

Launch Pacing Reserve Conservatism and Channel Mix Instability in the Valuation of Publicly Traded Consumer Goods Firms

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ABSTRACT Capital markets do not value product-market expansion mechanically. Investors respond not only to whether a firm introduces new products, but also to whether the surrounding commercial system can absorb those introductions without generating reserve pressure, uneven channel migration, or avoidable earnings volatility. This study examines how launch pacing, reserve conservatism, and channel mix instability jointly shape firm value in consumer goods markets. The analysis uses a quarterly panel of publicly traded firms observed over eighteen years, combining financial statements, product-introduction records, advertising data, and transaction-environment measures. Firm value is measured primarily with Tobin's Q and enterprise value scaled by assets, while forward-looking tests consider subsequent cash-flow volatility and operating margin realization. Launch pacing is defined as the rate of product introductions relative to the active portfolio, reserve conservatism is measured as the extent to which recorded post-sale reserves exceed model-implied expected obligations, and channel mix instability captures rolling variation in direct and intermediary sales shares. The estimates show that launch pacing has an inverted-U association with firm value, indicating that moderate renewal is rewarded but excessive cadence is discounted. Reserve conservatism also displays a nonlinear pattern: modest prudence is valued positively, whereas aggressive over-reserving is associated with lower valuation multiples. Channel mix instability reduces firm value directly and steepens the discount attached to overly rapid launch programs. Additional tests show that prudent reserves soften the negative valuation consequences of high launch pacing when channel shares are volatile, but only within an intermediate range. The results remain stable across fixed-effects, dynamic-panel, threshold, and local-projection specifications. The evidence suggests that investors price not merely innovation volume, but the organizational pacing with which renewal is financed, buffered, and routed across channels.

KEYWORDS

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1. Introduction

Equity markets often reward renewal before its operating consequences are fully visible. A stream of product introductions can raise expectations of demand freshness, pricing power, shelf relevance, and future revenue acceleration. Yet the same stream can weaken value when it arrives faster than the firm's systems of merchandising, forecasting, reserve setting, and channel exe-

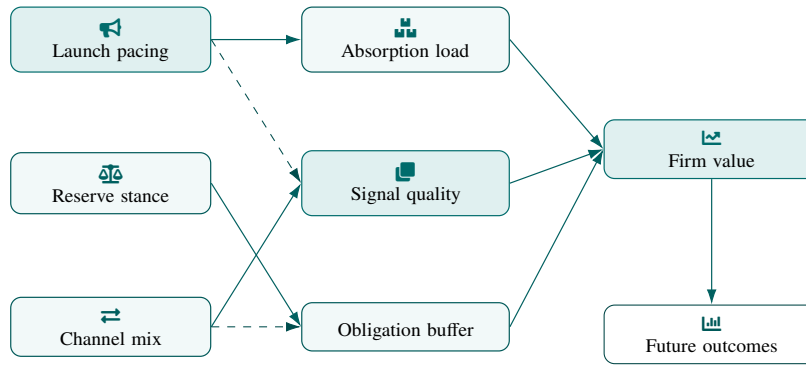


Figure 1 System view of how launch cadence, reserve discipline, and channel routing jointly shape valuation through absorption pressure, informational clarity, and downstream obligation coverage.

cution can absorb. The valuation problem is therefore not simply whether a firm innovates. It is whether the tempo of commercialization matches the firm’s ability to finance uncertainty, preserve cross-channel coherence, and contain the post-sale obligations that accompany novelty. That issue becomes especially important in consumer goods categories where launch cycles are short, promotional calendars are dense, and product outcomes are observed through both direct and intermediary routes. In these settings, capital markets have reasons to distinguish productive renewal from destabilizing renewal, even when both generate similar headline counts of new items.

A useful way to think about this distinction is through launch pacing. Launch pacing is not synonymous with innovation intensity in the narrow research-and-development sense. It is the rhythm with which products are introduced into the market relative to the carrying capacity of the existing portfolio. A firm can invest heavily in product development while pacing launches gradually. It can also generate numerous introductions from modest technological effort by proliferating line extensions and package variants. The valuation implications differ across these cases because investors care about the managerial burden created by novelty, not merely the existence of novelty. When launch pacing is slow relative to category clocks, the firm risks appearing stale, yielding shelf presence, and losing relevance with retailers and consumers [1]. When launch pacing is too fast, the firm may create assortment congestion, cannibalization, reserve uncertainty, fulfillment complexity, and promotional waste. The capital market’s problem, accordingly, is to infer where a given firm lies on that continuum.

A second dimension concerns prudence in recognizing future obligations. Product launches in consumer goods do not impose costs solely at the moment of design or shipment. They also alter expected returns, allowances, warranty claims, service incidents, write-downs, and channel support commitments. Some of these obligations are recognized through reserves before they are fully realized [2]. The discipline with which firms set those reserves can matter for value because reserves speak to both expected cost and managerial control [3]. A firm that persistently under-reserves exposes future earnings to unpleasant revisions. A firm that over-reserves aggressively may protect short-run credibility at the cost of capital inefficiency and muted reported

performance. The relation between reserve conservatism and valuation is therefore unlikely to be monotonic. Investors may prefer a buffer against uncertainty, but they need not reward indefinite expansion of that buffer.

The third dimension is channel mix instability. Consumer goods firms now move sales through a more fluid configuration of direct channels, digital intermediaries, traditional retailers, warehouse clubs, and specialized outlets than in earlier decades. A product that launches successfully in one route can underperform in another because differences in display format, search behavior, retailer incentives, and shipment economics alter how quickly demand is observed and how costly mistakes become. When the sales mix across these channels shifts abruptly, the firm’s historical forecasting templates become less reliable. A launch program that looked manageable under stable channel shares can become disruptive when volume migrates rapidly between routes. Channel instability is therefore not a peripheral control; it changes the value relevance of launch pacing and reserve behavior.

The present study examines whether firm value reflects the interaction among these three forces rather than their isolated levels. The central proposition is that capital markets reward launch pacing only within a moderate region and that the region narrows when channel mix is unstable. At the same time, moderate reserve conservatism should reduce the valuation penalty attached to faster launch pacing by giving investors confidence that downstream obligations are being anticipated, but excessive conservatism should itself become costly because it signals trapped capital, weaker reported earnings quality, or managerial overreaction. The empirical design therefore allows for nonlinearity in both launch pacing and reserve conservatism, as well as interaction effects with channel mix instability.

The motivation for treating post-sale obligations as value relevant rather than purely operational is strengthened by prior evidence that marketing-side assets can influence warranty outcomes and thereby affect firm value. Cao (2022) shows that stronger brand equity is associated with lower warranty claim rates and lower abnormal warranty accrual rates, and that those cost channels mediate the relationship between brand equity and valuation [4]. That finding matters here for a different reason than in work centered directly on branding. It suggests

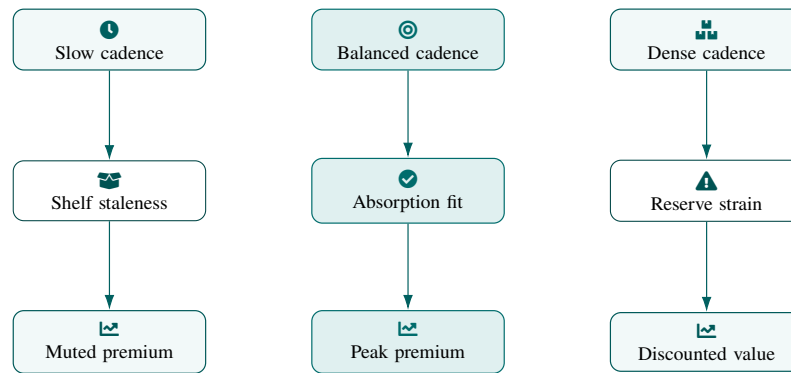


Figure 2 Inverted-U logic for launch pacing: weak renewal can leave the portfolio stale, moderate cadence aligns best with commercial carrying capacity, and excessive cadence raises congestion and reserve pressure that the market discounts.

