formally enshrined at the level of corporate legal personality.

The autonomy of cells provided by this structure has some practical advantages, enabling each cell to have its own board of directors, its own corporate governance profile and, if any, its own credit rating. This would mean a single cell could go bankrupt without dragging down the other cells, according to a firewall logic, which would provide both predictability for the counterparties and the structure participants.

This type of architecture is especially useful in hybrid cases where a joint infrastructure is needed but operational independence is desired. Examples include family office management or consortium arrangements where the participants want to benefit from the advantages of remaining separate legal entities with separate liabilities on top of the same platform and administrative base.

Meanwhile Insurance is not about crypto in insurance. In that case, the question was merely whether the insurer that accepts premiums, pays benefits, reserves, and makes solvency calculations in a given crypto asset unit of account needs to convert everything back to fiat or if it can simply keep everything in its unit of account. The math does not need that. However, even if the matching of assets and liabilities is corrected, the fact that assets and reserves exist in euros (or, in their case, USD) introduces a currency mismatch with liabilities denominated in BTC. This mismatch is a source of risk and cost, even assuming that underwriting is perfectly executed.

The Bermudian approach to regulating innovative insurers is structured precisely to allow experimentation without weakening prudential discipline. In recent years, the Bermuda Monetary Authority (BMA) has developed innovative licensing classes and associated mechanisms, including a sandbox, initially for general business and then, as a mirrored contour, for long-term business; in BMA consultation materials it is explicitly stated that Class IIGB and Class IILT were introduced in 2019 and 2022 respectively, and that their logic is to provide a proper shelf for companies whose models do not fit traditional categories but require full supervision rather than regulatory laxity [2].

Meanwhile (Meanwhile Insurance Bitcoin (Bermuda) Limited) is positioned as a bitcoin-only life insurer: the product is a form of whole life, and the key engineering principle is that all cash flows are expressed in BTC, premiums are paid in BTC, and benefits are also paid in BTC. Industry press covering the regulator's decision emphasizes that the company received a Class IILT license, and that the IILT class is described as created by the

BMA for innovative models, including those involving digital assets [11]. This matters not as a marketing detail but as an institutional precondition: long-term insurance is susceptible to the currency and rules under which reserves are measured, because liability horizons span decades, and any artificial currency bridge between assets and liabilities becomes, over time, a dominant driver of outcomes.

From the standpoint of supervisory mechanics, the meaning of permitting BTC accounting can be described as follows: the regulator recognizes the chosen unit of account as the reporting base, and then requires the company to operate under standard prudential logic, capital requirements, validated models, adequate Enterprise Risk Management, control of operational and investment risks, only without mandatory conversion of underlying economic reality into fiat for the sake of formal compliance. In the BMA's normative architecture for innovative general business insurers, risk-based solvency elements are described in detail, including the calculation of required capital (ECR), the use of BSCR or an approved internal model, and supervisory triggers that activate when capital ratios deteriorate [2]. In essence, this is the framework by which the BMA conceptualizes prudential supervision in innovative classes. Transposing this logic to BTC denomination implies that the key currency mismatch risk is removed not through assurances but through accounting-actuarial symmetry: reserves and liabilities are calculated in the same unit in which benefits are promised, meaning the insurer is not forced to sell BTC because reporting requires it, thereby creating taxes, spreads, and additional capital shocks.

The Meanwhile case also offers rare, verifiable empirical evidence for crypto-related narratives: the company publicly stated that it issued audited statutory financial statements entirely denominated in BTC for 2024, and its release contains measurable indicators, 220.4 BTC in total assets and 25.29 BTC in net profit for the year (with a stated 300% year-on-year net profit growth) [16]. Scientifically, the value lies not in the size of the profit, but in demonstrating a reproducible control contour: a digital asset becomes not an exotic investment, but a base unit of account within a licensed regime where reserves, audit, and the actuarial function are formally embedded in supervision.

