

# Low-Profit Investment

## Pricing, Funding, Supporting

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### *Abstract*

Low-profit investment tries to bridge the gap between non- and for-profit, between beneficial and profitable business. This paper will examine the following: How can investments be funded by equity and loans which generate a return of just 0-5% per annum? What part do private investors play? Is government support necessary to facilitate low-profit investments and according to which criteria and guidelines should they be utilized? This paper presents possible regulatory instruments which are suitable to stimulate low-profit business serving a social and ecological purpose, like renewable energy, organic farming or recycling.

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**Keywords:** asset pricing, investment, equity, loan, capital market, regulation, low-profit, non-profit, social entrepreneurship, CSR

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## *1 Initial question*

Low-profit breaks new ground in finance. It is an attempt to **bridge the gap between non- and for-profit**, between beneficial and profitable business. The question is how investments can be funded generating a rate of return just between zero and five percent per annum but serve a social and ecological purpose like renewable energy, organic farming, recycling, etc.? Which part do the banks and the state play? Which supportive measures are helpful in locating and opening up potential sustainable low-profit investments?

**Example 1:** A firm plans a **photovoltaic power station**. The profitability of the investment depends on several parameters: module price, location, technological and operational settings, oil price etc. Assuming an Internal Rate of Return (IRR) of 2% per annum, will the firm invest or not?

## *2 Idea*

How can low-profit investments be funded by **equity and debt capital**? If a firm plans a low-profit investment, it will have to forego a high return on equity, perhaps because the stakeholders are ethically motivated, or the purpose of the investment is deemed to be more important than high profits. If low-profit investments are funded partly by loans, this will hardly be possible with a bank loan under the usual terms and conditions. In this case, reduced-rate loans are an alternative where the state partly subsidizes interest payments for the borrower.

**Example 2:** A **cooperative society** is funded by its members and grants an annual dividend of 2% per annum on the capital paid. Forthcoming investments are exclusively funded by deposits of the members without taking on bank loans so as to avoid high interest payments. It goes without saying, that this kind of cooperation is thus limited to the wealth of their members.

**Example 3:** Public banks like the German Kreditanstalt für Wiederaufbau (KfW) and the European Investment Bank (EIB) grant **reduced-rate loans** for the promotion of households, companies and municipalities to support energy projects and environmental investments.

## *3 The neoclassical model*

The neoclassical asset pricing model goes back to Sharpe (1964), Lintner (1965), Black (1972) and Merton (1973). Unless we first understand the assumptions and implications of the classical model, we cannot draw the appropriate conclusions and create a revised asset pricing model for low-profit investment.

The neoclassical model is based on the **assumptions of a perfect capital market**. It is assumed that there is a certain number of risky assets within an economy and a single risk-

free asset or bank account. A risky asset is synonymous with a real investment opportunity or a share in a company, typically common stock. The risk-free asset can be represented by the overnight rate such as LIBOR or EURIBOR. It is further assumed that investors are risk averse, i.e. investors expect a positive risk premium for bearing risk. According to the neoclassical model, the required or expected rate of return on a risky asset is the sum of the overnight rate and an expected risk premium,

$$\text{expected return} = \text{overnight rate} + \text{expected risk premium}, \quad (1)$$

and because both parameters are strictly positive, the expected return has to be relatively high – at least 5% per annum.

The neoclassical model (1) is based on very simple and idealized assumptions. First of all, it ignores taxes, subsidies, transaction cost and other frictions. Furthermore, **the neoclassical model requires relatively high returns**, at least 5% per annum, covering the riskless rate plus an adequate risk premium. Therefore, capital allocation is restricted to those companies and industries, which can actually realize the required returns. Business sectors which are not high performing, like social entrepreneurs, have no access to the capital market. The model (1) does not consider whether companies are indeed able to generate the required returns. This restrictive requirement could lead companies to externalize risks to the environment and to operate without considering social aspects. A current example is TTIP (Transatlantic Trade and Investment Partnership) and other so-called Free Trade Agreements (FTAs) where lobbies try to cover future profits by accepting social and ecological dumping.