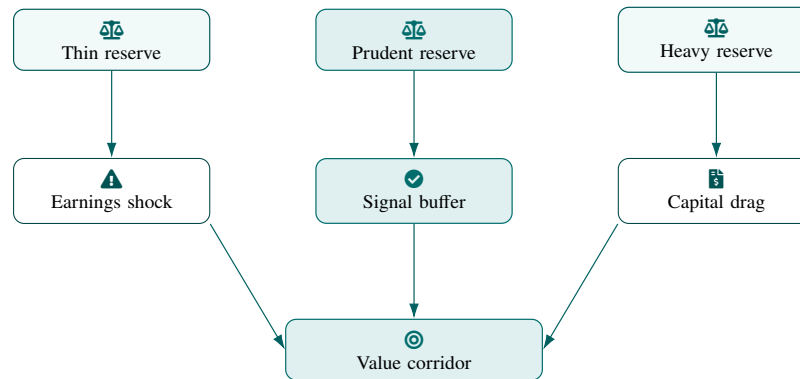


Figure 3 Reserve conservatism operates through a corridor rather than a corner solution: undercoverage leaves earnings exposed, moderate prudence stabilizes interpretation, and excessive buffering can suppress apparent efficiency and valuation multiples.

that the market does not see post-sale obligations as a residual accounting detail; instead, investors appear to infer enterprise quality from how firms manage future obligations generated by commercial decisions. If reserves and claims are already valuation relevant in the presence of brand effects, then reserve discipline should also matter when firms accelerate or decelerate their launch cadence.

The issue becomes more subtle when channel support and promotional coordination are considered [5]. Under uncertainty, commercial support can help move inventory and improve channel performance, but it can also complicate internal forecasting when information is strategically filtered. Yan, Cao and Pei (2016) show that supportive advertising in a dual-channel setting can improve coordination while simultaneously creating incentives for one party to distort information and for another to understate its forecast unless verification is introduced [6]. The implication for the present context is not that consumer goods firms face the same contractual problem examined there. Rather, it is that channel-side support and sales stimulation can make observed demand signals less clean when measurement and verification lag behind market activity. A firm that launches many products into a rapidly changing channel mix may therefore face valuation pressure not only from the launches themselves, but from the possibility that promotional and channel signals are temporarily noisy or strategically incomplete [7].

The paper contributes to the firm-value literature in four ways.

First, it shifts attention from the level of product innovation to the pace at which product-market novelty is commercialized relative to portfolio size. This is a different empirical object from research-and-development intensity, patent output, or one-time launch announcements. Second, it treats reserve conservatism as an intermediate valuation lever that can both protect and depress value depending on magnitude. Third, it places channel mix instability at the center of the valuation problem, recognizing that the same launch program may be priced differently when routed through stable versus volatile channel structures. Fourth, it evaluates not only contemporaneous firm value but also forward outcomes, including operating margin realization and cash-flow volatility, so that valuation estimates can be connected to subsequent operating evidence rather than left as purely market-based associations.

The data consist of a quarterly panel of publicly traded consumer goods firms from 2005 through 2022. Quarterly frequency is important because launch pacing, reserve recognition, and channel migration often change too quickly to be captured adequately in annual data. Quarterly observation also makes it possible to study how valuation effects unfold over subsequent horizons without excessively smoothing the underlying commercial process. The sample combines financial statements, product-introduction records, media-spend information, and channel-share disclosures. Launch pacing is measured with a rolling introduction rate relative to active stock-keeping units.

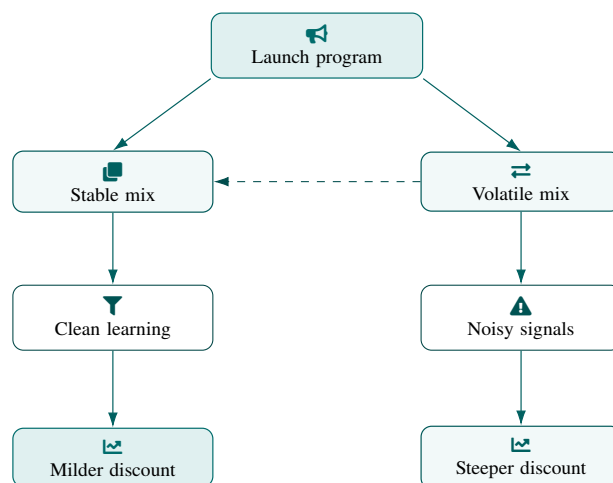


Figure 4 Equivalent launch intensity can be priced differently depending on whether channel shares remain stable or migrate abruptly. Routing volatility weakens learning continuity and amplifies the valuation penalty attached to aggressive pacing.

Reserve conservatism is measured as the extent to which recorded post-sale reserves exceed model-implied expected obligations. Channel mix instability is measured as the rolling volatility of the firm’s direct-to-consumer and intermediary sales shares.

The empirical results indicate that launch pacing has an inverted-U relation with firm value. Moderate launch renewal is valued positively, but valuation discounts emerge once pacing rises beyond the range that can be absorbed comfortably by the commercial system. Reserve conservatism displays a similar but milder inverted-U pattern. The direct effect of channel mix instability is negative, and the interaction between instability and launch pacing is also negative, indicating that rapid renewal is discounted more heavily when channel structure is moving. A further result is that prudent reserves dampen the negative effect of faster launch pacing, but only up to an intermediate level. Beyond that point, additional conservatism is associated with lower value, consistent with the idea that excessive buffers immobilize resources and may obscure rather than clarify performance. Forward-looking tests show that the strongest valuation penalties appear in firm-quarters where high launch pacing coincides with high channel instability and thin reserve coverage.

The remainder of the paper proceeds in a sequence chosen to match the empirical question rather than a generic template. The next section sets out the economic logic and formal predictions. The following section presents the empirical architecture, including the baseline, threshold, and horizon-specific estimators. The subsequent section describes data construction and variable design. The next two sections report the quarterly valuation estimates and the forward-looking evidence on subsequent operations [8]. A final empirical section addresses identification, falsification, and sensitivity. The paper closes with a concise conclusion.

2. Economic Setting

A firm that renews its portfolio through repeated product launches acquires two assets at once and two liabilities at once. The first

asset is renewed attention. New items refresh retailer negotiations, improve promotional relevance, and alter consumer beliefs about the firm’s vitality. The second asset is option value. A broader set of recent launches gives management more ways to reallocate shelf space, retire weak variants, and exploit demand surprises. Against these benefits stand two liabilities. One is portfolio friction, meaning the operational burden created by more introductions, overlapping packages, more promotional combinations, and less stable demand histories. The other is reserve exposure, meaning the obligation to recognize returns, claims, markdown allowances, and related commercial costs under higher uncertainty. The key point is that all four consequences rise with launch activity, but they do not rise at the same rate. Attention and option value rise quickly when the firm moves from very little renewal to moderate renewal. Friction and reserve exposure rise more sharply once launch activity becomes dense. The resulting value function should therefore bend rather than remain linear.

The bend is not a mechanical law; it depends on whether the firm can spread uncertainty across channels and accounting buffers without transmitting too much noise to investors. A firm with stable channel shares can learn from recent launches using consistent sales and returns patterns. The same firm facing volatile migration between direct and intermediary channels loses some of that learning continuity. A fast-moving direct channel often reveals demand sooner, but it can also concentrate promotional experimentation, consumer search frictions, and order-pattern volatility. Traditional retail routes may provide broader distribution, but they often layer in different allowances, presentation constraints, and lagged response. When volume shifts rapidly between the two, historical regularities weaken. Under those conditions, investors may attach a sharper penalty to fast launch pacing because it becomes harder to tell whether observed success is repeatable or merely a product of temporary channel reallocation.

