

Imposed Discipline of Payout Policy leads to Bankruptcy

The Deep Lack of Trust Conjecture

Safieddine Bouali

Management Institute, University of Tunis

41, rue de la Liberté, 2000 Le Bardo, Tunisia

Tel: 216-1-98-915-219 E-mail: Safieddine.Bouali@isg.rnu.tn

Abstract

Recent accounting scandals, frauds and wasted earnings by managers (executive jets, ostentatious parties...) spread a deep lack of trust in their relationship with stockholders or bondholders. Ownership is pushed to impose a strong discipline of payout mechanism extracting the free cash flows (FCF) from the manager hands. The financial governance arrangement should expel residual earnings in dividends or share repurchases. Accumulation of FCF and postponing payments should also imply a strong extra-dividend as a punishment to executives when they don't respect the discipline of payout policy. The dynamical model of a corporation selecting a nonlinear payout mechanism triggering strong disbursements of FCF is defined. Numerical computations show severe losses and dynamic turbulence. Paradoxically, automated disciplining payout policy injects bankruptcy risks in a deterministic model of firm without any stochastic leverage.

Keywords: Payout Policy, Free Cash Flow, Nonlinear model

1. Introduction

Described in 1961 as “irrelevant” by Miller & Modigliani, the debate focused on the dividend policy is not yet closed. The identification of the corporate conflict between ownership and management by Jensen (1986) about the destination of the free cash flow (FCF) delays indirectly the confirmation of its “irrelevancy”. Indeed, frauds (Agrawal & Chadha, 2006; Agrawal & al., 1999) and wasted earnings dispatched in inefficient investments push ownership to impose payout discipline. In a recent paper, Bates, Kahle & Stulz (2009) confirm that excess cash dilemma is a consistent, persistent and an expanding phenomenon for a wide sample of US industrial firms. For ownership, payout streams of FCF appear obviously as an appropriate financial behavior to enhance the stockholders wealth, but in the actual lack of trust, disbursements should be distributed without delays.

On the other hand, disciplining payout policy to disgorge FCF demonstrates efficient corporate governance which implies positive effects on the firm's shares valuation in the stock markets, contrarily to the Miller and Modigliani conclusion.

According to the shifted question, the gap between present earnings and their expected amount releases the mechanics of payout but, do automated financial governance procedures should be selected ?

We propose in Section 2, a dynamical model to simulate the wealth trend of a representative firm in case of “zero dividends & zero repurchase” policy. In Section 3, we investigate the outcome of the self-imposed discipline of the nonrecurring earnings in a generalized conjecture of lack of trust between ownership and control. The final remarks are in Section 4 and highlight some implications of our heuristic research. The main conclusion discusses briefly the outcome of automated and blind payout procedures to the financial stability of the firm. Our theoretical framework is deterministic since it can reflect without stochastic distortions the outcome of the corporate governance. Indeed, the model of three ordinary differential equations is written without randomness items.

2. Firm model with “zero dividends & zero stock repurchase” specification

We define a nonlinear dynamical system of a representative (and hypothetical) corporation which capitalizes part of its profits but neglects the payout policy since doesn't disburse dividends. Under this financial governance, we will detect the effects of the “zero dividends & zero stock repurchase” policy of a corporation quoted in a stock market by the trend of its profits. This first step of our heuristic model focuses the hypothesis of a “closed firm” since it targets sustainable investments in net value programs which indirectly enhance the firm's valuation. We point chiefly to the radical choice of a corporation following a growth path without disbursements. If no dividends or stock repurchases are featured, firm valuation appears, eventually, in its quotations.

To encompass the dynamical path of this kind of financial governance, we select Profits, Reinvestments and the Financing (capital) inflow of the firm's activity as the variables simultaneously determined in a nonlinear 3D system

previously introduced by Bouali (2009). Written in three first-order differential equations, the model summarizes the “orthodox” management and the principles of the good and rational practice of financial governance.

In the first equation, Reinvestment can be determined *ex-ante* as the agreed ratio of the Profits as follows:

$$dR/dt = m P \quad (1)$$

where m , the reinvested earnings ratio.

Reinvestment constitutes an important item of the global reliance of the corporate governance. Ownership encourages reinvestment which expands the production capacity of the firm, and enhances its shares value.

