In highly developed societies, education is given a very prominent role in the process of maintaining and increasing the level of development. This has not only a cultural, but also a social and an economic dimension. Education is considered to be important for the creation and transfer of norms and values in society, the utilisation of the talents present in the population, the creation of equal opportunities and the promotion of economic development. Although education as a ‘product’ has indeed a number of consumptive aspects – it can be very challenging and entertaining – the investment character prevails. This means that the economic resources for education must be created today, whereas the returns can only be expected in the longer term. Countries with a high development level are prepared to invest a great deal in education. Youths in OECD countries spend between twelve and twenty years in regular education, without the need to provide any substantial contribution to production during that period, the government spending 4 to 7 per cent of GDP on maintaining an extensive and highly accessible system of educational facilities (OECD, 1992, p. 41). All these sacrifices are made on the basis of the fundamental conviction that they are worth being made, in spite of the fact that the larger part of the returns of these sacrifices will only be achieved in the far future, spread out across many decades.

The fact that decisions with regard to education, both at the level of individuals and of society, mainly have the nature of investments, does not mean that they are the result of simple return-on-investment calculations, as was stated in neo-classical investment theories. In particular the future returns of education prove very difficult to measure. These measuring problems already manifest themselves when it comes to the traditional economic returns, such as productivity and wages. With regard to returns in terms of culture and society, such as ‘transfer of norms and values’, ‘utilisation of talents’ and ‘equal opportunities’, however, it is even more difficult to estimate the future returns. It has proved difficult enough to determine the relationship between education and wages or productivity, or the social and cultural returns of education, for the past. Even if we had found a relationship between the various possible returns and the investments in education made in the past, then the question would be justified to what extent such relationships can be expected to be valid in the future. After all, we may safely
assume that society will change in such a way during the next few decades that the returns of certain types of education and the contents of this education will change too. Hence we cannot simply apply the returns on education found in the past to the period that lies ahead of us.

At a time when government expenses are clearly weighed against the ensuing tax burden and additional government expenses are only possible if they are presented with a means of funding, there seems to be a danger of the social debate on investments in education being dominated by the expenses to be made and who should pay the bill. The basic notion that such investments also yield future returns, then runs the risk of being pushed into the background. To be able to adequately weigh such investment decisions, it seems crucial to have insight in the returns of educational investments. Such information could support policy-making when it comes to taking decisions about the size of educational investments, but also with regard to the direction in which these means can best be utilised and the best way to implement such education.

Government, however, is not the only party interested in adequate information to support investments in education. Employers, educational institutions and employment organisations also invest in education. Here too, an effective deployment of resources requires adequate information regarding the expected returns. Lastly, those who take part in education are also important investors in education. This applies both to pupils and students in initial education, and to those who continue their training during their working lives. Even if these consumers of education do not pay (part of) the direct costs of education, they nevertheless make considerable investments in the form of time – and hence loss of income – and energy. Also, the returns of education will be felt in particular by this category. For many different parties involved in education, the existence of adequate information concerning the returns of education – both at the level of the individual and at the level of society – seems of great importance.

To enhance rational decision-making in education, we shall have to take a route towards a transparent labour market for educational decisions, as indicated by the title of the present book. The aim of this book is to provide a scientific contribution to the process of making the labour market more transparent. It has an economic perspective. This means, firstly, that the returns on investments in education largely concern the returns of an economic nature, such as the chances of finding a job, career opportunities, the wages received, and mobility in the labour market, given the nature of the education concerned. This does not mean, however, that the above-mentioned social and cultural returns are considered unimportant. After all, the returns of education consist of both economic and social/cultural elements. This book does not deal with the quantification of such social and cultural returns, although they play an implicit role in the educational selection process discussed. The second implication of this economic perspective is that all contributions consider investments in education – whether aimed at
increasing productivity or cultural development – against the background of a framework in which the costs – in terms of required funds, time, et cetera – are weighed against the benefits.

This publication deals with three different aspects. To obtain an overview of the returns of education, we must first gain insight in the prospects of various educational programmes. In practice, individuals with a particular educational background appear to a certain extent to be employable in a range of jobs. Hence, investments in education do not fix future possibilities entirely by excluding others. The existence of such flexibility determines in a way the meaning of education as an investment. To gain adequate insight in the effects of investments in education, it is not only important to know which programmes yield high returns, but also why a particular curriculum leads to such returns.