At the same time, the case does not eliminate fundamental risks; it changes their geometry. When liabilities and assets are denominated in BTC, one axis of uncertainty (fiat-FX mismatch) disappears. Still, others remain: cyber and custodial risks, model risk in tail-event assessment, operational risk of infrastructure, and specific questions of interpreting value and liquidity in stress scenarios. These risk classes are well described in actuarial and supervisory literature on digital assets: for example, the Society of Actuaries offers a digital risk framework. It discusses practical implications for pricing and tail-risk management in the digital-asset ecosystem. At the same time, European Insurance and Occupational Pensions Authority (EIOPA) systematizes regulatory concerns and the advantages of blockchain and smart contracts for the insurance market [17].

4. Discussion

4.1. Regime Bifurcation as a Geopolitical and Economic Strategy

The analysis suggests that Bermuda's strategy of splitting the regulatory regime into two streams, known as the two-speed Europe approach, is not merely a technical solution, but a deliberate geopolitical maneuver.

Having obtained full Solvency II equivalence in 2016, Bermuda guaranteed its commercial reinsurers (Class 3A, 3B, 4) equal rights in the EU market. This is critically important because Bermuda supplies a significant share of reinsurance capacity for European catastrophe risks. Without equivalence, European cedents would be penalized with capital add-ons for reinsurance placed in a third country.

However, the BMA defended the right not to apply the stringent Solvency II requirements to captives (Classes 1 and 2). The argument was that captives do not threaten consumer-market financial stability because they insure only their owners' risks. This decision prevented an outflow of American capital, for which European Solvency II norms are alien and excessively costly. As a result, Bermuda functions as a bridge between two regulatory continents: serving the USA under rules aligned with its business understanding, and Europe under Brussels' rules.

4.2. Capital Optimization: From Theory to Practice

The Modigliani–Miller theorem asserts that in a perfect market, risk management does not create value [18]. Yet the real financial environment is structured differently: markets remain imperfect due to taxes, costs of economic distress, and information asymmetry. Under these conditions, a Bermudian captive can create incremental value precisely because it leverages such cracks in the ideal model, transforming the organization of insurance protection from a purely cost function into an instrument of financial optimization.

One key channel is cost-of-capital arbitrage. By transferring risks to a captive, a company reduces its reliance on expensive external insurance capital. Commercial insurer premiums embed an expected return on capital of approximately 15–20%, reflecting the cost of attracting and servicing insurance capital in the industry. Captive capital is often cheaper because its price is determined by the opportunity cost of internal capital rather than by market returns demanded by external investors. Consequently, part of the capital surcharge that would otherwise be paid to the market remains within the corporate perimeter.

An additional efficiency source is the diversification effect embedded in BSCR. However, when the risks are uncorrelated, weakly correlated or negatively correlated, the overall capital requirement can decrease nonlinearly with the covariance matrix embedded in the BSCR. An example includes a portfolio that contains both cyber and D&O risks. In a ceteris paribus context, diversification will lower the overall capital requirement since the risk of both occurring simultaneously is very small.

Additionally, asset allocation is important in EBS logic as the Economic Balance Sheet is influenced by how assets and liabilities are valued in other contexts and affected by their market value. This causes captive organizations to consider an asset-liability management (ALM) approach to asset management, as opposed to an inertial approach that keeps their assets in cash. This discourages lazy investment, but the ALM process requires both a higher expected return portfolio that holds corporate bonds and alternative investments, and hedging of the duration of interest rate and term risk in liabilities where possible, making captive investment policy more and more of a formalized process where expected return and risk are not just linked in the abstract but also in how sensitive they are to the state of the balance sheet and its capital needs.

4.3. Barriers and Risks

However, the operation of the vehicle, its tax treatment and capital contribution requirements can be less favorable than in some other jurisdictions. This does not suggest that it is ineffective, but it does mean it has more stringent requirements and requires players to be more skilled.

An administrative barrier is converting to an economic balance sheet, which includes a labor-intensive actuarial effort (such as developing the yield curve), and stochastic modeling of embedded options and guarantees in the securities. To meet this burden, administrative costs tend to rise through increasing reliance on specialized external providers and tightening of data quality control measures.

