

OPINION

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The Rise of Intangibles and Changes in Corporate Financial Behavior

Technological progress and the advancement of the knowledge-based economy have increased the economic importance of intangible assets, thereby altering the nature of corporate financing needs. Relative to tangible assets, intangible assets have lower collateral and recovery values, involve greater uncertainty over investment outcomes, and are subject to more severe information asymmetries. These characteristics make intangibles less compatible with debt financing. Consequently, intangible-intensive firms may have greater demand for equity financing and long-term risk capital relative to non-intangible-intensive firms and may also have stronger incentives to accumulate internal liquidity in anticipation of future external financing constraints.

Using financial data on Korean firms subject to external audit, this article compares the financing and cash-holding behavior of intangible-intensive firms (“intangible firms”) with that of other firms (“non-intangible firms”) and examines changes in financial behavior across the corporate life cycle. The results show that equity financing accounted for a relatively larger share of external financing among intangible firms than among non-intangible firms. Nevertheless, debt remained the dominant source of external financing, and despite the increasing importance of intangible assets in firms’ asset composition, particularly among intangible firms, there has been no corresponding structural shift in the composition of external financing. By contrast, cash holdings increased over the long term, with particularly pronounced increases among intangible firms in the introduction and growth stages. These findings are consistent with the possibility that intangible firms have accumulated internal liquidity more actively in response to future investment funding needs and potential constraints on external financing.

* All opinions expressed in this paper represent the author’s personal views and thus should not be interpreted as Korea Capital Market Institute’s official position.

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These findings highlight the need to improve the external financing environment for firms in response to the transition toward an economy increasingly driven by intangibles. Financial infrastructure should be strengthened to enable more sophisticated assessments of the economic value of intangible assets and to incorporate these assessments into capital-allocation decisions. At the same time, the institutional foundations for supplying equity financing and long-term risk capital should be strengthened to meet the financing needs of intangible-intensive firms at different stages of growth.

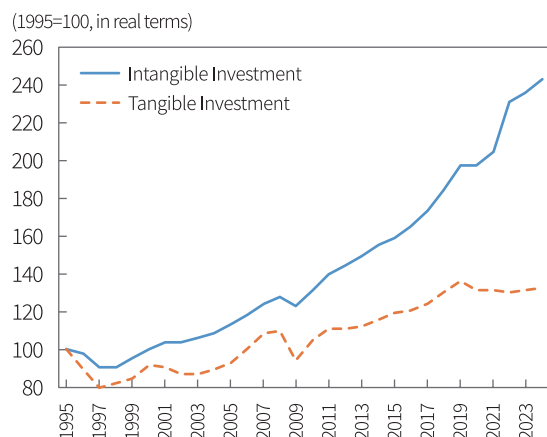
Transition toward an Intangible-Intensive Economy

Technological progress and the continued development of the knowledge-based economy have steadily increased the economic importance of intangible assets, including knowledge, software, data, brands, and organizational capital. In the modern economy, the accumulation of intangible assets is widely regarded as a key factor contributing to firms' competitive advantage and productivity growth by facilitating the creation and application of knowledge and technology through research and development, enhancing brand value, and improving organizational capabilities.

This shift is also evident in the sustained expansion of intangible investment. In major foreign economies, intangible investment has grown faster than tangible investment over an extended period, with the gap between their growth rates widening further since 2008 (Figure 1). A similar pattern is observed in Korea, where the growth of intangible investment is estimated to have substantially outpaced that of tangible investment over the same period (Figure 2). This trend is also reflected in the asset composition of the Korean corporate sector, with a significant increase in the share of intangible assets, particularly in intangible-intensive industries.¹⁾

1) Jung, H., forthcoming, The rise of intangibles and allocative efficiency, KCMI Research Paper.