Although the main objective of this book is to collect a number of views regarding the way in which the labour market can be made transparent, all chapters contain empirical data to support the train of thoughts. All empirical data relate to the Netherlands, which optimises the mutual coherence. The Appendix of this book gives a description of the Dutch education system.

**Prospects**

In the past, two approaches were developed to indicate the effects of investments in education on the labour market. The first approach concerns the rate of return (see e.g. Psacharopoulos, 1981). This is done by comparing for a graduate from a particular course the range of future benefits on education, in terms of additional wages to be earned, with the investments that must be made to complete the course, in terms of direct costs of education and loss of income. The outcome of this comparison is often expressed in an internal rate of return, i.e. the discount rate which makes the range of possible future benefits equal to the costs of the investment in education. The higher this rate of return is above the market interest rate, the more profitable the investment in the course concerned is – if we consider the issue purely from the point of view of financial considerations.

The second approach that was developed, concerns the manpower requirement approach (see e.g. Ahamad and Blaug, 1973; Heijke, 1994). This first deduces from the expected growth in the different economic sectors and different occupations the number of graduates of each course that will be necessary in the future in order to fill the existing vacancies. This is set off against the expected number of workers with the proper educational background already present in the labour market. From this, it is deduced how many additional young people will have to be trained, or change the study of their choice, in order to eliminate the shortages and surpluses.
The two approaches appear to be completely different from one another, and cannot be reconciled. Blaug (1969) stressed that calculations of the returns of education assume a labour market in which the market mechanism, with free wage formation, operates, whereas the manpower requirement approach in his views supposes that markets are inflexible and different categories of skilled workers cannot substitute one another. To be able to assess the value of both views, three different aspects are important. Firstly, it is important to determine which (implicit) assumptions are made regarding the way in which the labour market functions. Empirical data on the labour market can only be used properly from an adequate theoretical framework of the labour market. Secondly, one may ask how the information provided can be utilised to support investment decisions by those involved. Thirdly, it is important to determine to what extent these data can be used to anticipate future developments. An essential difference between the two approaches is that the rate-of-return approach expresses the labour market prospects of educational courses in the level of wages, whereas the manpower requirement approach presents the prospects in terms of the amount of work demanded and supplied. The economic mechanisms that determine the wages and the amount of labour, however, could nevertheless be interconnected. For example, the effects of the price mechanism in the labour market will simultaneously influence both the wages and the amounts demanded and supplied. This can be illustrated as follows. Assume the following labour market model for a particular course:

\[ S = c + aW \] (1)
\[ D = d - bW \] (2)

where:  
\[ S = \text{supply} \]
\[ D = \text{demand} \]
\[ W = \text{wages} \]

When this market in balanced, and hence \( S = D \), then it follows that:

\[ W = \frac{d-c}{a+b} \] (3)

and:

\[ S = D = \frac{cb+da}{a+b} \] (4)

Exogenous shifts of supply and demand – i.e. shifts of the parameters \( a, b, c \) or \( d \) – lead to both a change of \( W \) and a change of \( S \) and \( D \). From the point of view of investments, however, it is interesting in particular to know the wage level. This
investing in Education

5

The excess supply \((S-D)\) gives an indication of the rate of employment that can be expected for the course concerned. As the wages are fixed, the discrepancy between supply and demand will change with shifts of the parameters \(a, b, c\) and \(d\). In this situation, it would therefore be the unemployment indicator that provides the most relevant information, rather than the fixed (i.e. known) wages.

Borghans and Heijke (1996) and Borghans and Willems (1996) show, however, that the discrepancy between supply and demand, as calculated in a manpower requirement approach, is also relevant in a situation of free wage formation. Let us assume the hypothetical situation that in a situation of free wage formation, wages in the future would no longer change, and remain the same as the present wages \((\hat{W})\). This is shown in Figure 1 for the course concerned. If shifts of supply and demand are expected in the years to come, the demand will start to deviate from the supply at this wage rate. A discrepancy between supply and demand emerges. As:

\[
\hat{W} = \frac{(S-D) + (d-c)}{a+b}
\]  

we may conclude that:

\[
W - \hat{W} = \frac{D-S}{a+b}
\]

This means that there is a direct relationship between the discrepancy between supply and demand resulting from the absence of wage adjustments \((D-S)\), and the wage adjustments that would be required in order to create an equilibrium between supply and demand \((W - \hat{W})\). The hypothetical discrepancy between supply and demand is therefore an indicator of the tension in the labour market for the course concerned. In the case of free wage formation, this tension manifests itself in a wage change, whereas such tension would also manifest itself in
unemployment and unfilled vacancies if the adjustment processes in the market were non-existent or only partially effective.