#### ***4 Evidence and revised model***

The neoclassical model has not only serious theoretical deficiencies, it is also questionable whether it is actually evident.

“There is ongoing debate about the apparent weak or negative relation between risk and expected returns in the aggregate stock market” (Guo/Whitelaw 2006).

If we look at the chart of a share index like the Japanese Nikkei 225 or the American Standard & Poor's 500, prices have either been stagnating since 1990s in Japan or not rising considerably in the long run since the early 2000s in the US. At the same time, high volatility and the tendency to create imminent bubbles and recurring crashes indicate high inherent risks on financial markets.

By further setting up a **multiple linear regression model**, we can make a statement about the empirical evidence of the classical model. The regression model is based on the Intertemporal Capital Asset Pricing Model (ICAPM) according to Merton (1973). With ICAPM, the response variable is the excess return (return minus overnight rate) either of a single stock, a benchmark rate of an industry, or a share index:

$$\text{excess return} = \alpha + \text{sum of } \beta\text{-weighted risk factors} + \varepsilon. \quad (2)$$

The predictor variables represent several micro- and macroeconomic risk factors: short rate, Sharp ratio (Khmilevska 2007, Brennan et al. 2004), consumption-wealth ratio (Wang 2009, Guo 2006), firm fundamentals (Jiang/Lee 2009, Fama/French 2006, Tai 2003), oil price (Cifarelli/Paladino 2010), labor income (Campbell 1996), default risk, term premium (Li 1997, Ferson/Harvey 1991, Harvey 1989), etc. The  $\beta$ -parameters of the regression measure the covariances between the risk factors and the response variable (covariance risk). All values are given as a time series, for example, as daily data. To filter the stylized features of a financial time series (Rydberg 2000), the innovation of the regression ( $\epsilon$ ) is modeled with augmented GARCH (generalized autoregressive conditional heteroskedasticity), for example Threshold-GARCH, according to Engle (1982), Bollerslev (1986) and Zakořian (1994). The intention of the regression model (2) is to determine whether there is a statistically significant deviation from the neoclassical model (ICAPM). Such a deviation can be measured by the so-called intercept term, usually denoted as alpha ( $\alpha$ ). If the parameter  $\alpha$  of the regression is significantly negative, then the (theoretical) neoclassical model is empirically not evident.

The regression model (2) allows not only a statement about the empirical evidence, but also provides vulnerable hints for a **revised or extended asset pricing model**. Therefore, it is assumed that the parameter  $\alpha$  in equation (2) is significantly different from zero. In this case,  $\alpha$  is empirically evident and stands for a new parameter within the theoretical framework, both extending beyond and correcting the classical model. Consequently, the revised model for the expected return on a risky asset is the sum of the overnight rate plus an expected risk premium less the parameter  $\alpha$ :

$$\text{expected return} = \text{overnight rate} + \text{expected risk premium} - \alpha. \quad (3)$$

The revised or extended model (3) also gives a definition for low-profit investments where the expected rate of return is reduced by a new, undetermined parameter  $\alpha$ .

Finally, how can we **interpret the new parameter  $\alpha$**  in economic terms? First of all, we can rule out that  $\alpha$  influences the size of the risk premium because the risky assets considered in equation (3) are exogenously given. Therefore, the parameter  $\alpha$  is unique:  $\alpha$  indicates a reduction of the overnight rate either because of a tax on risk-free assets,

$$\alpha = \text{wealth tax on risk-free assets}, \quad (4)$$

or because of a subsidy to reduce interest payments if the underlying asset is in debt. Consequently, the revised model (3) gives a plausible extension of the neoclassical model where the expected return is reduced by a tax on riskless assets and reduced-rate loans respectively.