Another element is the global tax reform proposed in the OECD Pillar Two logic since the global minimum tax counteracts the benefits of low-tax offshore jurisdictions. The introduction of a Corporate Income Tax (CIT) in Bermuda from 2025 has shifted the center of gravity away from tax optimization functions towards operational efficacy and risk management. Otherwise, the only purpose of the captive is that of a tax shell, which devalues it. In contrast, structures that genuinely perform a risk-management function and deliver a measurable effect on the cost of risk and capital remain sustainable.

Finally, BSCR volatility represents a distinct source of tension. During periods of rising interest rates, as observed in 2022–2023, the market value of assets, particularly bonds, tends to decline. This can lead to temporary deterioration in solvency metrics and even breaches of ratios, despite liabilities being long-term and supported by cash flows under cash-flow matching strategies. Thus, the model becomes more sensitive to short-term market shifts, and capital-position resilience begins to depend not only on fundamental liability backing but also on how the regulatory metric responds to asset revaluation within a specific time window.

Captive evolution is moving toward integration with decentralized finance. The Bermudian sandbox indicates that captives can become an ideal instrument for insuring Web3 risks. Smart contracts enable automated claims settlement (parametric insurance), while the use of stablecoins or BTC facilitates cross-border payment reservations, reducing friction. However, this requires exceptionally high regulatory expertise to assess the cyber risks associated with the smart contracts themselves (model risk).

5. Conclusions

The study confirms that Bermuda has successfully transformed its role from a tax haven into a global center of excellence for risk capital management. This transformation is expressed not only in changes in external positioning but also in the consolidation of an institutional model in which regulatory logic, capital valuation methodologies, and legal instruments form a mutually coherent system oriented toward measurability, predictability, and practical applicability.

A key factor is hybrid regulation grounded in regime bifurcation. For global players, strict Solvency II equivalence is ensured, while for captives, a more pragmatic approach is applied through BSCR. Such a construct enables the maintenance of reputational robustness at the international standards level while preserving the necessary flexibility for specialized structures, where the economic function of insurance is closely tied to corporate risk management. As a result, a balance is formed in which the jurisdiction is perceived as comparable to leading supervisory regimes yet does not lose competitiveness due to excessive regulatory rigidity.

The model's economic efficiency is revealed through the BSCR/EBS linkage, where the TVaR metric is applied. Compared with static models such as the US RBC, this approach provides a more precise and, within the given framework, more equitable capital assessment, because attention shifts to risk behavior in the adverse region of the distribution. This creates conditions under which captives can reduce the total cost of risk by 15–30% through more effective retention and reinsurance, i.e., by optimizing the share of risk that remains within the group and the share that is transferred to the external market, and on what terms.

An additional dimension of competitiveness is linked to innovative potential. ISAC and digital-asset legislation create preconditions for the emergence of digital captives capable of serving the crypto-economy. In this context, legal infrastructure is viewed as a mechanism for expanding the product space, as it enables the creation of structures tailored to risks and operating models that are insufficiently covered by the traditional insurance market. This combination of regulatory engineering and market demand constitutes a unique competitive advantage for Bermuda.

Based on the analysis, practical recommendations are proposed for global corporations and market participants. International insurers are advised to utilize Bermudian captives, particularly Class 3A and SAC, as strategic hubs for consolidating their global programs. In parallel, it is rational to implement Economic Capital Modeling not merely as a reporting instrument but as a basis for managerial decisions in underwriting, including pricing based on risk capital.

For mid-sized enterprises, it is appropriate to consider ISAC or Rent-a-Captive structures as a way to reduce entry barriers. This approach provides functional captive advantages without establishing a fully fledged insurance company, thereby reducing organizational burden and enabling a lighter participation format in risk retention and redistribution mechanisms.

In the domain of digital assets, it is advisable to examine the possibility of establishing captives within the BMA sandbox to ensure specific risks, such as cyber risks and smart-contract risks, which the traditional market covers only to a limited extent. Under this logic, the emphasis shifts toward building specialized solutions for new risk categories where standard products and underwriting models are insufficiently adapted. Overall, the Bermudian model demonstrates that, in the modern world, capital flows not to where taxes are lower, but to where regulation is more efficient, more transparent, and more adequate from the standpoint of risk valuation.

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