![Diagram](image)

**Figure 1** Relationship between wage changes and the discrepancy between supply and demand from the manpower requirement approach

The concept of a market in which wages constitute the entire allocation mechanism, is a highly simplifying one. In practice, the employment relationship between employers and employees has more aspects. A shift of the relationship between supply and demand may also affect the distribution of power between employers and employees, and hence affect the nature of the work that can be found by individuals with a particular educational background, the nature of their contracts (permanent of temporary), et cetera. This means that the discrepancy between supply and demand can be regarded as an indicator of the labour market position of the group concerned, without making explicit how this labour market position will in fact manifest itself.

The most important difference between the rate-of-return approach and the manpower requirement approach therefore does not concern the theoretical assumptions that constitute the basis of the way in which the labour market functions. The two aspects, in which the rate-of-return approach differs from the manpower requirement approach, to be discussed now are the information that these two methods provide with regard to the investment decision and the extent to which the approach can be used to forecast future market developments.
For the investors, it is important to obtain insight in the benefits of investments in education. By relating these benefits to the costs and personal preferences, education investment decisions can in principle be taken. One of the strengths of the rate-of-return approach is that it shows a crucial element of the returns – the wages across the entire professional career. In case the allocation mechanism fails, or other elements than wages also play a role, such aspects should be made visible too. In addition to the monetary rate of return, we should also analyse the expected duration of unemployment, the degree of certainty of finding a job, et cetera. The manpower requirement approach leads to an indicator that only indirectly provides the information necessary to take an investment decision. It is not the tension indicator itself, but the expected effects reflected by this indicator, which are important. An advantage of this is that the indicator, in principle, incorporates all possible adjustment processes and hence renders superfluous the need to make explicit all the different aspects relevant for the labour market. A weak point, however, is the very fact that these aspects cannot be specified, and also that the indicator only shows shifts of the labour market position. Naturally, the absolute level of returns is also relevant to be able to take the right investment decision.

The third important aspect to be discussed if we wish to make the labour market more transparent for educational investment decisions, concerns the degree to which the method concerned is capable of forecasting the future returns in the labour market. In addition to trend-related shifts of the labour market position of a particular course, sudden shifts of this labour market position are caused in particular by shifts of supply and demand. The wages – or the rate of return – constitute the result of developments in supply and demand. Wage shifts cannot therefore be attributed directly to shifts of either supply or demand. As a result, it is difficult for the rate-of-return approach to arrive at forecasts of future developments by means of extrapolation, even if shifts of the rate of return are analysed. As the manpower requirement approach is based on such developments of supply and demand, this method is much more suitable to forecast future developments. To this should be added that, if the labour market position is determined not only by wages, but also by other aspects such as unemployment, underutilisation, having a permanent contract, et cetera, the rate-of-return approach should explicitly chart all these aspects. The assumptions to be made regarding the way in which the labour market functions, will therefore affect the rate-of-return approach to a greater extent than the manpower requirement approach. The fact that the manpower requirement approach forecasts the labour market tension as such, makes this method less sensitive to the exact nature of these labour market mechanisms and renders the character of the forecasts more robust.
Table 1
A comparison between the rate-of-return approach and the manpower requirement approach regarding the usefulness of these analyses to support educational investment decisions

<table>
<thead>
<tr>
<th></th>
<th>rate-of-return</th>
<th>manpower requirement</th>
</tr>
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<tbody>
<tr>
<td>assumptions regarding the way in which the labour market functions</td>
<td>no specific assumption required forecasts, however, require adequate suppositions of the mechanisms</td>
<td>no specific assumption required approach is also very robust with respect to the actual mechanisms, because the tension indicator is based on a hypothetical development without adjustments</td>
</tr>
<tr>
<td>informative power for investment decision</td>
<td>direct insight in the core variable in the investment decision in a market in which not only wages are important, however, all other aspects must be made visible</td>
<td>only an indirect tension indicator, which indicates labour market shifts without showing the exact nature; also, this tension indicator is only a relative one, which does not present a picture of the level of the 'returns' of the educational investment</td>
</tr>
<tr>
<td>forecasting capabilities</td>
<td>very difficult to use for forecasts</td>
<td>eminently suitable for forecasts</td>
</tr>
</tbody>
</table>