The second equation allows the creation of profits P which is made up of Reinvestments and financed also by an additional capital inflow, i.e. the debts F :

$$dP/dt = v (R + F) \quad (2)$$

v : rate of profits.

We notice that supplementary investments have identical profitability (the scalar v) of the previous projects.

Eventually, the third equation is the account of the net capital inflow of the firm:

$$dF/dt = - r P + s R \quad (3)$$

After deducting the capital outflow (r : the debt service ratio), the corporate borrowing is obtained according to the debt/equity ratio s . In fact, the debt service is linked to the volume of loans but for ease of the simulations, our basic formulation simplifies the model and does not modify fundamentally the core of the studied corporate governance.

The system becomes:

$$\begin{cases} dR/dt = m P & (1) \\ dP/dt = v(R + F) & (2) \\ dF/dt = - r P + s R & (3) \end{cases}$$

All variables are endogenous and the steady-state equilibrium is obtained for $dP/dt = dR/dt = dF/dt = 0$. The solution $E(R, P, F) = (0, 0, 0)$ is trivial and for the set of parameters $C(m, v, r, s) = (0.04, 0.25, 0.1, 0.3)$, the trajectory of the profit (Fig. 1) pursues an exponential rate of growth.

This radical choice is hypothetical since it contradicts the standard decision of corporate arrangements. In a survey of the motives of the payout policy (Brav & al., 2005), disbursements are also signals to investors and potential industry competitors. However, this first simulation serves only to contrast the implications of the imposed (or self-imposed) discipline of payout policy when nonlinear mechanism is implemented.

3. Firm model with automated payout policy specification

In the actual international economic context of financial crisis and fraud scandals, a strong level of the monitoring activity is chosen which introduces itself a new agency cost. Indeed, lack of trust leads to specific payout procedures with wasted resources.

To the immediate ejection of the FCF, earnings are transferred from managers to shareholders with a noticeable item: extra-dividend is released as a manager’s punishment when total cash exceed the amounts of “normal” Profits agreed by corporate governance. Nonlinear mechanism allows similar specification.

We assume that the “normal” amount of profits have the value $P^*=1$. Indeed, for $P=P^*=1$, the reinvestments trend takes the targeted m value and no procedures of payout are launched.

Beyond what a firm could invest, extra funds are sharply reduced by intensification of disbursements, or by the more flexible stock repurchases. To this end, we select the gap between 1 and P^2 to initiate payoff.

If the mass of Profits is lower to P^* , earnings are capitalized with a fast increase. Nonlinear item arises strongly and pushes management to reduce payout to compensate the reduction of profits. To prevent financial distress and underinvestment threat, payout is decelerated since cash flow shortage is a critical phenomenon (Uhrig-Homburg, 2005). Capitalization must grow at a strong rate to converge to the m value and the stock buybacks, or the dividend payout, is decelerated.

The firm must resort to financing reinvestments by self-tender offers of new equities or shares’ issuances into the open market. However, the firm divestitures its capital assets when accumulates losses.

The regulation’s mechanism and its specification violate neither the “orthodox” behaviour of the managers nor the principles and rules of the disciplining practice of finance governance. In fact, the aim of the mechanism is the

driving of Reinvestment to desired level m and hinders the retention of excess liquid assets. P^* is a threshold which separates between supplementary reinvestments and triggering off payout.

The first equation becomes:

$$dR/dt = m P + (P^* - P^2) n R \quad (1.1)$$

n , recapitalization ratio.

We substitute eq. (1) by eq. (1.1) in the previous model and we obtain a new system:

$$\begin{cases} dR/dt = m P + (P^* - P^2) n R & \text{(I)} \\ dP/dt = v (R + F) & \text{(II)} \\ dF/dt = -r P + s R & \text{(III)} \end{cases}$$

The stylized facts of a representative firm agreeing automated procedures of payout are simulated numerically by a nonlinear approach in the deterministic framework.

The three variables are endogenous and the steady-state equilibria are determined for $dP/dt=dR/dt=dF/dt=0$. We get $F=-R$ from (II), $n(P^2-P^*)R=mP$ from (I) and $P=sR/r$ from (III). The last two relations yielded the following equality: $[(P^2 - P^*)nrP/s]-mP = 0$.