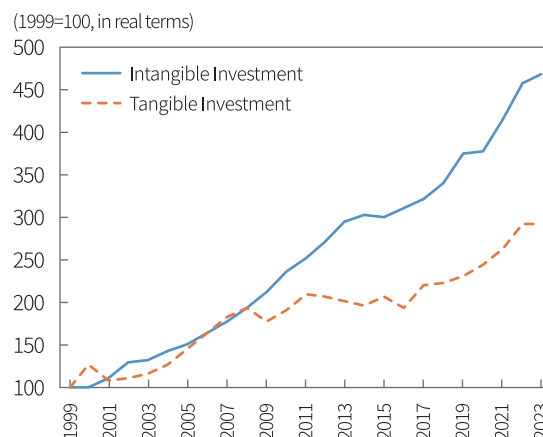
Figure 1. Intangible and Tangible Investment in Foreign Economies



Note: 1995 = 100. Values are measured at PPP-adjusted constant 2020 prices and represent the aggregate for the United States, the United Kingdom, the EU-22, Brazil, and India.

Source: Author's reconstruction based on WIPO & Luiss Business School (2025), World Intangible Investment Highlights 2025.

Figure 2. Intangible and Tangible Investment in Korea



Note: Based on Korean firms subject to external audit. Intangible investment is calculated as the sum of measures for investment in knowledge capital and organizational capital.

Source: Author's estimates.

Potential Effects on Corporate Financing Needs and Financial Behavior

This structural shift may induce important changes not only in the types of assets in which firms invest, but also in the nature of their financing needs and financial behavior. First, the rise of intangible assets may exacerbate firms' external financing constraints and increase their reliance on internal funds. Compared with tangible assets, intangible assets are more difficult to pledge as collateral and their value is less likely to be fully recovered when a firm is liquidated or experiences financial distress.²⁾ Moreover, because intangible assets are difficult to value and involve substantial information asymmetries regarding investment outcomes, external capital providers face considerable difficulty in accurately assessing the quality and expected returns of intangible investment. Consequently, intangible-intensive firms are more likely to face higher financing costs or tighter credit constraints when seeking external financing.

In particular, these constraints may be especially severe for young and growing innovative firms, which often have limited collateral assets and credit histories and face unstable cash

2) Almeida, H., & Campello, M., 2007, Financial constraints, asset tangibility, and corporate investment, *Review of Financial Studies*, 20(5), 1429-1460; Hall, B. H., & Lerner, J., 2010, The financing of R&D and innovation, *Handbook of the Economics of Innovation*, Vol. 1, 609-639.

flows. Accordingly, intangible-intensive firms may rely heavily on internal funds to finance investment and may have stronger incentives to maintain larger liquidity buffers in order to pursue future investment opportunities without disruption.

Second, the rise of intangible assets increases the relative importance of equity financing and long-term risk capital, as opposed to debt financing, in firms' external financing. Debt financing, which entails fixed repayment obligations, tends to be less well suited to intangible investment because such investment has limited collateral value and is characterized by substantial uncertainty over outcomes and long lags before returns are realized. By contrast, equity financing allows investors to share in both the uncertainty surrounding investment outcomes and the potentially substantial upside in the event of success. It may therefore be relatively more suitable for financing intangible-intensive firms.

In sum, the transition toward an intangible-intensive economy may affect corporate financing and financial structure in two main ways. First, the rise of intangible assets increases the importance of equity financing and long-term risk capital relative to debt financing. Second, if the supply of such external risk capital is insufficient, intangible-intensive firms may become more dependent on internal funds and cash holdings to cope with external financing constraints.

The effects of the rise of intangible assets on corporate financial behavior may therefore depend on the extent to which the financial system has adapted to this structural shift. If the financial system has developed sufficiently in response to the transition toward an intangible-intensive economy, the external financing constraints facing intangible-intensive firms may be alleviated,³⁾ thereby reducing their need to rely on internal liquidity.

Conversely, if the financial system remains heavily dependent on collateral-based debt financing, intangible-intensive firms may be more exposed to external financing constraints. In such circumstances, firms may have stronger incentives to accumulate internal funds and increase cash holdings in order to pursue future investment opportunities without disruption.⁴⁾

3) For a discussion of how expanded access to external equity financing plays an important role in alleviating financing constraints on intangible investment, including R&D, see Brown, J. R., & Petersen, B. C., 2009, Why has the investment-cash flow sensitivity declined so sharply? Rising R&D and equity market developments, *Journal of Banking & Finance*, 33(5), 971-984.

