Constrained Divestiture and Ownership Unbundling

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Motivation

- Ownership unbundling (OU) can be analyzed from a welfare economic point of view, as well as from a financial perspective.

- Only if there is a positive impact for both parties or at least no debasement, ownership unbundling can be implemented without resistance.

- Literature mainly focuses on welfare implications and ignores the impact on former owners.
Legal and ownership unbundling can be seen as spin-off or sell-off of divisions:

- Sell-offs do not reduce the value of the assets. Herein, real assets are turned into liquid assets (equivalent to ownership unbundling).

- Spin-offs imply a reduction in assets without any cash payments (equivalent to legal unbundling):

Scope of the article: Analysis of the impact of unbundling on the remaining company or former shareholders.

Problem:

- The company divisions are not traded at the stock exchange separately. → focus on ex-ante analysis instead of often considered ex-post tests.
Financial Perspective (2)

Derivation of an optimization approach in order to determine the optimal type of divesting.

Assumptions:

- A company consists of $f$ divisions (at least two)
- Existence of unique and joint costs
- Debt bears a certain risk (risk of insolvency)
- No inventory carry over exists
Optimal Corporate Strategy (1)

Assuming a firm with \( f \) divisions, the value maximization function is given by:

\[
\max V = \left[ \sum_{j=1}^{f} \frac{1}{k_j} [P_j(Q_j)Q_j - C_j(Q_j)] - \frac{1}{k_a(D,E)} [S(Q_j) + R(D)] \right] (1 - \tau)
\]

\[
- (1 - \tau)r_d D - \lambda \left[ \sum_{j=1}^{f} I_j(Q_j) - \delta(D,E) \right]
\]

With \( Q_j \) as quantity produced and sold, \( k_j \) determining the divisional costs, \( P_j \) denotes the price for good \( j \) and \( C_j \) the cost for producing product \( j \). Moreover, \( k_a \) stands for the average cost of capital, \( S(Q_j) \) gives the non-financial overhead costs while \( R(D) \) measures the indirect cost of debt. With respect to this, the optimal product mix is given by:

\[
\frac{\partial V}{\partial Q_j} = \left( \frac{1}{k_j} \left( P_j + (Q_j) \frac{\partial P}{\partial Q_j} - \frac{\partial C_j}{\partial Q_j} \right) - \frac{1}{k_a(\partial Q_j)} \right) (1 - \tau) - \lambda \frac{\partial I_j}{\partial Q_j} = 0
\]
Equation (3) measures the profitability of the considered company.

- Values above or equal to zero indicate that the considered company operates efficiently, i.e. it is optimal not to divest.

- If the resulting marginal value shows a negative sign, the company might be better off by divesting the company division. → But how?
Suppose, \( k_a > k_j \) and the company decides to separate division \( j \). Then, the marginal value of this division prior to divestiture is determined by:

\[
\frac{1}{k_j} MP_j - \frac{1}{k_a} MS_j = MV_j
\]  \hspace{1cm} (4)

After divestiture, this market value changes to:

\[
\frac{1}{k_j} MP_j - \frac{1}{k_j} MS'_{j} = MV'_j, \hspace{1cm} (5)
\]

\[
\frac{1}{k_j} MP_j - \frac{1}{k_a} MS_j > \frac{1}{k_j} MP_j - \frac{1}{k_j} MS'_{j} \hspace{1cm} (6)
\]

with \( MS'_{j} \) and \( MV'_j \) as "new" overhead costs and new market value respectively. In this case, the separation of the company division should take the legal form of a sell-off. The independent subsidiary will provide lower costs than as part of a joint firm.
Suppose now, $k_a < k_j$ when divesting division $j$. Again, the marginal value of the division prior to divestiture is determined by:

$$\frac{1}{k_j} MP_j - \frac{1}{k_a} MS_j = MV_j$$

(7)

After divestiture this value changes to:

$$\frac{1}{k_j} MP_j - \frac{1}{k_j} MS'_j = MV'_j$$

(8)

As previously mentioned, the costs are at least as high as prior to divestiture such that $MS'_j \geq MS_j$. In opposite to the previous situation, the marginal value of the divested division ($j$) is now higher than the market value of the division within the existing entity.

$$\frac{1}{k_j} MP_j - \frac{1}{k_a} MS_j < \frac{1}{k_j} MP_j - \frac{1}{k_j} MS'_j$$

(9)
Optimal Corporate Strategy (5)

• As long as the unit to be divested provides a higher marginal value than the integrated division, shareholders would decide to spin-off.