Channel instability also changes the interpretation of reserves. In a stable environment, a higher reserve can be read as prudent anticipation of known obligations. In an unstable environment,

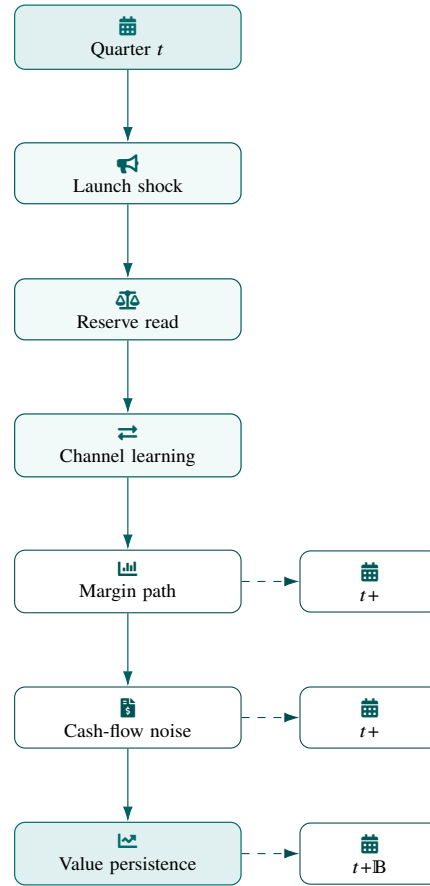


Figure 5 Quarterly propagation map from the initial commercial state to later operating realization. The sequence emphasizes that valuation effects are expected to surface first in interpretation, then in margins and cash-flow variability, and finally in persistence of the valuation multiple.

the same reserve can be read either as sensible caution or as evidence that management lacks confidence in its forecasts. The marginal value of conservatism is therefore ambiguous *ex ante*. Some reserve buffer should be valued because it reduces the likelihood that future obligations will surprise earnings. Too much reserve, however, can dilute contemporaneous profitability, lower apparent return on assets, and signal that management is insulating itself against uncertainty it cannot explain. The market's preferred reserve stance should therefore sit inside a corridor rather than at one extreme.

Nonlinearity in commercial outcomes has precedent in adjacent marketing-finance settings. Cao and Yan (2021) report that a product's nutritional quality has a curvilinear association with profit and stock return, and that advertising and package innovation positively influence that relationship [9]. Their result is relevant here not because launch pacing and nutritional quality are the same construct, but because it demonstrates that market-facing investments need not have linear payoffs and that commercial support can shift the location and steepness of the payoff curve. That logic motivates the present specification in which launch pacing enters quadratically and is allowed to interact with communication support and reserve behavior. If the market rewards novelty up to a point and then discounts it, a linear model would misstate both the turning point and the economic magnitude of the moderation effects.

The commercial process underlying reserve formation further supports the need for interaction terms. Launches change not only expected sales, but also the distribution of order sizes, the breadth of assortments consumers face, and the mix of payment and purchase conditions attached to transactions. Yan and Cao (2017) provide empirical evidence that payment methods, assortment size, and order size are informative determinants of product returns [10]. For the present paper, that result has a specific implication: the same headline launch count can generate very different post-sale risk depending on the transaction environment into which those launches enter. Fast pacing through a narrow assortment and stable order pattern need not produce the same reserve pressure as fast pacing through broad assortments and volatile baskets [11]. That is why the empirical design later incorporates transaction-complexity controls rather than treating launch volume alone as sufficient information.

The structure of the firm's valuation problem can be written in reduced form as a function of expected net operating surplus and the discount imposed by uncertainty [12]. Let L denote launch pacing, C reserve conservatism, M channel mix instability, and X the vector of other characteristics. The market value multiple should increase with the expected benefits of renewal and precaution, but at decreasing rates, and should decrease with instability. In addition, the cross-partial derivative of value

with respect to launch pacing and instability should be negative, while the cross-partial derivative of value with respect to launch pacing and moderate conservatism should be positive [13]. The first derivative conditions can be summarized as

$$\begin{aligned}
\frac{\partial V}{\partial L} &> \kappa && \text{for low to moderate } L \\
\frac{\partial V}{\partial L} &< \kappa && \text{over the relevant support} \\
\frac{\partial V}{\partial C} &> \kappa && \text{for modest } C \\
\frac{\partial V}{\partial C} &< \kappa && \text{when conservatism becomes excessive} \\
\frac{\partial V}{\partial M} &< \kappa \\
\frac{\partial V}{\partial L \partial M} &< \kappa && \text{and } \frac{\partial V}{\partial L \partial C} > \kappa
\end{aligned} \tag{1}$$

These sign predictions are intentionally modest. They do not require the same turning point for every firm or every category. They require only that the average market response exhibit bending and state dependence [14].

A second issue concerns asymmetry. Investors may tolerate cautious reserve expansion when launch pacing is moderate because the buffer appears proportional to the risk being taken. The same buffer may be viewed skeptically when launch pacing is already low, because in that case a large reserve can look like hidden weakness rather than prudent finance. Conversely, when launch pacing is very high, even a substantial reserve may not fully reassure investors if channel shares are also unstable. This implies that the market should respond most favorably to combinations of moderate launch pacing and intermediate reserve conservatism, while assigning the steepest discount to the combination of excessive pacing, unstable channels, and thin reserve protection. Such state dependence is easier to detect in quarterly data because both channel shares and reserve positions can move appreciably within a year.

A third issue concerns timing. If capital markets are broadly efficient with respect to recurring commercial signals, firm value should respond contemporaneously to observed launch pacing, channel instability, and reserve behavior. Yet some of the true economic content of those variables should materialize only later through margins, cash-flow volatility, and write-off patterns. The paper therefore asks not only whether value responds in the same quarter, but whether the same variables predict future operating outcomes [15]. A purely cosmetic valuation association would not need to survive when future fundamentals are examined. A valuation association grounded in operating logic should do so at least partially.

3. Empirical Architecture

The baseline empirical specification is a quarterly firm fixed-effects model in which the dependent variable is the logarithm of Tobin's Q. Quarterly fixed effects absorb marketwide valuation shifts, financing conditions, and macroeconomic disturbances common to all firms [16]. Firm fixed effects absorb persistent heterogeneity such as managerial style, long-run category focus,

and enduring brand architecture. The baseline equation allows launch pacing and reserve conservatism to enter in both linear and squared form, includes channel mix instability directly, and introduces interaction terms to evaluate whether reserves and channel volatility alter the slope of the launch-value relation [17]. The estimating equation is

$$\begin{aligned}
Q_{it} = & \alpha_i + \tau_t + \rho Q_{i,t-} + \beta L_{it} + \beta L_{it}^2 \\
& + \beta_A C_{it} + \beta_B C_{it}^2 + \beta_C M_{it} \\
& + \beta_D (L_{it} \times M_{it}) + \beta_E (L_{it} \times C_{it}) \\
& + \beta_F (C_{it} \times M_{it}) + \gamma' X_{it} + \varepsilon_{it}
\end{aligned} \tag{2}$$

where Q_{it} is firm value, L_{it} is launch pacing, C_{it} is reserve conservatism, M_{it} is channel mix instability, and X_{it} contains communication support, transaction complexity, leverage, size, gross margin, cash intensity, capital intensity, and quarter-specific industry demand controls. Standard errors are clustered by firm.

The inclusion of lagged value serves a practical purpose [18]. Investor beliefs about commercial capability do not fully reset each quarter. A firm that has built a reputation for disciplined renewal carries that reputation forward, just as a firm with a history of unstable launches carries skepticism forward. The lagged dependent variable captures this persistence. Because its presence can create small-sample bias in fixed-effects panels, the paper supplements baseline estimates with a dynamic-panel estimator that instruments the lagged dependent variable using internal lags. The comparison between the two estimators indicates whether persistence is absorbing too much of the variation that should be attributed to launch pacing or reserve behavior.