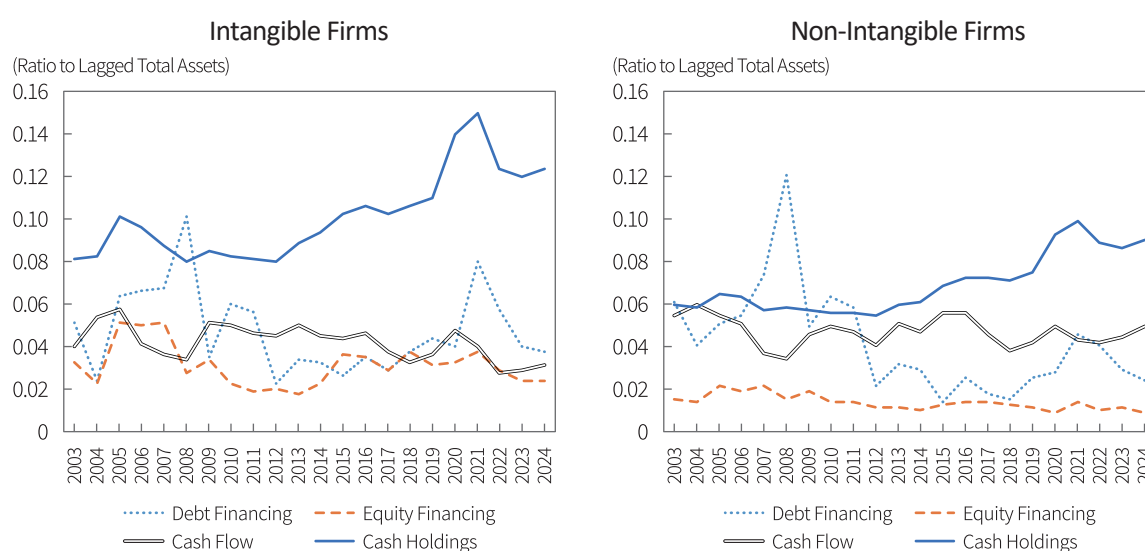
4) For a discussion of the precautionary motive for corporate cash holdings in anticipation of future financial constraints, see Almeida, H., Campello, M., & Weisbach, M. S., 2004, The cash flow sensitivity of cash, *Journal of Finance*, 59(4), 1777-1804.

Changes in the Financial Behavior of Korean Firms

This section examines changes in average financial patterns in the Korean corporate sector using financial data on nonfinancial firms subject to external audit. The underlying data are drawn from DataGuide, and the sample period spans 2003-2024. Specifically, the sample firms are classified as either intangible-intensive firms (hereafter, “intangible firms”) or other firms (hereafter, “non-intangible firms”), and trends in their sources of financing and cash holdings are examined. Intangible firms are defined as firms belonging to the industries classified as intangible-intensive in Jung(forthcoming 2026).

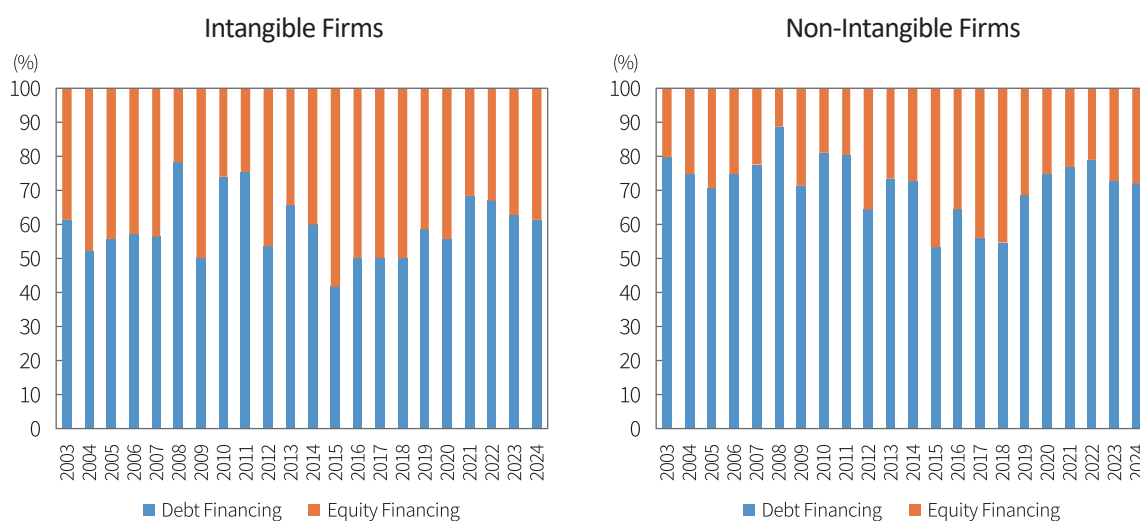
Figure 3 presents trends in the financing sources and cash holdings of intangible and non-intangible firms, while Figure 4 shows the shares of debt and equity financing within external financing over time. Intangible firms exhibit higher external financing ratios overall than non-intangible firms, suggesting that their demand for external funds relative to firm size may be greater.⁵⁾ In addition, the share of equity financing in external financing is higher on average for intangible firms in all sample years. This pattern is consistent with the theoretical prediction that the external financing needs of intangible-intensive firms may be relatively better suited to equity financing than to debt financing.