The three roots of P are: $P_1 = 0$, $P_2 = [(ms/nr) + P^*]^{1/2}$ and $P_3 = -P_2$. Let $[(ms/nr) + P^*]^{1/2} = k$, the three equilibria become: $E_1 (R, P, F) = (0, 0, 0)$, $E_2 (P, R, F) = (rk/s, k, -rk/s)$ and the third solution $E_3 = -E_2$. Jacobean matrix of the 3D system gives $|J| = v[nr(P^* - P^2) + ms - 2nPRs]$.

Numerical computations are carried out with the fifth-order Runge-Kutta integration method and 10^{-6} accuracy and the initial conditions are $IC (R_0, P_0, F_0) = (0.01, 0.01, 0.01)$.

We add the new parameter n to the previous set and the financial statement of the firm becomes $C_1 (m, n, v, r, s) = (0.04, 0.02, 0.25, 0.1, 0.3)$ and the "normal" profits: $P^* = 1$.

Computational simulation shows that trajectory of the system (Fig. 2) follows an infinite orbit centred on the equilibrium: $E_2 (R, P, F) = (0.88, 2.64, -0.88)$.

The firm as a dynamical system oscillates without periodicity in the phase portrait of the state variables, profits, reinvestments and capital inflow. Its behaviour is chaotic.

Implementing nonlinear payout procedures marks persistent and non-transitory chaotic oscillations and contrasts the utterly different monotonic path of the profits displayed in the "non public firm" case.

Rational financial behaviour can give unexpected and unpredictable financial instability. The selected ownership-management governance can reduce strongly the amount and the persistence of FCF but its cost seems to be higher than the fraud threat.

Critical financial disorder versus fraud or wasted investments appears as a new corporate dilemma.

We notice that rigorous financial discipline introducing the item: $(P^* - P^2)nR$ is itself the automaton of fluctuation.

To cancel this chaotic behaviour, the value range of the parameters is investigated. We find at the best of our knowledge a several stable periodicity, for example with the C_2 parameters (Fig. 3). Chaos disappears but oscillation persists. Not monotonic trends are obtained as shown in Figure 1.

Adjusting the current cash flow to the preferred level of earnings leads also to severe and highly critical financial distress. Indeed, for the set of parameters $C_3 (m, n, v, r, s) = (0.02, 0.3, 0.98, 0.1, 10)$, Profit variable can glide to very high losses (Fig. 4).

Instability is derived from the implemented nonlinear specification of Eq (I) for all positive value of n .

Paradoxically, best practice of financial rules injects unexpected dynamical pattern. Corporation governed by automated actions and cybernetic arrangements seems to be not the best answer to resolve the firm trade-offs.

Our heuristic model of corporate finance serves as a framework to detect the dynamics of the profits in the context of separation between ownership and management.

By their power of decision (Rajan & Zingales, 1998), the owners can incorporate strong constraints in the main field of the corporate management but do not reach in all cases the reduction of financial threats.

The management of public firms can be a subtle balance (and neutralisation) of the stockholders, bondholders and executives interests allowing a wide autonomy to the managers with a minimum level of monitoring interference.

Managers and owners choose the best direction to boost the corporate activity and its profits and fix together the frontier of their strategic skills. Corporate governance is also a trusted gentlemen agreement to avoid automatic (and blind) mechanical rules of financial governance.

The main result of the present corporate model is centred on the generation of financial instability when the problem of FCF is reduced. Such automated governance doesn't represent the best way to prevent fraud temptations.

4. Final Remarks

Our basic model of the financial statements masks a loss of generality and deserves a sophisticated formulation. However, our outlook is consistent with Baker & Smith (2006) conclusions. They indicate that some firms "...may follow a "modified" instead of "pure" residual dividend policy to avoid highly volatile dividend payments." Intuitively, managers "disconnect" the payout's automaton and drive "manually" the earnings' disbursement to pull backward the system far from the chaotic bubble.

The intense elasticity of payout to earnings is derived from scarce level of trust between stockholders, debtholders and managers (Farber, 2005) injecting severe instability.