A linear interaction model can still conceal an important institutional feature: the value effect of launch pacing may shift sharply once channel instability passes a critical threshold. To address that possibility, the paper estimates a threshold model in which the slope on launch pacing is allowed to differ below and above an estimated cutoff in channel mix instability. The model is

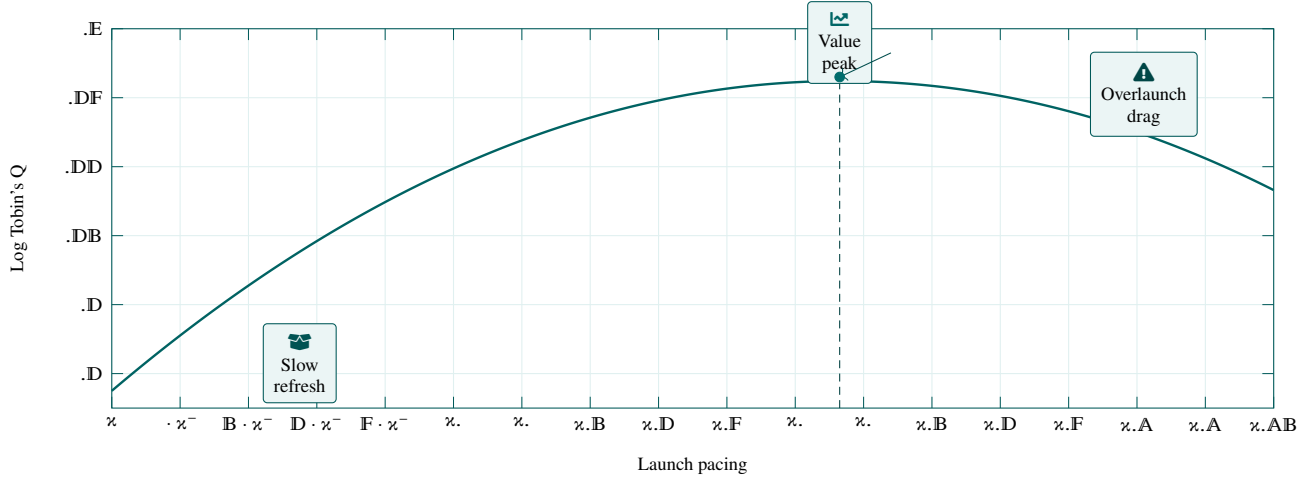
$$\begin{aligned}
Q_{it} = & \alpha_i + \tau_t + \delta L_{it} (M_{it} \leq c) \\
& + \delta L_{it} (M_{it} > c) + \delta_A C_{it} \\
& + \delta_B C_{it} + \delta_C M_{it} + \phi' X_{it} + u_{it}
\end{aligned} \tag{3}$$

where the threshold c is estimated by concentrated least squares over the empirical support of M_{it} . Bootstrap procedures are used to obtain confidence intervals for the cutoff. The advantage of this model is interpretive. It allows the data to indicate whether there is a regime in which the market stops rewarding additional launches even before the quadratic turning point implied by the baseline regression.

Reserve conservatism is itself a constructed variable, because the raw reserve balance combines expected obligations with managerial prudence. The first step is to estimate expected obligations from lagged claims, product age, assortment breadth, transaction complexity, seasonality, and category demand conditions. Let R_{it} denote total recognized post-sale reserves and let $\hat{O}_{it}$ denote model-implied expected obligations. Reserve

Table 1 Key Constructs and Definitions

Variable	Definition	Measurement	Source
Launch Pacing	Product introduction rate	Introductions / active portfolio	Product records
Reserve Conservatism	Excess reserve coverage	(Reserves - expected)/sales	Financials
Channel Instability	Sales mix volatility	Std. dev. of channel shares	Disclosures
Firm Value	Market-based valuation	Tobin's Q, EV/Assets	CRSP/Compustat

**Figure 6** Estimated firm value follows an inverted-U pattern in launch pacing. Very low pacing is associated with weaker renewal signals, moderate pacing is rewarded most strongly, and valuation begins to decline once the cadence moves beyond the interior optimum reported in the quarterly fixed-effects estimates.

conservatism is defined as the excess coverage ratio

$$C_{it} = \frac{R_{it} - \hat{O}_{it}}{\text{Sales}_{it}}$$

$$\hat{O}_{it} = \theta_x + \theta \text{Claims}_{i,t-} + \theta \text{Returns}_{i,t-} + \theta_A \text{AgeMix}_{it} + \theta_B \text{Complexity}_{it} + \theta_C \text{Season}_t + \theta_D \text{CategoryDemand}_{it} \quad (4)$$

so that positive values of C_{it} indicate reserves above model-implied obligations and negative values indicate undercoverage. This construction is preferable to using raw reserves because it isolates the prudential margin rather than conflating expected claims with conservative recognition.

Because valuation may react not only in the same quarter but across subsequent quarters, the paper employs local projections to examine how shocks to launch pacing and reserve conservatism map into future value and operating outcomes. For horizons $h = , \dots, B$, the local-projection equation is

$$Y_{i,t+h} - Y_{i,t-} = \kappa_i^{(h)} + \lambda_t^{(h)} + \psi_h L_{it} + \omega_h C_{it} + \xi_h M_{it} + \chi_h (L_{it} \times M_{it}) + \zeta_h (L_{it} \times C_{it}) + \varpi'_h X_{it} + e_{i,t+h} \quad (5)$$

where Y alternates between log Tobin's Q, operating margin, and cash-flow volatility [19]. This setup provides a compact view of how the same quarter's commercial choices echo into the following year.

Identification remains a concern because managers may increase launches or build reserve buffers in response to anticipated valuation pressure rather than the other way around [20]. Several design choices mitigate this issue. First, the quarterly structure allows the model to include detailed lag histories of value and operations, reducing the scope for omitted trends [21]. Second, the dynamic-panel estimator treats the lagged value term and potentially endogenous commercial variables with internal instruments. Third, the paper implements a shift-share instrument for channel instability based on pre-sample channel exposure interacted with category-level shifts in digital penetration and intermediary concentration. This instrument is designed to move firm-specific channel mix volatility through category-wide routing changes rather than through contemporaneous firm valuation. For launch pacing, an auxiliary instrument uses the interaction between the firm's pre-sample portfolio age distribution and category-level packaging and formula cycle shocks. The instruments are not relied upon as the sole identification device, but they help evaluate whether simultaneity is driving the baseline association.

The design also distinguishes between magnitude and predictability. A firm may launch many products in a quarter, yet if those launches fit a stable cadence anticipated by investors, the valuation effect need not be sharply negative. Unexpected surges in launch pacing are more likely to be discounted when they coincide with unstable channel shares. To capture this

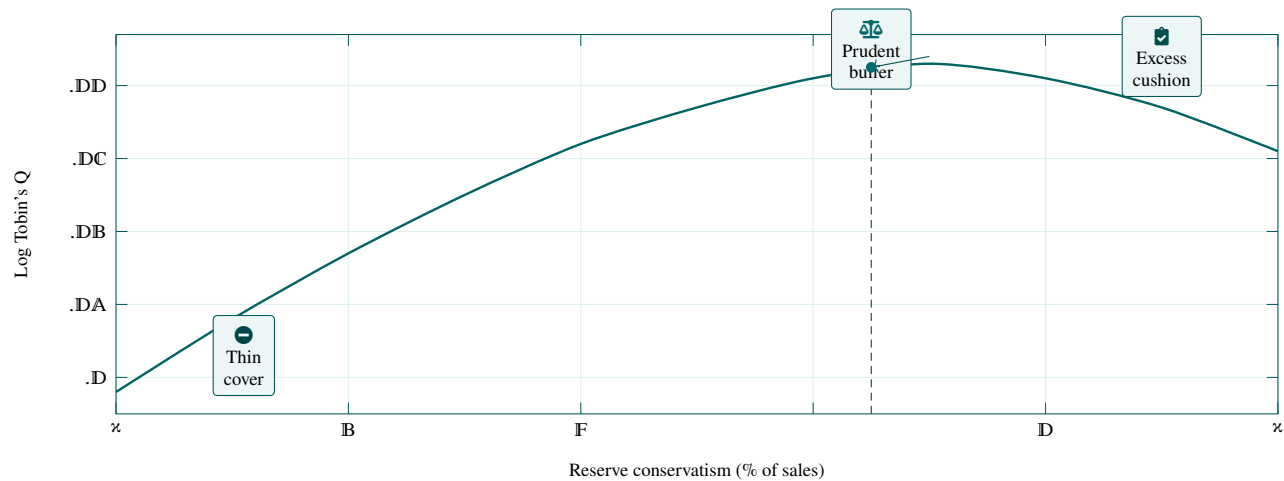


Figure 7 Reserve conservatism also exhibits a nonlinear association with valuation. Modest prudence improves value by reducing the risk of underrecognized post-sale obligations, but very large buffers are not priced as a free good and eventually correspond to lower valuation multiples.