• This means in terms of capitalization rates: If the capitalization rate after divestiture increases, i.e. if the risk exposure of the firm to be divested lies above the average capitalization rate of the joint firm, a spin-off has to be favored.

• Economically, higher capitalization rates signal higher risk and higher possible returns and growth.

• Consequently, a divested marginal value below the integrated value leads to a sell-off decision, as such a division has stable operating earnings and lower growth potential.
Data

- Accounting Data provided by Amadeus.
- Dataset consists of 624 companies dealing in energy, energy distribution and energy transmission for the time period between 2003 and 2007.
- 217 distribution firms from Denmark, France, Luxembourg, Sweden and Switzerland.
- 49 transmission operators from Belgium, Denmark, Finland, France, Germany, Italy, Norway, Sweden, Switzerland and UK.
- 358 energy companies that do not deal in transmission or distribution (of energy).
Return on Assets- a proxy for profitability (1)

For the considered sample, 45% of transmission and 60% of distribution firms show a negative profit indicating (direct) benefits for shareholders when divesting. The return on assets (ROA) can serve as proxy for a firm’s profitability.

Questions:

• Are there significant differences between the different groups of firms?

Results:

• The average ROA of energy firms exceeds the ROA in the transmission or distribution area.

• Owners will be better off by divesting transmission and distribution parts.
ROA gives insights whether divestiture (or unbundling in general) can be a favorable decision for investors.
Return on Capital - legal versus ownership unbundling (1)

- Rational investors will decide in favor of ownership unbundling if the capitalization rate for energy companies exceeds the division specific discount factor.

- ROC is the modest approximation of an adequate capitalization rate which encompasses the return on equity and debt. Decision criteria:
  - If $k_a > k_j \rightarrow$ decide in favor of sell-off (OU).
  - If $k_a < k_j \rightarrow$ spin-off (legal unbundling) is preferred.
Return on Capital - legal versus ownership unbundling (2)

ROC over time for distribution, transmission and energy companies.

[Graph showing ROC over time for distribution, transmission, and energy companies from 2003 to 2007, with trends indicated for each category.]
Return on Capital - legal versus ownership unbundling (3)

- ROCs for integrated companies exceed the discount rates for companies dealing in the transmission or distribution area solely.

- This holds for large and medium sized firms → arguing in favor of sell-off.

- It can be concluded that OU will leave owners better off than legal unbundling.
From the viewpoint of owners, ROE forms the decision variable (and seldom ROC).
Return on Equity - Owner’s decision variable (2)

- The ROE of the energy sector lies between the averaged returns of the transmission or distribution area.

- The highest returns can be found in the transmission sector which significantly exceed the ROE of energy firms on average as well as for small and medium sized firms → transmission owners should prefer legal unbundling.

- Nevertheless, no significant differences can be found for large transmission firms.

- For distribution facilities, a different picture arises (besides small firms) - equity holders will be better off with selling the distributing part of the firm and would hence prefer OU.
Conclusion (1)

- The empirical analysis showed that about 45% of transmission and 60% of distribution firms in 2007 should decide in favor of divesting the transporting part in Europe (because of negative profits).

- With respect to the ROA, rational agents would decide in favor of divesting a company division.

- Due to the ROC, ownership unbundling would leave investors better off if the company to be divested operates in the transmission - or energy distribution sector and earns revenues above 1 Mio. Euro.

- Contrary to this, ROC also indicates that if the transmission part to be divested is small, investors will be better off by refusing a separation of ownership and control.
Conclusion (2)

• However, the analysis in this article cannot completely confirm the rationality of refusing ownership unbundling, besides if ROE is the crucial decision variable.

• Consequently, the determination of additional factors which influence a shareholder’s decision and the analysis whether these are driven by regulatory constraints or actions is left for further research.