Figure 3. Sources of Financing and Cash Holdings by Firm Type



Note: Simple averages by firm type. All variables are expressed as ratios to lagged total assets.

5) Observed external financing ratios may reflect not only the degree of financing constraints but also differences in financing needs relative to firm size.

Figure 4. Composition of External Financing by Firm Type

Note: Simple averages by firm type. External financing is defined as the sum of debt and equity financing.

Even among intangible firms, however, debt financing accounts for a larger share of external financing than equity financing in nearly every year. Moreover, no clear structural change is observed in the composition of external financing over the sample period. These findings suggest that, despite the growing economic importance of intangible assets, the external financing structure of the Korean corporate sector may not have adjusted sufficiently to this structural shift.

By contrast, a more pronounced change can be seen in the increase in cash holdings. The cash-holdings ratio exhibits a long-term upward trend among both intangible and non-intangible firms, but the increase is greater among intangible firms. This pattern suggests that intangible-intensive firms may be accumulating larger internal liquidity buffers to cope with future external financing constraints and uncertainty over financing conditions.

Financial Behavior across the Corporate Life Cycle

This section examines financial behavior across the corporate life cycle and how it has changed over time. Following Dickinson(2011), firms are classified into five life-cycle stages—introduction, growth, mature, shake-out, and decline—based on the sign patterns of their operating, investing, and financing cash flows.⁶⁾

6) Dickinson, V., 2011, Cash flow patterns as a proxy for firm life cycle, *The Accounting Review*, 86(6), 1969-1994.

Figure 5 presents financing patterns across life-cycle stages for intangible and non-intangible firms, while Figure 6 shows patterns in their cash-holding ratios. For both firm types, firms in the introduction and growth stages exhibit relatively high levels of debt financing on average, whereas average debt financing is negative in the mature and later stages. Equity financing is also relatively higher in the introduction and growth stages than in the other stages, although its overall magnitude is smaller than that of debt financing. Meanwhile, cash-holding ratios are relatively high among firms in the mature and shake-out stages for both firm types.