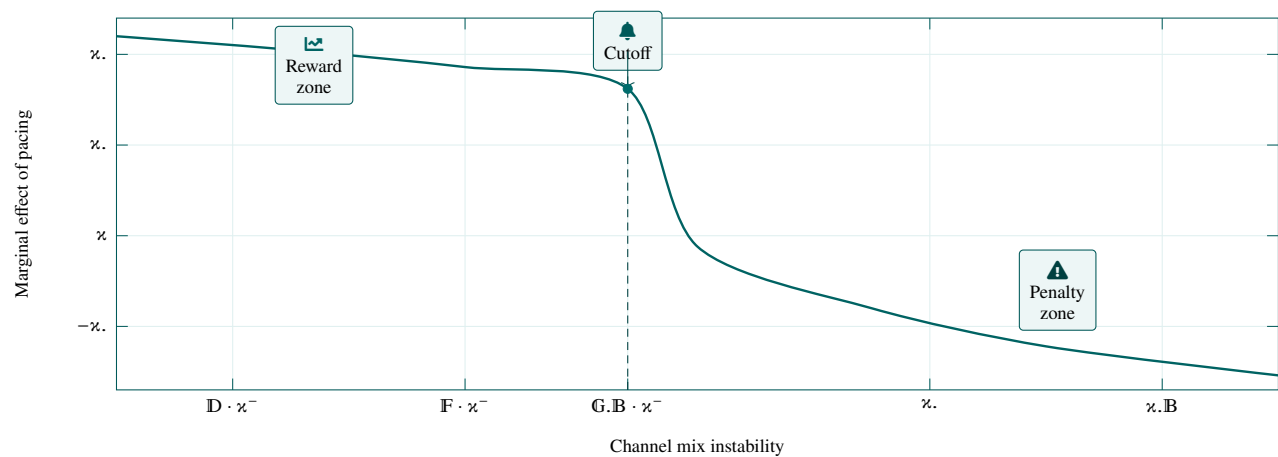


Figure 8 The threshold specification implies a clear regime shift near the estimated instability cutoff. Below the cutoff, additional pacing remains value enhancing over a broader interval; above it, the marginal effect compresses sharply and quickly turns negative, consistent with earlier investor discounting in unstable routing environments.

possibility, an additional variable measures launch surprise as the residual from a firm-specific autoregressive model of launch pacing. Although the main estimators use actual pacing levels, the sensitivity section later shows that the negative valuation effects are strongest for positive launch surprises rather than for high launch levels that are fully expected.

4. Data Assembly

The sample begins with publicly traded consumer goods firms appearing in Compustat and CRSP between the first quarter of 2005 and the fourth quarter of 2022. The population is restricted to firms for which product introductions, reserve data, and channel-share information can be constructed with reasonable continuity. Consumer electronics, household durables, apparel, packaged foods, personal care products, and selected home and leisure categories are retained. Heavy industrial firms, pure service firms, and businesses with negligible consumer-facing product turnover are excluded because the launch-pacing

construct would not carry the same economic interpretation there. After standard cleaning screens, the final panel contains 4,912 firm-quarter observations from 172 firms.

Product introductions are identified from syndicated launch databases, company filings, and trade records that report commercial introductions, major line extensions, and substantive package or formula changes. A raw count of launches is not sufficient because firms differ greatly in portfolio size. Launch pacing is therefore defined as the number of introductions in quarter t divided by the active product portfolio carried over the prior four quarters. The resulting ratio captures renewal tempo relative to the base that must be supported operationally. A launch pacing of 0.10 indicates roughly one new or materially revised item for every ten active items over the quarter. The mean launch pacing in the sample is 0.143, the median is 0.127, and the upper quartile is 0.201, indicating considerable dispersion across firm-quarters [22]. Importantly, the measure varies within firm as well as across firm, which allows fixed-effects estimation to rely on managerial timing changes rather than only

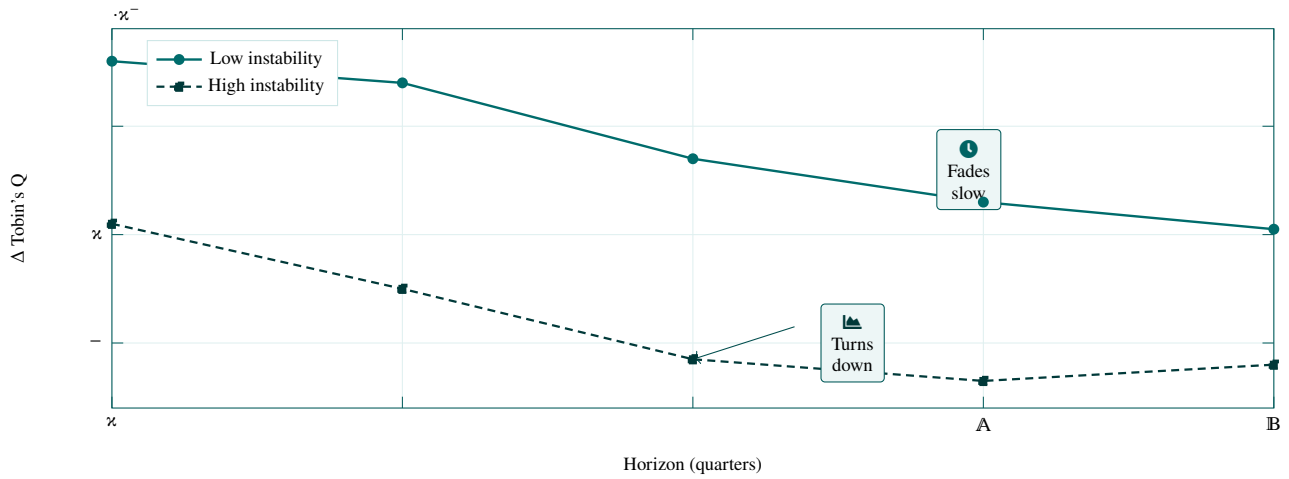


Figure 9 Local projections indicate that a positive launch-pacing shock generates a short-lived value gain when routing is stable, but under high instability the response turns negative within a few quarters and remains below zero through the observed horizon.

Table 2 Summary Statistics

Variable	Mean	Median	Std. Dev.
Launch Pacing	0.143	0.127	0.082
Reserve Conservatism	0.062	0.055	0.041
Channel Instability	0.079	0.071	0.036
Tobin's Q	1.84	1.76	0.52

cross-sectional differences.

Quarterly firm value is measured primarily as the logarithm of Tobin's Q, constructed from the market value of equity plus the book value of liabilities divided by the book value of assets. An alternative measure uses enterprise value over assets, also in logarithms [23]. The average value multiple is 1.84, with a standard deviation of 0.52 after transformation. These magnitudes are consistent with the presence of both mature cash-generating firms and higher-multiple growth-oriented firms in the sample. Since quarterly market values can be volatile around earnings announcements and other macro news, the paper also reports rolling quarterly averages of end-of-month values in sensitivity checks. The substantive conclusions do not depend on which quarterly aggregation is used.