Although the two variables, wages and labour market tension, are interrelated, it proves very difficult in practice to integrate the wage-based rate-of-return approach and the employment-based manpower requirement approach. The comparison between the two approaches, presented in summary in Table 1, shows that both give only a restricted picture of the returns to be expected for investment decisions. As long as integration remains impossible and the wage rates and job opportunities each have their own informative values for investors in education, it remains useful to apply both methods simultaneously. In highly simplified terms, we could say that the rate-of-return approach provides information on the wages in the labour market as they are or were in the recent past: \( \bar{W} \). In itself, this is important information for investors, but in fact one should know the future wages (\( W \)) rather than the present ones. The manpower requirement approach provides the tension indicator \( S-D \). The latter contains no information on the absolute level
of wages, but does provide the relationship between $\tilde{W}$ and $W$, as is shown in equation (8). Combining the two methods should therefore lead to the ideal set of data for educational investment decisions. However, this requires an explicit specification of equation (8). It must be determined explicitly how discrepancies between supply and demand affect wage levels in all different aspects. Borghans and Wieling (1995) have explored this relationship, but there is as yet insufficient insight in such mechanisms to be able to fully integrate the existing approaches.

**Flexibility**

So far, this discussion of the way in which the labour market functions has not dealt explicitly with the consequences of the simultaneous existence of the various educational submarkets. The idea has long been abandoned that an education provides preparation that can only be used within a specific occupational field. It is true that in practice vocational courses often focus on a specific occupational domain, but this concerns primarily the subject-specific knowledge and skills. During the course, students also acquire general skills, which are usually more widely applicable, in particular in occupational domains in which subject-specialisation is less important. In addition, certain subject fields may be so closely related that the exact nature of the subspecialisation is not very relevant for proper performance. See, for example, the occupational domain of information engineers, which recruits candidates from specific information science courses as well as from completely different subject areas with a considerable information science component. In general, courses have comparative advantages for certain occupational domains, but they may also offer acceptable returns outside these domains. This adaptive capability can be enhanced if employers are prepared to make the necessary adjustment costs in the form of on-the-job or off-the-job training. Some courses offer distinct advantages in this area, because they generate powerful learning and adaptation capabilities in students.

School-leavers from different courses are therefore interchangeable to a certain extent when it comes to filling vacancies in a certain occupational domain. In the labour market model for an educational submarket outlined above, account should be taken of such possibilities of substitution between courses. This creates more or less strong interdependencies between submarkets. If the wage level in a particular submarket decreases in relation to other submarkets, the demand for labour offering the knowledge and skills required in this submarket will increase as a result of the cost-savings that can be achieved if more of this type of labour can be productively employed. Because of the existence of the possibility of substitution by other courses, the demand will also partly shift from the course which was originally regarded as the most suitable one to related courses, the productive disadvantages of which are now regarded as less of a problem by
employers. If the range of courses from which employees can be recruited is wide, the demand for labour will increase more rapidly in the case of wage decreases than would be the case if employers had no alternatives. Also in the case of wage increases, adjustment will take place more rapidly, albeit in the opposite direction. The existence of relationships between courses therefore increases the wage flexibility of demand, i.e. parameter $b$ in the labour market model.

The relative wage decrease also affects the supply side. The lower wage level renders the submarket concerned less attractive for both suppliers of labour who have the required educational qualifications, but who now see the wages in submarkets in which they would be less productive increase in relative terms, and for those who have related qualifications and are more productive elsewhere and see their wages increase in relative terms. The existence of such alternative job opportunities will therefore cause the supply of labour to decrease more rapidly in case of wage decreases. Wage flexibility of supply, i.e. parameter $a$ in the labour market model, will also be greater.

From equation (7), one can easily deduce that if the values of $b$ and $a$ are greater, any discrepancy between supply and demand will have less effect on wage shifts. In the case of strong relationships with other courses, the equilibrium in a submarket will therefore be restored relatively easily, although this may involve majors shifts of workers between submarkets. Hence it is not surprising that Klaassen and Heijke (1975) have developed a method to determine this relationship between courses by means of an analysis of mobility behaviour. Another way of determining this relationship was developed several years ago by Borghans (1992), who used a more statistic approach by investigating to what extent the occupational domain of the different courses overlap. A third method was recently developed by van Eijs and Heijke (1996), who deduce the relationship between courses from the wage function, on the basis of the differences the latter reflect of the efforts made for additional training between the various combinations of occupation and education.