Figure 5. Financing Patterns across Life-Cycle Stages

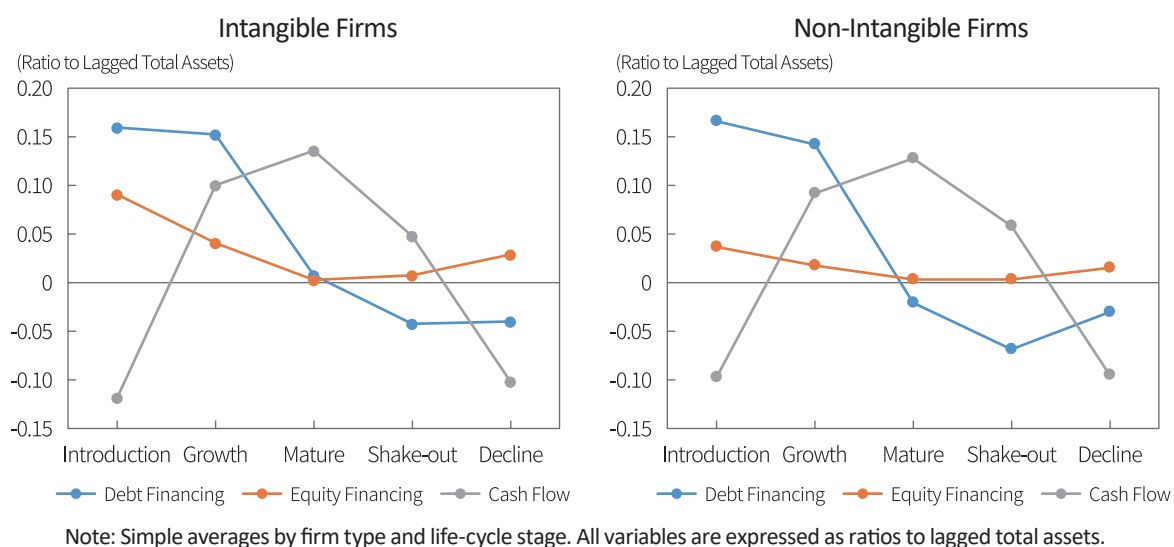
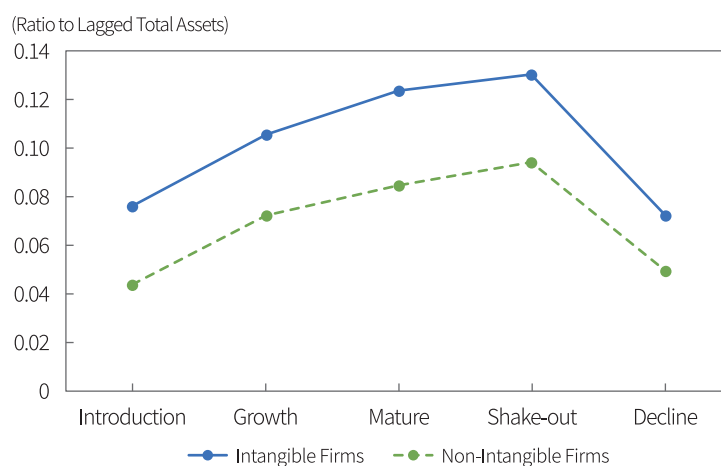


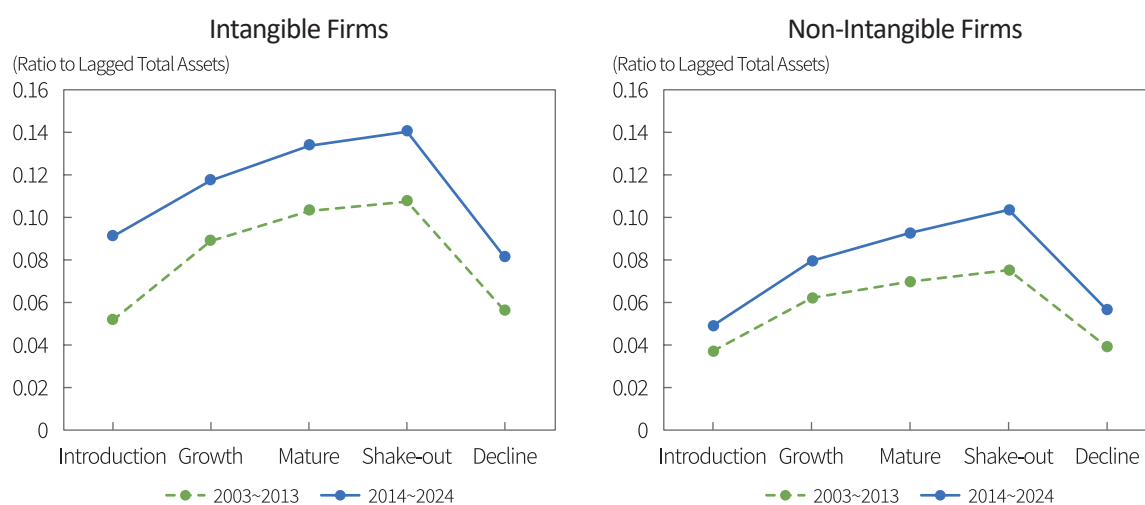
Figure 6. Cash-Holding Ratios across Life-Cycle Stages



A comparison across firm types shows that intangible firms have a relatively higher share of equity financing than non-intangible firms in the introduction and growth stages. This finding indicates that intangible firms tend to rely more heavily on equity financing than non-intangible firms during the early stages of their life cycle. Nevertheless, debt financing remains the predominant source of external financing for intangible firms even in the introduction and growth stages. Intangible firms also exhibit higher cash-holding ratios than non-intangible firms at every stage of the corporate life cycle. This pattern suggests that intangible-intensive firms may have relatively greater liquidity needs throughout the corporate life cycle.