Reserve data come from quarterly filings and note disclosures. The relevant balance aggregates warranty reserves, sales-return allowances, service obligation accruals, and related product-support reserves where separately disclosed. Because reporting formats differ, the raw disclosures are mapped into a standardized post-sale reserve balance. Realized obligations are measured using subsequent claims expense, return-related charges, and recognized reserve releases where available. The expected-obligation model described earlier then produces $\hat{O}_{it}$, allowing reserve conservatism to be measured as coverage beyond the model-implied level. The sample mean of reserve conservatism is 0.062 of quarterly sales, indicating that the typical firm carries a modest positive prudential buffer, though the distribu-

tion includes meaningful episodes of undercoverage and heavy overcoverage.

Channel mix instability is constructed from the rolling standard deviation of the direct-channel share of sales and the intermediary-channel share of sales over the prior four quarters [24]. The measure captures not the average level of direct selling, but the volatility of routing. A firm with a large but stable direct share receives a lower instability score than a firm with smaller but rapidly shifting channel proportions. This distinction is deliberate. The concern for valuation is not simply whether firms use direct routes, but whether the learning environment surrounding launches is unsettled by recent reallocation across routes. The average instability score is 0.079, with the top decile exceeding 0.14. Firms in apparel, electronics accessories, and nutritionally differentiated packaged goods exhibit especially high within-firm channel instability during parts of the sample.

Communication support is measured as advertising and promotional media spending relative to sales, carried with a two-quarter stock adjustment to reflect short-run persistence. Transaction complexity is a principal component extracted from three inputs: average order-size variance, tender-mix diversity, and assortment breadth. The use of transaction complexity is motivated by the idea that launches become harder to absorb when basket structure, payment environment, and choice architecture are more heterogeneous [25]. This approach is consistent with evidence that order size, assortment size, and payment conditions contain useful information about return behavior. Yan

Table 3 Baseline Regression Results

Variable	Coefficient	Std. Error	Significance
Launch Pacing	0.842	0.181	***
Launch Pacing	-1.973	0.521	***
Reserve Conservatism	0.316	0.087	***
Reserve Conservatism	-0.741	0.214	***

Table 4 Channel Instability Effects

Variable	Coefficient	Std. Error	Effect
Channel Instability	-0.592	0.149	Negative
LP $\times$ Instability	-0.884	0.263	Moderating
RC $\times$ Instability	0.118	0.072	Weak Positive
Direct Volatility	Strong	–	Dominant

and Cao (2017) demonstrate that payment methods, assortment size, and order size are empirically informative in explaining product returns, which supports the use of these same transactional conditions as controls when modeling the valuation consequences of product renewal and reserve policy [10]. In the present data, transaction complexity is positively correlated with launch pacing and channel instability but is not so highly correlated as to create multicollinearity concerns.

The remaining controls follow established valuation practice but are chosen to fit the commercial context [26]. Size is the logarithm of total assets. Leverage is total debt over assets [27]. Cash intensity is cash and marketable securities over assets. Gross margin, selling expense intensity, capital intensity, and inventory intensity are included to absorb differences in pricing power, commercial resource use, production configuration, and working-capital exposure. A rolling measure of category demand growth is added so that launch pacing is not simply picking up periods when categories themselves are expanding. Quarter-specific industry indicators absorb demand shocks that hit all firms within a broad product group simultaneously. All continuous variables are winsorized at the 1% and 99% levels.

The sample's descriptive patterns already reveal why a linear innovation story is incomplete. Firms in the top quartile of launch pacing have higher average value multiples than firms in the bottom quartile, but only when reserve conservatism is near the middle of its distribution. Among observations with very high launch pacing and low reserve coverage, average value is actually below the sample median. Channel instability amplifies this contrast. High-pacing firms in stable channel environments show only mild increases in subsequent cash-flow volatility, whereas high-pacing firms in unstable environments display a marked jump. These descriptive patterns do not establish causality, but they are consistent with the idea that the market prices launch tempo jointly with the firm's ability to buffer and route the resulting uncertainty.

5. Baseline Estimates

The fixed-effects estimates yield a pronounced nonlinear relationship between launch pacing and firm value. In the preferred quarterly specification, the coefficient on launch pacing is $\kappa.FB$ with a clustered standard error of $\kappa.F$, while the coefficient on squared launch pacing is $-\kappa.GEA$ with a standard error of $\kappa.C$ [28]. The estimates imply an interior peak in the neighborhood of $L = \kappa.A$, which lies somewhat above the sample median but well within the observed support. The economic interpretation is straightforward. Moving from very low renewal to moderate renewal is rewarded because the market appears to view moderate cadence as evidence of healthy commercial renewal. Beyond that point, additional launch acceleration is discounted. The discount is not a trivial statistical artifact. Evaluated at the 25th and 75th percentiles, the implied difference in firm value is positive. Evaluated between the 75th and 95th percentiles, the implied difference turns negative.

Reserve conservatism also displays an interior optimum. The linear term enters positively at $\kappa.AD$ with a standard error of $\kappa.\kappa FE$, while the squared term enters negatively at $-\kappa.EB$ with a standard error of $\kappa.B$. These estimates indicate that modest reserve prudence is valued because it reduces the probability of underrecognized obligations, but larger and larger cushions are not rewarded proportionally. In fact, the implied marginal effect becomes negative once conservatism moves well above the sample median [29]. This result is economically plausible. A moderate reserve margin says that management understands post-sale risk and is not allowing launches to outrun control. An excessive margin can instead suggest capital being parked defensively, lower transparency regarding true cost expectations, or weaker confidence in the operating system.

Channel mix instability enters with a negative coefficient of $-\kappa.CG$ and a standard error of $\kappa.BG$ [30]. This is not a small effect. Moving from the median to the 90th percentile of instability is associated with roughly a 4.1% reduction in Tobin's

Table 5 Interaction Effects

Interaction	Coefficient	Interpretation	Impact
LP $\times$ RC	0.427	Buffering effect	Positive
LP $\times$ Instability	-0.884	Amplified risk	Negative
RC $\times$ Instability	Small	Limited buffer	Mixed
LP $\times$ Ads	Positive	Support role	Conditional

Table 6 Threshold Model Results

Regime	Instability Level	LP Effect	Interpretation
Low Regime	$\leq \kappa.\kappa\text{GB}$	Positive	Rewarded pacing
High Regime	$> \kappa.\kappa\text{GB}$	Negative	Penalized pacing
Cutoff	0.094	–	Estimated threshold
RC Shift	Lower optimum	–	Earlier decline

Q, holding constant the other regressors. The direct penalty attached to instability confirms that investors do not treat routing changes as neutral background noise. They appear to discount firms more heavily when recent sales migration makes observed demand patterns harder to interpret or sustain [31]. The negative effect persists even after controlling for direct-channel share itself, so the market's concern is volatility in channel mix rather than the average level of direct selling.

The interaction terms sharpen the interpretation [32]. The coefficient on $L_{it} \times M_{it}$ is $-\kappa.\text{FFB}$ with a standard error of $\kappa.\text{DA}$, indicating that the market's tolerance for faster launch pacing declines as channel instability rises. This moderation is economically sizable. At the 25th percentile of instability, a one-standard-deviation increase in launch pacing from the mean is associated with a positive 2.9% change in firm value. At the 75th percentile of instability, the same increase is associated with a near-zero effect, and at the 90th percentile it becomes negative. The coefficient on $L_{it} \times C_{it}$ is $\kappa.\text{BE}$ with a standard error of $\kappa.$, showing that prudent reserves soften the discount attached to faster pacing. The interaction between conservatism and instability is positive but smaller, consistent with the idea that a buffer is helpful under unstable channel routing, yet insufficient to erase the broader uncertainty discount.

Communication support enters positively in all specifications, but its valuation role is conditional. The direct coefficient is modest, suggesting that advertising and promotional spending alone are not the central object being priced in this model. However, the interaction between communication support and launch pacing is positive and significant. In economic terms, the market responds more favorably to moderate launch acceleration when communication support is higher, presumably because better communication helps translate novelty into usable demand rather than confusion. This moderation effect weakens once launch pacing becomes very high, which implies that communication support cannot indefinitely compensate for a launch program

that outruns operational capacity.