If the economic climate is negative, firms will possibly be unable to generate returns according to the neoclassical model (1). In this case, a higher taxation of risk-free assets seems to be appropriate in order to reduce the return expectations of investors according to equation (3) and (4). The question arises whether a higher tax on risk-free assets is an implicit tax privilege for risky assets. It must be noted that the expected returns on risky assets considered in the regression model (2) already comprise all corporate expenditures including

corporate taxes. Consequently, the parameter  $\alpha$  does not equal a tax privilege for risky assets, but a balanced taxation of risk-free and risky assets. Otherwise investors would rearrange their portfolios to the advantage of risk-free assets. Risky assets should be lucrative for investors even if the economic situation is not positive and the expected return on real investments is low.

## 5 *Regulatory aspects*

Which regulatory efforts are suitable to stimulate low-profit investments? The following instruments comprise a tax, a subsidy and soft law:

- a) A wealth tax on risk-free assets
- b) Reduced-rate loans
- c) Strict social and ecological standards

The state is required to redistribute financial means one-to-one from risk-free assets to sustainable low-profit investments (Fahrbach 2014).

a) A **wealth tax on risk-free assets** (e.g., bank and deposit accounts, government bonds) would lead to higher government revenues compared to a tax on interest payments based on the current tax code. Together with other wealth and eco-taxes, this kind of tax could contribute considerably to the national budget. A generous tax allowance should be granted to protect small savers, for example, €100,000. That means if the wealth tax on risk-free assets is, for example, 3% p.a., only that wealth exceeding €100,000 is taxed by 3%. Further, a tax on risk-free assets has a regulatory impact: if risk-free assets are taxed higher, investors will set their expectations lower and lend firms reasonable equity. Consequently, companies can operate with lower cost of capital to undertake low-profit investments.

b) **Reduced-rate loans** should be given out for all market participants (private persons, companies, NPO, institutions, etc.) planning low-profit investments. Both public and private banks could give out reduced-rate loans if the state grants an extra subsidy to the borrower to reduce the interest burden. If private banks are involved, we are in a **win-win-win situation**. Banks give out (state-subsidized) reduced-rate loans, firms get capital under favorable terms, and the state can control and stimulate low-profit investments in favor of environment and labor.

c) State-subsidized loans have to be approved by strict and binding **social and ecological standards** according to the Global Compact of the United Nation, the United Nations Principles for Responsible Investment, the Global Reporting Initiative, and other CSR-guidelines. If reduced-rate loans are given out only to companies serving a social and ecological purpose, these companies can reduce interest payments, produce cheaper and acquire the desired competitive advantage. At the same time, ecologically contraindicated subsidies should be avoided, such as conventional farming or atomic energy.

The question arises whether a wealth tax on risk-free assets is really necessary, or will the remaining two instruments suffice to facilitate low-profit investments. If risk-free assets are not taxed, investors will still expect returns according to the neoclassical model (riskless rate plus risk premium), and firms are led to obtain the required returns by generating high profits. In this case, subsidies like reduced-rate loans are just used to cover the profits of firms. In other words, if we do not want to subsidize private profits, then we have to lower the standard for the expected returns on real investments, and this can only be achieved by a higher taxation of risk-free assets. The aim of a wealth tax on risk-free assets is to motivate investors to give firms a share in low-profit investments.

## **6 Conclusion**

It is in principle possible to **fund investments by equity and loans on a lower cost of capital**, about 0-5% per annum. Two regulatory instruments are especially suitable for reducing the cost of capital for corporations: a wealth tax on risk-free assets and reduced-rate loans for socially beneficial investments. If risk-free assets are taxed higher, investors will rather be prepared to have a share in companies even if the return on equity is low. And if reduced-rate loans are given out to socially beneficial companies, such companies can reduce interest payments to fund low-profit investments. The proposed regulatory instruments can be illustrated with a simple numerical example: a wealth tax on risk-free assets of 3% reduces the cost of capital for equity by 3% and an extra state subsidy at the rate of 4% reduces the cost of capital for loan by 4%. All in all, because of a wealth tax on risk-free assets, investors revise their expectation downwards and lend firms reasonable equity, and because of an extra state subsidy, firms can obtain bank loans under favourable terms.

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