To assess whether these life-cycle patterns have changed over time, the sample period is divided into an earlier period (2003–2013) and a later period (2014–2024), and financial behavior is compared across firm types and life-cycle stages. No major structural change in financing patterns is observed between the two periods. Among non-intangible firms, however, external financing ratios decline somewhat for firms in the introduction and growth stages. Among intangible firms, by contrast, the external financing ratio increases modestly for firms in the introduction stage, with the increase concentrated primarily in equity financing.

A more pronounced change is observed in cash holdings. Figure 7 presents average cash-holding ratios by firm type and life-cycle stage for the earlier and later periods. For both intangible and non-intangible firms, cash-holding ratios are higher in the later period than in the earlier period at every life-cycle stage. The pattern of increase, however, differs across firm types. Among non-intangible firms, the increase in cash-holding ratios is particularly pronounced for firms in the mature and shake-out stages. Among intangible firms, by contrast, cash-holding ratios also increase markedly in the introduction and growth stages.

Figure 7. Cash-Holding Ratios across Life-Cycle Stages: Comparison across Periods

Note: Simple averages by firm type, life-cycle stage, and period. The cash-holding ratio is calculated as cash and cash equivalents divided by lagged total assets.

These findings suggest that the accumulation of internal liquidity may have become increasingly important for intangible firms. In particular, it is noteworthy that cash holdings increased despite the absence of a clear shift in the structure of external financing. The increase in cash holdings even in the early stages of the corporate life cycle, when the demand for growth capital is particularly strong, is consistent with the possibility that intangible-intensive firms have been accumulating internal liquidity more actively in anticipation of future financing needs and external financing constraints.

Implications

The findings of this article suggest that, despite the substantial increase in the economic importance of intangible assets, the external financing system for firms may not have adapted sufficiently to this shift. These results are also consistent with the possibility that intangible-intensive firms have been accumulating internal liquidity more actively in anticipation of future investment funding needs and external financing constraints.

This trend has implications not only for the financial strategies of individual firms but also for the efficiency of resource allocation in the economy as a whole. If firms with substantial growth opportunities hold excessive cash in anticipation of future external financing constraints, resources that could otherwise be directed toward productive investment may remain tied up

in liquid assets. Conversely, innovative firms with insufficient internal liquidity may be unable to secure sufficient financing in a timely manner and may therefore be unable to pursue promising investment opportunities. Over the long term, these dynamics may widen disparities in firm growth and hinder productivity growth and allocative efficiency across the economy.

Accordingly, multifaceted efforts are needed to improve the corporate financing environment in response to the global rise of intangibles. First, financial practices that rely excessively on collateral-based debt financing need to be supplemented by approaches better suited to intangible-intensive firms. Compared with tangible assets, intangible assets have lower collateral value, retain less recoverable value in financial distress or liquidation, and involve greater uncertainty over investment outcomes and more severe information asymmetries. Conventional credit assessment methods may therefore fail to adequately capture firms' growth potential. Financial infrastructure should be strengthened to enable more sophisticated assessments of the economic value of firms' technological capabilities, intellectual property, and other intangible assets and to incorporate these assessments into decisions on the provision of financing.

Second, the capacity to supply long-term risk capital suited to intangible-intensive firms should be strengthened. Compared with tangible investment, intangible investment is characterized by greater uncertainty over investment outcomes, longer periods before returns are realized, and substantial upside potential in the event of success. These characteristics make intangible investment more compatible with equity financing, venture capital, and long-term patient capital than with debt financing that requires fixed principal and interest payments. Accordingly, the roles of capital markets and policy finance should be refined to better meet the financing needs of intangible-intensive firms at different stages of growth, and an environment should be created that facilitates the effective provision of private risk capital.