As stated above, if parameters $a$ and $b$ are large, and hence the flexibility of the deployment of human capital is great, any discrepancy between supply and demand will create a smaller shift of wages. Future wages will then deviate changes less from the present levels. A flexible labour market therefore decreases the need for adequate forecasts of the shifts of the labour market. Instead of manpower requirement forecasts, a strategy aimed at a wider employability of individuals with a particular educational background may decrease many of the investment risks. If such a strategy required adaptation of the curriculum of a particular course, this would have certain implications requiring further investigation. This will be discussed below.
Curriculum

The parameters of the supply and demand curve affect the match between education and the labour market, and hence the returns of education. Changes of the supply and demand parameters can be achieved by shifting the emphasis in education itself. This relationship between curriculum and the way in which the labour market functions has far-reaching implications for the way investment decisions in education are regarded. Traditionally, decisions on investments in education are represented as choosing between different educational courses. This means that students choose whether to take a course in electronic engineering or in mechanical engineering. Government must also take such decisions, for example to provide more funds for certain courses in order to increase their capacity. If the issue is presented in this way, one assumes that each occupation has its own course and that the objectives set by this course are clear. The economic problem is then to take the best possible choice between the different courses, while, given this choice, the educational problem consists of achieving the learning objectives as efficiently as possible.

If we assume, however, that the labour market position is not merely determined on the one hand by supply and demand in a particular submarket and on the other hand by the degree to which one has the required skills for the occupation concerned, but if we accept that due to uncertainties in the labour market, the existence of flexibility and transition skills also plays a role, then we create an interrelationship between the content of the course and considerations regarding the labour market prospects. Optimal curriculum development cannot then be regarded as being unrelated to the labour market characteristics of the course concerned.

Considerations regarding the width of the occupational domain for a course are examples. The need to provide students with a wide education, in order to render them less dependent on a specific submarket of the labour market will vary from one subject field to another. The labour market for both technical and commercial occupations is quite sensitive to economic fluctuations. This means that the uncertainty relating to investments in education in these fields is fairly great. Areas such as theology and jobs in the civil service or the military are hardly subject to economic fluctuations. Hence the risks of specialising in these areas are small. One could therefore consider to make the technical and commercial courses mentioned above wider in order to limit the risks in the labour market. To be able to take investment decisions regarding courses on the basis of such labour market information, however, requires insight in the educational possibilities. Figure 2 provides an imaginary example. In this figure, the horizontal axis lists the number of occupations for which the course provides training. This in fact constitutes the width of the course. The vertical axis indicates the productivity reached within.
these occupations. As wider courses must deal with more topics, the depth of the course (at an equal educational effort) will decrease, causing productivity to drop.

If the different occupations for which one can be trained are completely unrelated to one another from an educational point of view, then training for two different subject fields would require double the amount of time. Inversely, if the effort remained the same, productivity would be halved. In practice, however, such extreme situations will not exist. In many cases, it will be possible to train for two or more subject fields which are closely related. Without losing too much depth, training can then be given for a wider range of occupations because the required contents of the course to some extent overlaps with others, and subjects can be learnt more quickly if others have already been mastered. This is indicated by curve $O_c$. For certain subject fields, however, it will be difficult to find a suitable combination. The relationship between width and productivity in this case is represented in curve $O_c$.

In the second case, productivity declines rapidly if the curriculum is made wider. A marginal widening of the curriculum in such courses therefore involves greater expenses than in a course in which relevant aspects of other subject fields or occupations can be integrated relatively easily. The costs of widening by one unit (access to one more occupation) are given in Figure 3 for both the course in which combinations of subjects are easy to achieve ($O_c$) and for courses in which integration is more difficult ($O_f^i$).
Investing in Education

Figure 3 Marginal returns and costs in relation to the size of the occupational domain

Allowing a course to provide access to more than one subject field, however, also decreases the employment risks in the labour market. Students who take a wide course, postpone their labour market choices to some extent. They need not weigh the possibilities offered by the labour market for the various jobs until after they have completed their courses. Such students can choose between the alternatives left when they actually enter the labour market. If they had taken a specialist education, the choices would have been made at the start of the course, with the ensuing uncertainty regarding the developments in the specific submarket. A wide education therefore has an option value which is dependent on the degree to which the specific market development can be accommodated (Dothan and Williams, 1981). This return is also represented in the figure. In a greatly fluctuating market, this option value will be high (A1), whereas a predictable labour market has a low option value (A4). The wider the occupational domain of a course, the less relevant any further widening of this domain will be as an increasingly greater part of the risks will be covered. Both curves are therefore downward.