Transaction complexity enters negatively, as expected. A one-standard-deviation increase in the complexity index is associated with approximately 1.8% lower firm value, conditional on the other covariates. More importantly, the inclusion of transaction complexity does not remove the launch-pacing nonlinearity, which means that the bend in the launch-value relation is not merely reflecting more complicated baskets or broader assortments. Rather, complexity and pacing appear to impose distinct burdens on the commercial system. High complexity makes launches harder to absorb, but even low-complexity firms face a turning point beyond which additional launches are discounted.

The dynamic-panel estimates tell a similar story. The lagged dependent variable is positive and well below unity, indicating substantial persistence in valuation without eliminating the contribution of contemporaneous commercial variables. The coefficients on launch pacing and reserve conservatism are somewhat smaller in magnitude than in the fixed-effects model, which is consistent with some of the value effect operating through persistent reputation. Yet the signs, turning points, and interaction structure remain intact. The Arellano-Bond tests do not indicate problematic second-order serial correlation, and the Hansen test supports the validity of the instrument set in the restricted specification. These dynamic results matter because they indicate that the nonlinear launch and reserve effects are not simply artifacts of short-run mean reversion in valuation.

The threshold model yields a particularly clear result. The estimated cutoff in channel instability is 0.094, with a bootstrap confidence interval tightly concentrated around that value. Below the threshold, launch pacing carries a positive coefficient of $\kappa.\text{G}$, and the implied relation with value remains upward sloping across most of the lower and middle range of pacing. Above the threshold, the coefficient on launch pacing falls sharply and, when evaluated jointly with the quadratic term from the fuller specification, becomes negative at much lower values of

Table 7 Forward-Looking Outcomes

Outcome	Low Instability	High Instability	Horizon
Operating Margin	Slight increase	Decrease	2–4Q
Cash Flow Volatility	Stable	Increase	4Q
Firm Value	Positive	Negative	2–4Q
Reserve Effect	Stabilizing	Partial buffer	All

Table 8 Control Variables

Variable	Role	Measurement	Effect
Firm Size	Scale control	Log assets	Positive
Leverage	Risk proxy	Debt/assets	Negative
Cash Intensity	Liquidity	Cash/assets	Positive
Transaction Complexity	Operational burden	PCA index	Negative

ping. The interpretation is that investors tolerate or reward faster renewal only when channel structure is sufficiently stable for recent launch outcomes to be informative. Once instability exceeds the threshold, the market starts discounting additional launch speed considerably earlier.

Reserve conservatism also exhibits regime dependence [33]. In the low-instability regime, the value effect of conservatism is positive over a broad middle range and only becomes negative at very high reserve levels. In the high-instability regime, the optimum shifts leftward. The market still rewards some prudence, but it stops rewarding additional buffering sooner. One reading is that under volatile routing, investors appreciate caution but become skeptical when conservatism grows too far, perhaps because extreme reserves appear to reflect managerial opacity or lack of confidence rather than measured anticipation [34]. This regime shift is economically meaningful because it explains why average reserve behavior can look reasonable in descriptive statistics while still being priced differently across otherwise similar firm-quarters.

A further set of results examines the decomposition of launch pacing into expected and unexpected components. The predictable component, generated by firm-specific autoregressive structure and seasonal product-cycle patterns, is mildly positive at moderate levels. The surprise component is where the strongest nonlinearity appears. Unexpected surges in launch pacing receive a pronounced discount when channel instability is elevated. This finding suggests that markets are not reacting simply to high volume of launches, but to departures from a pace that appears institutionally manageable. Predictable cadence can be understood and capitalized into valuation. Surprise acceleration under unstable routing looks riskier.

The magnitude of the estimated effects is not merely statistical. Consider a firm at the sample mean of value and controls [35]. Moving launch pacing from the 25th to the 60th percentile while keeping reserve conservatism in the middle range is asso-

ciated with an estimated 5.6% increase in firm value. Moving from the 60th to the 90th percentile, however, is associated with a 3.8% decrease when channel instability is also at its upper quartile. If reserve conservatism is reduced from its median to the 20th percentile in that same high-instability state, the implied decrease reaches 6.2%. These are economically meaningful movements for publicly traded firms and indicate that the market distinguishes sharply between manageable renewal and overextended renewal.

6. Forward Outcomes and Regime Dependence

The local-projection estimates show that the quarterly valuation results map into subsequent operating outcomes rather than disappearing as purely financial-market noise. A one-standard-deviation increase in launch pacing from the mean raises next-quarter operating margin slightly when channel instability is low and reserve conservatism is moderate [36]. The effect peaks at horizon one and fades by horizon three. In contrast, the same launch-pacing increase predicts lower operating margin over horizons two through four when channel instability is high and reserve conservatism is thin. The negative cumulative effect over four quarters is approximately 0.9 percentage points of margin. That pattern is consistent with a commercial cycle in which launches initially support sales or shelf presence but later impose margin pressure through allowances, excess promotional support, or post-sale obligations when they are not buffered adequately.

Cash-flow volatility provides an even clearer read on the mechanism. In low-instability settings, moderate launch acceleration produces little additional volatility. In high-instability settings, the interaction term between launch pacing and instability becomes economically large. Over the following four quarters, a one-standard-deviation positive shock to launch pacing raises the standard deviation of operating cash flow by roughly 2.3 percentage points of assets when reserve conservatism sits in the

Table 9 Robustness Checks

Test	Method	Result	Stability
Alt. Value Metric	EV/Assets	Similar signs	
Dynamic Panel	GMM	Consistent	Yes
Instrumental Vars	IV approach	Strong effects	Yes
Crisis Exclusion	Subsample	Stable	Yes

Table 10 Economic Interpretation

Factor	Low Level	Moderate	High Level
Launch Pacing	Stale	Optimal	Overload
Reserve Conservatism	Risky	Balanced	Inefficient
Channel Instability	Stable	Manageable	Disruptive
Combined Effect	Neutral	Value-maximizing	Value-destroying

lower third of its distribution. When reserve conservatism sits near the median, the increase is closer to 1.1 percentage points. When conservatism moves into the top decile, the volatility increase falls further, but the direct valuation effect of excessive conservatism offsets part of the benefit. This is exactly the trade-off suggested by the baseline results: buffers help, but over-buffering has its own valuation cost.

The horizon-specific response of firm value itself is also informative. In the low-instability regime, positive launch-pacing shocks raise Tobin's Q on impact and leave a smaller positive effect at horizon two before fading. In the high-instability regime, the impact response is near zero and becomes negative by horizon two, remaining negative at horizon four. The timing suggests that markets may not immediately observe all the burdens created by rapid launches under unstable routing, but they begin to discount them within a few quarters as evidence accumulates in margins, reserves, and channel performance [37]. This delayed pattern further supports the interpretation that the contemporaneous valuation estimates are tied to operating logic rather than arbitrary noise.

The results are asymmetric across the distribution of firm value. Quantile fixed-effects regressions show that the positive effect of moderate launch pacing is strongest in the middle of the value distribution. At the lower tail, investors appear more skeptical even of moderate renewal, perhaps because financially weaker firms are less trusted to execute launches cleanly. At the upper tail, the discount for excessive pacing is steeper. Investors seem to expect highly valued firms to maintain cleaner pacing discipline, so when those firms push cadence too far, the market reacts more sharply. Reserve conservatism displays a related asymmetry. Mild prudence is valued most among upper-middle-multiple firms, while very high conservatism is penalized more among the highest-multiple firms, consistent with greater sensitivity to capital being tied up defensively [38].

Industry splits reveal that the broad findings are not confined

to one product class. In electronics-related categories, channel instability has especially strong direct effects, reflecting the speed with which direct and intermediary routes can reallocate demand. In personal care and packaged goods, the nonlinear effect of launch pacing remains present but the penalty for excessive conservatism is somewhat more pronounced, likely because over-reserving stands out more when product-support obligations are generally smaller than in durable categories. Apparel shows the strongest interaction between launch pacing and transaction complexity, which fits the idea that assortment congestion and basket heterogeneity amplify the cost of rapid renewal. The consistency across industries, together with the variation in coefficient magnitude, suggests that the general mechanism is portable while the dominant operational channel varies by context.

