



# Corporate Responsibility of Pension Funds: Implications for Natural Resource Use and Sustainable Development

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## Abstract

We analyze the impact of corporate responsibility rules for pension funds on economic development in a two-sector economy with overlapping generations. The dynamics of the economy are characterized by the essential use of a non-renewable natural resource and two types of research which allow for directed technical change. The two sectors, called ‘modern’ and ‘traditional’, differ in terms of resource use and knowledge creation. Each young generation saves for the retirement age, both with private savings and pension funds. We show that pension funds have no impact on sustainability when investing disproportionately in stocks of modern firms. However, they promote development when supporting the modern sector with credit for knowledge creation.

Keywords: Pension funds, sustainable development, financial investments, directed technical change, overlapping generations

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## 1 Introduction

There are several reasons why pension funds increasingly include corporate responsibility rules in their business and investment strategies. First, the large pooling of savings for long-term investments suggests to take basic economic, environmental and social problems into account because these affect long-term capital return. Second, the growing size and market shares enable pension funds to exert a noticeable impact on firms' activities, the more so as financial intermediators have to take part in the monitoring and control of corporations. Third, as pension are of high political interest, a large variety of stakeholders is affected by their activities. Fourth, corporate responsibility may in certain cases appear as an appropriate response to governmental regulation or a good anticipation of future regulation by the government.

Hence when pension funds promote corporate responsibility and sustainability in the rest of the economy this can be favorable for the return on their investments. If they are successful, their policy corresponds to an optimum long-term strategy. However, it is not guaranteed that pension funds do in fact have the impact they intend to bring about or that all instruments they employ are equally efficient.

In this paper we study which corporate responsibility activities of pension funds support sustainability, that is bring development closer to a sustainable pattern meaning that later generations enjoy a level of welfare which equals or exceeds the welfare of the current generation. We employ an OLG approach in which – besides consumers and the pension fund – two types of production sectors are considered. These sectors differ according to the intensity of natural resource use and the productivity gains from diversification in production. Consumer and pension funds can invest in research of either sector. The corporate responsibility of the pension fund can manifest itself in two ways: first, funds can invest relatively more in shares of the modern sector compared to private investors. This reflects socially responsible investment (SRI) in the model. Second, funds can promote the modern sector by providing basic knowledge to modern firms which decreases costs of modern goods. This might be thought of subsidizing basic research or giving (cheap) credit to the modern sector. An example for this kind of activity is found in Switzerland, where pension fund money can be used for real estate investment applying low energy technologies, that is, more advanced technologies get better credit conditions than normal housing. We show in which way the quantity and the direction of investment affect natural resource abundance and research activities that are crucial for welfare growth. The focus is specifically on the role of directed technical change which is incorporated by assuming CES production technology in the final goods sector.

As a basic result it will turn out from the model that the two activities of the pension



funds have very different impacts on the overall economy. Whereas the investment rule for the stock market has no impact on economic dynamics, the provision of additional knowledge to the modern sector is effective. The economic intuition behind this result is that the pension funds' endeavors on stock markets are countered by neutral investors while there is no comparable counter-effect in the case of credit markets.

The paper is related to various strands in the literature. Regarding the theory on corporate governance and the stakeholder approach, Tirole (2001) lists various control and management problems in the principal agent context. La Porta et al. (2000) emphasize that corporate governance is also a set of mechanisms through which outside investors protect themselves against expropriation by managers and controlling shareholders. Several contributions present interesting empirical evidence. That the share of total savings managed by pension funds has reached respectable dimensions becomes evident in Social Investment Forum (2003), Eurosif (2003) and Swiss Federal Statistical Office (2004). La Porta et al. (2000) show empirical evidence for the impact of legal corporate governance arrangements on financing structures of firms. In a broad study Smith (1996) finds that a majority of firms targeted by the large and well-known Californian pension fund CalPERS adopt proposed changes. Faccio and Lasfer (2000) conclude that pension funds have large incentives to monitor companies in which they hold large stakes but are, according to empirical results for the UK, not very effective monitors. Del Guercio and Hawkins (1999) study pension funds behavior and find a large variety of activism objectives, tactics, and the impact on target firms; the major motive is found to be value maximization. Prevost and Rao (2000) derive that firms receiving proposals of pension funds the first time experience a temporary decrease in shareholder wealth while firms targeted repeatedly are faced with longer-lasting negative effects.