Figure 3 shows that the combination of curriculum possibilities (O1 versus O2) and the degree of labour market security (A1 versus A4) is decisive for the optimisation of the contents of education. Table 2 summarises the results. For a job as a theologian, a highly specialised education is obvious. The course is difficult to expand into other subject fields, but the labour market position provides no need for such an extension, because the risks are limited as a result of the small sensitivity to economic fluctuations of the jobs. Commercial economics,
on the other hand, should focus on a wide occupational domain. From the point of view of education, this is very well possible, whereas the labour market advantages are great. For jobs in the civil service, an average width of the educational course seems obvious. Technically, widening is very well possible, but the returns in terms of decreased risks are small. In such a situation, one may expect high returns of the investment in education. On the basis of Figure 3, we may expect courses training for technical occupations to have an average width of the occupational domain. The cause is the reverse here. The need for widening is great from a labour market point of view, but in terms of education, the possibilities are limited. As a result, an investment in a technical education and the ensuing risks, and the difficulty of compensating for this by widening the curriculum, is expensive. The returns of technical education will then be lower.

### Table 2
#### Ideal structure of the curriculum balancing productivity in case of widening and labour market risk

<table>
<thead>
<tr>
<th></th>
<th>Predictable Market</th>
<th>Unpredictable Market</th>
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<tbody>
<tr>
<td>Curriculum easy to widen</td>
<td>civil servant&lt;br&gt;average occupational&lt;br&gt;domain, high returns</td>
<td>commercial staff&lt;br&gt;wide occupational domain</td>
</tr>
<tr>
<td>Curriculum difficult to widen</td>
<td>theologian&lt;br&gt;narrow occupational&lt;br&gt;domain</td>
<td>engineer&lt;br&gt;average occupational&lt;br&gt;domain&lt;br&gt;low returns</td>
</tr>
</tbody>
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This example shows that in addition to insight in the mechanisms of the labour market, we must also have insight in the way in which the structure of the curriculum affects the position in the labour market if we want to arrive at an adequate decision regarding educational investments.

### Plan of the book

In the discussion above on the way in which the labour market functions in relation to education, three aspects were dealt with. The first aspect concerned the labour market prospects of courses. It was indicated that these can be expressed in terms of wages or returns, or in the degree of difficulty of finding employment. It
Investing in Education

appeared useful to apply the two points of view side by side. The second aspect discussed concerned the possibilities of substitution between courses. This focused on the shifts in the relationships in which courses are used for the jobs within a particular occupational domain if the degrees of shortages between the courses change. The degree of relationship between the courses concerned played a major role here. The third aspect discussed was the explanation of the possibilities of substitution between courses on the basis of the characteristics of the underlying curriculums. We outlined the possible implications of a general versus a job-specific curriculum for the accessibility of certain occupational domains. These three aspects of the relationship between education and the labour market have been taken as the starting point for the structure of this publication. The three Parts are therefore called Prospects, Flexibility and Curriculum respectively. Each of these Parts contains three contributions, making a total of nine.

This introductory chapter and the contributions divided into three Parts are preceded by an elaborate foreword by Albeda, who placed the theme of this book within the framework of his views on the changes that the education system should undergo in order to fulfil its future role in society in the best possible way. Albeda expects that far-reaching, increasingly rapid changes in technology and organisation of the labour process will make it necessary for young people to prepare for life of permanent learning. Rather than merely training for a specific occupation, education will have to focus on creating the possibilities of acquiring general skills and further development. Education should do no more than prepare for the real school which is life itself. In such a changing and increasingly complex interrelationship between education and the labour market, adequate information that may help students take their investment decisions, will be of great importance.