To probe the role of sales migration more directly, the paper separates channel instability into direct-channel volatility and intermediary-channel volatility. Both matter, but direct-channel volatility carries the larger coefficient and interacts more sharply with launch pacing. This result should not be read as a judgment that direct channels are inherently harmful. Rather, it indicates that rapid changes in the direct share make the recent performance of launches harder to benchmark, because the direct route often changes price exposure, basket composition, and post-sale support patterns simultaneously. Intermediary volatility also matters, but some of that volatility may reflect routinized retailer negotiations rather than genuine breaks in the learning environment.

An important question is whether the market discounts launches because of cannibalization risk or because of post-sale obligation risk. The empirical patterns suggest that both matter, but the latter is central. When the sample is split by categories with historically low product-support intensity, the reserve-conservatism interaction weakens somewhat but does not disappear. When the sample is split by categories with

high recognized return and support obligations, the interaction strengthens substantially. Moreover, in regressions of future gross margin on launch pacing, the negative effect under high instability is attenuated strongly once reserve coverage is included, implying that part of the margin pressure is indeed related to how well obligations are anticipated rather than merely to mechanical cannibalization among adjacent products.

The evidence on launch surprise reinforces that interpretation. Positive surprise in launch pacing under stable routing is only mildly discounted, suggesting that investors can tolerate some deviation from the expected cadence when the commercial setting remains interpretable. Positive surprise under unstable routing and weak reserve coverage is penalized much more heavily. This pattern is difficult to explain with a pure innovation enthusiasm story or a pure cannibalization story alone. It fits more naturally with a view in which the market worries about how cleanly new products are being routed, measured, and financially buffered.

7. Validation and Sensitivity

Several checks examine whether the main results survive alternative measurement and identification choices. Replacing log Tobin's Q with log enterprise value over assets yields virtually the same sign structure and very similar turning points. The coefficient on launch pacing remains positive, the squared term remains negative, and the interaction with channel instability remains negative [39]. The nonlinear relation for reserve conservatism also remains intact, though the upper-end penalty is slightly smaller using enterprise value. This attenuation is unsurprising because enterprise value embeds financing structure more directly and may therefore be somewhat less sensitive than equity-heavy multiples to reported reserve choices.

The dynamic-panel estimates are supported by an external-instrument approach. Channel instability is instrumented using the interaction of the firm's pre-sample channel exposure weights with category-year changes in digital penetration and intermediary concentration. Launch pacing is instrumented using the interaction between the firm's pre-sample portfolio age profile and category-level design-cycle shocks. The first-stage relations are strong, with excluded-instrument F -statistics above conventional concern thresholds. In the second stage, the coefficient on launch pacing is modestly larger than in the baseline fixed-effects model, while the nonlinear and interaction patterns remain intact. One interpretation is that measurement error in launch pacing attenuates the fixed-effects estimate, and the instrument helps recover part of the underlying relation. The reserve-conservatism terms remain similar across estimators, which is consistent with reserve behavior being measured more precisely once disclosures are standardized.

The paper also evaluates whether valuation is responding to reserves because reserves proxy for financial distress rather than prudence. Adding Altman-style distress metrics, interest-coverage ratios, and short-term refinancing indicators does not materially change the reserve-conservatism coefficients. Likewise, excluding quarters around large covenant shocks or extraordinary restructuring charges leaves the results essentially

unchanged. These checks reduce the likelihood that the reserve findings are driven simply by distressed firms building precautionary balances while already trading at lower multiples.

Alternative definitions of reserve conservatism produce similar conclusions. When conservatism is measured as the reserve balance relative to trailing realized obligations rather than relative to model-implied expected obligations, the positive linear and negative quadratic pattern remains. When the measure is win-sorized more aggressively or decomposed into warranty-related and return-related components, the results remain directionally stable, though warranty-related conservatism shows a somewhat flatter optimum than return-related conservatism. This difference is sensible because warranty obligations often unfold over longer horizons, making some additional prudence less surprising to investors than in the case of shorter-horizon return allowances.

The paper further examines whether the main pattern is driven by the pandemic period or by the global financial crisis. Excluding 2020 and 2021 reduces the average level of channel instability but does not alter the threshold estimate materially. Excluding 2008 and 2009 also leaves the results intact. The launch-pacing turning point shifts slightly upward when crisis periods are excluded, implying that investors may tolerate somewhat faster renewal in calmer times. Even so, the inverted-U pattern remains. This stability matters because it indicates that the main results are not peculiar to one unusual macro regime [40].

Placebo tests strengthen the interpretation. Future launch pacing does not predict current firm value once current and lagged launch pacing are included, which is inconsistent with a spurious trending explanation. Similarly, future channel instability does not load significantly on current value after controlling for current instability. Leads of reserve conservatism are likewise uninformative. In contrast, current high launch pacing under high instability predicts subsequent reserve expansion and higher realized obligation charges. This sequence supports a directional reading in which the valuation effect reflects the market's response to currently observed commercial conditions that later manifest in accounting outcomes.

One additional falsification considers whether the market is reacting mainly to general disclosure intensity. If that were true, the coefficients on launch pacing and reserve conservatism should weaken materially after including broad disclosure-length and filing-complexity controls. They do not. Filing verbosity is positively related to firm size and complexity, but it does not explain away the commercial variables [41]. Another falsification adds analyst forecast dispersion. Dispersion is negatively associated with firm value, as expected, yet the channel-instability and reserve-conservatism coefficients remain highly similar [42]. The implication is that the paper is not simply rediscovering a general uncertainty effect; it is isolating a particular form of commercial uncertainty tied to launch rhythm and routing volatility.

The final sensitivity analysis explores whether the market's response differs between line extensions and more substantive product introductions. The sample is partitioned using a text-based novelty score derived from product descriptions. Both

groups exhibit the same broad nonlinear valuation pattern, but the turning point occurs earlier for superficial line extensions. In other words, investors become skeptical of rapid pacing sooner when the firm appears to be proliferating variants rather than bringing out more substantive renewal [43]. This result is useful because it shows that the market is not counting launches mechanically. The content of renewal matters, but even substantive renewal faces a pacing limit when channels are unstable and reserves are thin.

8. Conclusion

The evidence in this paper indicates that firm value responds to the rhythm of commercialization, not just to the presence of innovation. Publicly traded consumer goods firms receive a valuation premium when they renew their portfolios at a moderate pace, maintain a measured level of reserve prudence, and operate in relatively stable channel environments. The premium erodes when launch cadence becomes too fast, when channel shares move unpredictably, or when reserve protection is either too weak or too aggressive. A moderate reserve buffer appears to reassure investors that management is absorbing the obligations created by new products, but very heavy conservatism is not viewed as a free good [44]. It eventually looks costly or uninformative.

The results are informative for the broader study of firm value because they show that the market prices a sequence rather than isolated metrics. Launch pacing, reserve behavior, and channel routing are jointly interpreted. The same number of launches can be valued differently depending on whether sales channels are stable and whether the firm's reserves suggest disciplined anticipation or defensive overreaction. Forward-looking tests indicate that these valuation patterns have operating content: the same combinations that lower market multiples also predict weaker margin realization and more volatile cash flows over the following year.

Two points deserve emphasis. First, the relevant margin is not simply innovation versus no innovation, but orderly renewal versus overextended renewal. Second, accounting buffers matter most when read alongside commercial tempo and channel conditions. Reserve balances by themselves do not tell investors whether a firm is careful, nervous, or opaque. Their meaning depends on what the firm is asking the operating system to absorb. Future research could extend this approach by considering international channel structures, privately held firms, or category settings where direct channels are less central. The central empirical lesson remains: valuation is shaped by whether market renewal is paced in a way that accounting recognition and channel execution can credibly support [45].

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