Self disciplining payout in the context of deep lack of trust between ownership and control is investigated with the tools of the theory of deterministic chaos (Day, 1994) which differs from the stochastic modelisation in econophysics (Mantegna & Stanley, 1999 ; Lux & al., 2005). Our singular results are made with nonlinear payout mechanics which imply a systemic risk. Paradoxically, corporation loses its dynamic stability when targets immediate FCF disbursements. Fluctuations are injected leading to bankruptcy threat.

Ownerships, themselves, play against their interests! In other words, payout procedure is, *itself*, the turbulent process!

This paper highlights stylized facts of the strong adjustment of the preferred cash flows level reflecting high sensitivity of ownership to the earnings emergence.

Financial oscillations are not an artefact and not driven by incomplete, imperfect market considerations or industry arguments.

If payout policy is "neutral" and "irrelevant" to the firm's valuation according Miller & Modigliani (1961), its specific implementation into the corporate decisions can mislead the worse consequences.

References

- Agrawal, A. & Chadha, S. (2006). Corporate Governance and accounting scandals. *Journal of Law and Economics*, 48, 371-406.
- Agrawal, A., Jaffe, J. F. & Karpoff, J. M. (1999). Management turnover and governance changes following the revelation of fraud. *Journal of Law and Economics*, 42, 309-342.
- Baker, H. K., & Smith, D.M. (2006). In Search of a Residual Dividend Policy. *Review of Financial Economics*, 15, 1, 1-18.
- Bates, T.W., Kahle, K. M. & Stulz, R. M. (2009). Why Do U.S. Firms Hold So Much More Cash than They Used To?. *Journal of Finance*, 64, 5, 1985-2021.
- Bouali, S. (2009). Targeting Fixed Reinvestment Rate with nonlinear Mechanism: A Strange "Path" to Financial Distress. *Corporate ownership & Control*, 7, 2, 311-318.
- Brav, A., Graham, J. R., Harvey, C.R. & Michaely, R. (2005). Payout Policy in the 21st Century. *Journal of Financial Economics*, 77, 483-527.
- Day, R.H. (1994). *Complex Economic Dynamics*. Vol. 1. *An Introduction to Dynamical Systems and Market*. M.I.T., Boston.
- Farber, D. B. (2005). Restoring trust after fraud: does corporate governance matter?. *Accounting Review*, 80, 539-561.
- Jensen, M. C. (1986). Agency Cost of Free Cash Flow, Corporate Finance and Takeovers. *American Economic Review*, 76, 2, 323-329.
- Lux, T., Reitz, S. & Samanidou, E. (2005, eds). *Nonlinear Dynamics and Heterogeneous Interacting Agents*, Springer, Berlin.
- Mantegna, R. & Stanley, H. E. (1999). *Introduction to Econophysics. Correlation and complexity in Finance*. Cambridge University Press, Cambridge.

Miller, M. H., & Modigliani, F. (1961). Dividend Policy, Growth, and the Valuation of Shares. *Journal of Business*, 34, 411-433.

Rajan, R., & Zingales, L. (1998). Power in a Theory of the Firm. *Quarterly Journal of Economics*, 113, 387- 432.

Uhrig-Homburg, M. (2005). Cash-flow shortage as an endogenous Bankruptcy reason. *Journal of Banking & Finance*, 29, 1509-1534.

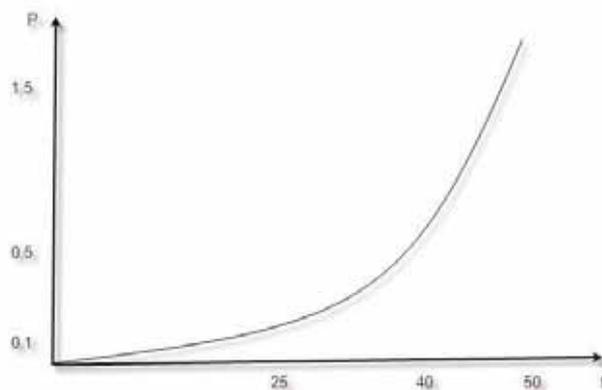


Figure 1. Profit Trend for “Zero Dividend-Zero Stock Repurchase”

Capitalized earnings without explicit payout policy allows a sustainable growth of the Profit