The dynamic structure of the modelled economy has several roots. Intergenerational transfers and long-run investment within a dynamic OLG framework were already studied in Hammond (1975) and Kotlikoff et al. (1988). Contributions on the impact of natural resource use on development in continuous time approaches without intergenerational aspects are Bovenberg and Smulders (1995) and Stokey (1998). Papers that deal with environmental and resource aspects in a discrete time framework include Howarth and Norgaard (1992), John and Pecchenino (1994) and Marini and Scaramozzino (1995). The relationship between social security and long run investments, e.g. in the environmental or in the education sector, has been studied by Rangel (2003) who concludes that social security plays a crucial role in sustaining investments favoring future generations. Attanasio and Rohwedder (2003) find mixed effects of pension funds savings on overall savings for the case of the UK.

The modelling of the OLG setting and the inclusion of non-renewable resources in our approach draws on the contributions of Quang and Vousden (2002) and Agnani,



Gutierrez, and Iza (2005), respectively. Technology assumptions are based on Romer (1990); directed technical change is related to Acemoglu (2002) and Smulders and de Nooij (2003). The impact of natural resource use in this kind of framework is treated in Bretschger (2003). Pittel (2002) provides a broad survey on the impact of the natural environment on economic growth. Finally, Bretschger and Pittel (2005) derive first results on the long-term impact of pension funds in a model without directed technical change and with a smaller set of pension funds activities.

The remainder of the paper is organized as follows. Section 2 describes the model in detail. In section 3, we derive the impact of pension funds investments in shares of modern firms. Section 4 deals with the effects of public knowledge investment by pension funds. In section 5, the properties of long-term growth paths are analyzed. Finally, section 6 concludes.

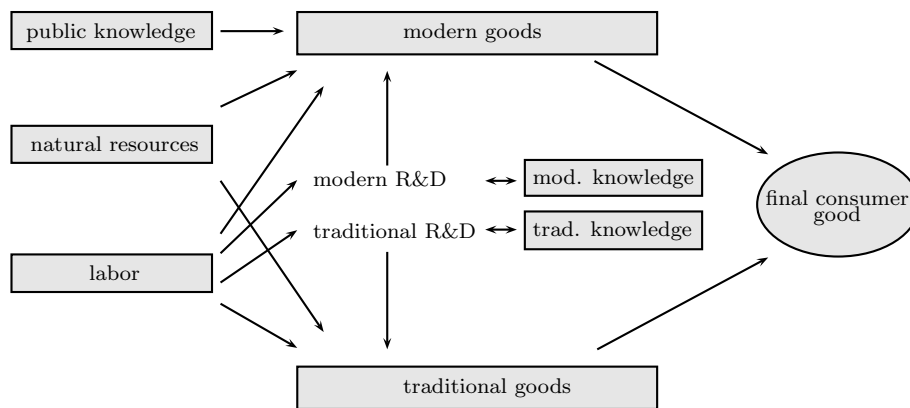


Figure 1: Production sectors

## 2 The Model

The model distinguishes between two sectors, a ‘modern’ and a ‘traditional’ sector (see Figure 1). The two sectors differ with respect to the intensity of natural resource use, the gains from specialization and the productivity of research activities. New blueprints for modern and traditional goods are developed by two different research activities; it is assumed that modern research takes relatively more effort per blueprint. The blueprints are sold to monopolistic producers in each sector, the gains from specialization are higher in the modern sector. Furthermore, the intensity of natural resource use is lower for modern goods. In each sector, the produced goods are combined to a homogeneous





































