Chapter 4
The Choice of Financing Method: Economic Motives

4.1 Introduction

Many public pension schemes were originally financed by some CR-system and then sooner or later the fund was abolished and a transition was made to the PAYG-system. This also was the development of the pension schemes that were considered in chapter 2. In this chapter we shall be concerned with the economic rationales for choosing one of these two financing methods.

In section 4.2 an informal discussion of the Aaron-condition, introduced in chapter 3, is presented. Its fulfillment at the time when the PAYG-system was introduced will be considered for a few countries. Moreover, it will be investigated whether the Aaron-condition was a leading motive for the politicians who decided on the financing method to be used. In section 4.3 an explicit derivation of the Aaron-condition is presented for the case in which the parameters of the pension system are not constant. In this exercise the assumption is made that the decision-makers take the economic parameters of the economy as being exogenously determined. In particular, the rate of interest is assumed given to the decision-makers concerned. In a complete model of a small open economy the assumption of an exogenous interest rate, makes it necessary to deal with current account and exchange rate movements. The current account will be introduced in section 4.4, but the introduction of an endogenous exchange rate will be delayed until chapter 9. The question will be posed whether a Pareto-optimal conversion from a PAYG-system to a CR-system can be effectuated. This question is particularly urgent because, due to declining birth rates, the Aaron-condition does not hold currently in many western democracies. Finally, section 4.5 contains a summary.

4.2 Economic considerations

To set the stage, consider the working of the CR-system. Take for simplicity the two-overlapping-generations model of the previous chapter.
where individuals work in the first period of their lives and are retired in the second period. Individuals consume part of their net labor income in the first period and leave no bequests when they die at the end of the second period. Suppose no income inequality exists within generations, but income earned may grow over time. The government levies a constant premium rate \( \tau \) of the workers' wages and promises to pay back these same premiums including the returns on their investments when the workers are retired. If the government is able to make the same return on savings as other suppliers of capital on the capital market\(^1\), the return on the premiums obviously equals the rate of interest, \( r-1 \) in the notation of the previous chapter. Had an individual worker, instead of the government, invested the same amount during his working life, then, assuming perfect capital markets, the same return would have been obtained by this worker. Thus, as is well-known, a CR-system does not affect the lifetime budget restriction of the worker. We are led to conclude that apart from the motives mentioned in the previous chapter, there is no rationale then for starting a public pension scheme based on the CR-system.

Next, consider the same economy where now the public pension scheme is financed by the PAYG-system. Assume the same premium rate to hold as in the CR-system. The government now pays out the premium revenues to the retired currently alive. Clearly, these premium revenues depend on income earned and the size of the working population. Assuming that the present working population will be paid a pension payment in the next period financed by levying a premium from the then working population at the same rate \( \tau \), the return\(^2\) on the premiums paid depends on the growth rates of population and income. In particular, the return on the taxes under the PAYG-scheme is equal to the sum of the population and income growth, or \( bg-1 \), using the symbols of the previous chapter\(^3\). Thus the government is justified in operating an unfunded system if \( bg>r \), which is the Aaron-condition introduced in the previous chapter. The PAYG-system shifts the lifetime budget restriction of the present working generation outward in that case. If, moreover, the parameters \( b, g \) and \( r \) are constant over time the PAYG-system will benefit every future working generation as well, i.e. in the sense of generating a higher lifetime income than under a CR-system\(^4\). It is thus of some interest, to consid-