The first contribution in the Part Prospects is by de Grip, Borghans and Smits. They present an explorative study for the medium-term developments in the occupational levels and occupational domains of the higher educated. Their approach is in line with the manpower requirement approach. Their contribution, however, focuses on the adjustment processes in the labour market that result from the discrepancies between supply and demand. Thus, they show how the manpower requirement approach can be used to illustrate such market mechanisms. The second contribution in this Part is by de Koning, who discusses the labour market prospects of courses in terms of returns. This concerns a rate-of return approach. He pays attention not only to the educational level attained but also to the route taken through the educational system. His analyses show that the returns of education may vary greatly from one type of education to the next, and that patterns may emerge that would not at first have been expected. General education, for example, appears to provide better returns than intermediate vocational education, and the returns of detours in education are considerable.
The third contribution is by Webbink, who investigated the role of labour market forecasts for study choices made by students in higher education. If labour market prospects provide important information to support decisions regarding the choice of studies, then it can be expected that such decisions are influenced by this information. Webbink has found, however, that this relationship is at least not a direct one. It seems therefore that the available labour market information is hardly used by young people choosing their studies.

In the Part *Flexibility* the first contribution is by Hartog and Jonker. They have investigated the rates of return of education if the level of education does not match the level of the job accepted and hence there is undereducation of overeducation. They have also investigated the developments of the return of education in *over- and underinvestment* over time. Their contribution therefore discusses the consequences of a certain (mis)allocation of workers across occupational levels. In accordance with earlier research in this field, they also found that a mismatch has a negative effect on wages, but that the returns remain positive. Hence the loss of productivity resulting from a different allocation appears to develop gradually, which means that in the case of shifts of supply and demand, the available human capital can still be utilised with acceptable productivity. In the following contribution, by Borghans and Heijke, the existing allocation of courses across occupations is analysed, as well as the resulting relationships between courses. The authors show how shifts of demand affect the position of different types of education. In general, there seems to have been a concentration of occupational domains, both between the education levels and the education types. The demand of the labour market is apparently becoming less focused on a certain educational background. The third contribution in this Part is by van Zon, Muysken and Meijers. They have developed a labour market model in which certain educational categories are distinguished and which simultaneously describes both wage developments and supply and demand. This model therefore integrates elements of the manpower requirement approach and the rate-of-return approach. The authors assume an asymmetric substitutability between higher and lower educated. The higher educated may do the work of the lower educated, but not vice versa. They have investigated in particular how the bumping-down process works, in which the higher educated force the lower educated from the labour market and on the other hand, an increase of the number of jobs available for the higher educated may serve as a chimney for the position of the lower educated.

The Part *Curriculum* starts with a contribution by Nijhof, showing which elements of the curriculum constitute in particular vocational education and what the consequences may be of each of these elements of the curriculum for the way in which graduates perform in the labour market in terms of job opportunities and careers. Nijhof has developed a research model for this, which he tries to validate on the basis of a number of empirical studies. Although these studies show the
importance of subject-specific skills for career development, they provide insufficient evidence to create a link between the various characteristics of the curriculum. The subsequent contribution by Glebbeek and Waslander is focused more on the labour market. After a discussion of the aspects of the curriculum that may be of importance for labour market performance, they present an empirical study which investigates whether the different university courses also lead to clearly recognisable positions in the labour market. Their research results are then set off against those of a number of other studies. On the basis of this, they qualify the importance of the curriculum for the labour market position. The educational level appears to dominate the degree of labour market success. In the contribution by Heijke, Koeslag and van der Velden, attention is shifted to the labour market even more. They have investigated for recent graduates of higher vocational education which types of knowledge and skills of a general or occupation-specific nature are required both within and outside their education-specific occupational domains, and whether the education taken (and the knowledge and skills acquired in this way) have a specific influence on the level of wages. The results of their research show that there is a relatively large effect on wages for occupations which match the education taken both as to level and as to subject, as well as of the occupation-specific knowledge and skills acquired in it.

References

Ahamad, B., and Blaug M. (eds.) (1973), The Practice of Manpower Forecasting, Elsevier: Amsterdam.
Eijs, P. van, and Heijke, H. (1996), The Relation between the Wage, Job-related Training and the Quality of the Match between Occupation and Types of
To this should be added that if the rate-of-return approach actually wishes to present the discounted value of the entire professional career, it will only have sufficient data to make an estimate at the end of the careers of a cohort, which means that the data in principle lag behind the current developments by about forty years. To be able to also estimate the rate of return of later cohorts, suppositions must be made regarding the part of their careers which still lies ahead of them.