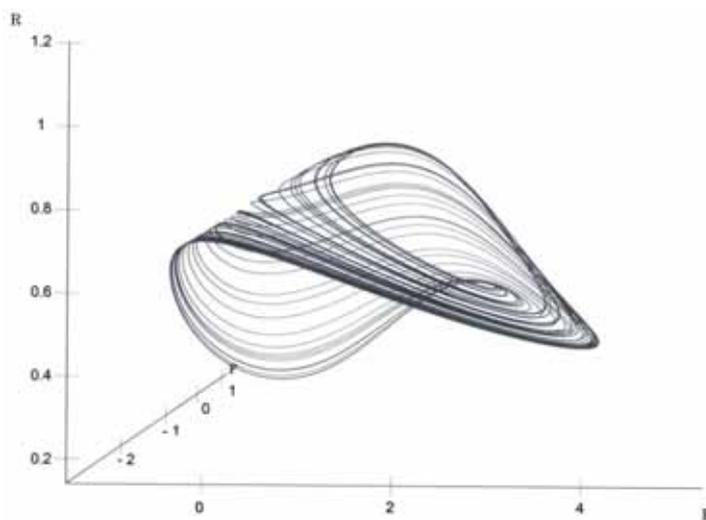


Figure 2. Chaotic Attractor

The dynamic of the firm fluctuates chaotically between weak negative values and high levels of profits P. The attractor is centered around the unstable equilibrium E_2 .

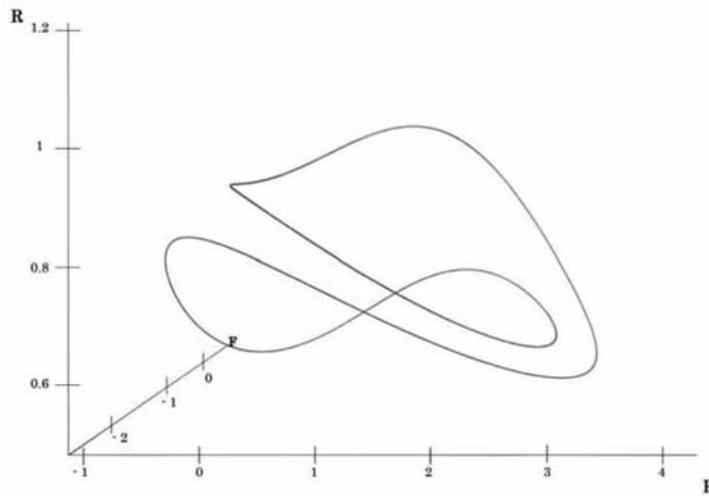


Figure 3. Periodic Motion

The financial variables of the firm fluctuate periodically between weak negative values and high levels of profits P when the parameters are $C_2 (m, n, v, r, s) = (0.04, 0.02, 0.25, 0.1, 0.2)$

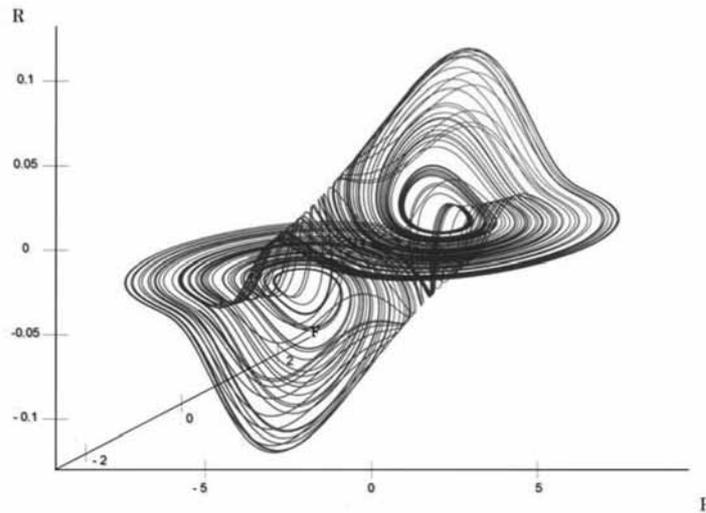


Figure 4. Symmetric Chaotic Attractor

When $C_3 (m, n, v, r, s) = (0.02, 0.3, 1.02, 0.1, 10)$, chaotic fluctuations of the financial variables glide towards a deep negatives level. For example, P reaches an identical amplitude both for positive (profits) and negative (losses) amounts