

Analysing labour supply in a life-style perspective

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1 Introduction

Several labour market theories have been developed to understand the supply of labour. A distinction can be made between, on the one hand, market based theories in which the price- and equilibrium mechanism is central, like the neo-classical theory or keynesian theory, and on the other hand, power based theories, like the marxist or institutional theory. Recently studies of the determinants of labour supply increasingly take into account social and cultural ‘non-economic’ factors (Van der Laan, 1996). Incorporation of these factors in economic research becomes important at both the micro- and macro-level. More and more, individual specific factors and culture are considered to be as economic as investments and productivity. For example, Kapteyn et al. (1989), Woittiez (1990), and Vendrik (1993) have introduced ‘habit formation’ and ‘dependent preferences’ as individual specific factors in neo-classical labour supply theory.

Another trend in the economic literature on labour supply is the increasing importance attached to the spatial aspect. In several studies a region is considered as more than a meeting place of employees and employers. Labour markets develop in relation to the regional arena: a meeting place of actors with different strategic behaviour (a.o. Cooke, 1983; Van der Laan, 1991; Van der Ploeg, 1994). The region contributes significantly to the size and structure of labour supply.

In the light of these trends the life-style perspective can be applied. Different economic actors are assumed to pursue different goals and to choose a specific institutional and regional framework for that. Therefore actors behave strategically different. A specific institutional and regional framework is chosen according to the actor’s goals, for instance the choice of a specific kind of household, number of working hours or place to live. Life-style can be defined as an individual’s orientation to the structure of his or her life. It is the organisational framework in which an individual wishes to live and work. Since individualisation has increased enormously, the analysis of behaviour has become more complex. Nowadays multiplicity is standard. The traditional multiplication of background variables as gender and age to explain labour supply does not result in accurate analyses anymore.

¹ The authors thank participants of the RSA Nederland dag ‘97 in Utrecht, the ESPE ‘97 congress in Essex and the ERSA97 congress in Rome

We assume that analysing labour supply on the basis of strategic behaviour (a certain life-style) is more accurate than analysing on the basis of only similarities in background variables. Individuals with corresponding strategic behaviour behave more similar than individuals with corresponding background variables.

The aim of this article is to point out the importance of individual and group specific factors in labour supply modelling and to show that the concept of life-style is more appropriate than the traditional multiplication of background characteristics. First, based on a short overview of the (inter)national literature, we analyse the importance of traditional individual and group specific determinants of labour supply. This overview is necessary because these determinants act as starting points for the analysis based on the life-style perspective. Moreover, the studies in this overview are also used for formulating some hypotheses concerning the effects of characteristics of the labour force on the size and structure of the labour supply. These hypotheses will be tested in the empirical part of this paper. Then the life-style concept is introduced. After a methodical section, the different stages of the adaption of the concept of life-style to an empirical model of labour supply are discussed. After that, some empirical results of a LISREL model concerning the relations between different careers - the pillars of life-style and life-style groups - are given. We conclude with a discussion on the possible next steps of our research after the useability of the life-style perspective for analysing labour supply.

2 Traditional labour supply research

Empirical labour market research has taken into account various individual and group specific determinants of labour supply. Table 1 gives an overview of the effects of these factors on labour supply. The total effects in this table result from the (striking) average of the effects of individual- and group specific factors as indicated by 29 studies. We did not endeavour to make an exhausting table of all labour supply studies, but tried to get an as large as possible diversity of supply determinants. Besides the effects of the individual specific factors, the effects of economic and 'other factors' are also summarised. Appendix I shows the results of each study apart.

The various studies are distinguished by the effects on the supply of the male, female and the total labour force. A '+' indicates a positive effect on the labour supply; a '-' means a negative effect. For example, a '-' for unemployment means that higher unemployment rates result in less supply. In contrast to this, more child care facilities result in more supply. Hereafter the effects of the determinants and the reasons for this given by the various studies are shortly discussed.

for their helpful comments on earlier versions of this article.

Table 1: Effect of determinants on the supply of labour²

Variables	effects on			Variables	effects on		
	Men	Total	Women		Men	Total	Women
economic factors				children 0 - 5 years			-
unemployment	-		-	children 6 - 11 years			-
wage	+		+	children above 12 years			-+
other income	-		-	number of children	+		-
employment	+		+	ethnicity 'non white'	-		-
underemployment	+		+	religion			-
social security	-		-	weak health	-		-
taxes	-		-	speak language not well	-		-
individual specific factors				habit formation			+
gender (female)		-		dependent preferences			+
age general		-		other factors			
age man	-		-	urbanisation level	+		+
age woman	-		-	service industry	-		+
education general		+		day-care facilities	+		+
education man	-		+	commuting time	+		-
education woman	+		-	unionization			-
marital status (married)	+		-	% women in pot. labour force		-	
# persons in family		-					

economic factors

The level of unemployment influences labour supply negatively. This can be explained by the 'discouraged worker effect'. Due to a high unemployment level individuals are discouraged to look for a job. This effect appears to be larger than the additional-worker effect.

The wage level has a positive effect on participation. Because of higher wages, the profits of labour market participation increase as well as the opportunity costs of non-participation. Other household income (salary of partner or interest) influences participation negatively. The pressure to participate at the labour market decreases if other income is available.

Employment and underemployment have a positive effect. In these situations the demand of labour is large, so wages possibly increase and stimulate participation. Also an encouragement effect by the additional worker effect may arise. People are stimulated to work.

² based on the following studies (see appendix I)

1. Fleisher & Rhodes (1976)	16. Gallaway, Vedder & Lawson (1991)
2. Schubert (1982)	17. Woittiez (1990)
3. Siegers (1983)	18. Krvdal (1992)
4. Veen, van der & Evers (1983)	19. Harkness (1993)
5. Veen, van der & Evers (1984)	20. Dolton & Makepeace (1993)
6. Molho (1983)	21. Zabel (1993)
7. Veen, van der (1983)	22. Henkens, Meijer & Siegers (1993)
8. Molho & Elias (1984)	23. Isserman & Rephann (1993)
9. Duggan (1984)	24. Swain & Podgursky (1994)
10. Lillydahl & Singell (1985)	25. Coulson (1994)
11. Baumann, Fisher & Schubert (1988)	26. Lehrer (1995)
12. Grossbard-Shechtman, & Neuman (1988)	27. Rosenbaum & Gilbertson (1995)
13. Nord (1989)	28. Aronsson & Brännäs (1996)
14. Stern (1989)	29. Hsuesh & Tienda (1995)
15. MacPherson & Stewart (1989)	

Social security benefits in case of unemployment or (partly) inability to work influence participation negatively. The need to earn money to fulfil the primary necessities of life declines, so unemployed and (partly) disabled persons are less likely to participate.

Taxes influence the participation negatively, for men as well as for women. Because of wage-taxes, net wages decrease which influence the willingness to work negatively.

individual factors

Table 1 shows that gender influences labour supply significantly. To be a woman has a negative effect on participation. The table also shows that the direction of the effects of other individual specific variables is not clearly negative or positive for women and men. Thus the effect of gender by itself is influenced by several other factors too. Some of these may amplify, others will counteract the negative effect.

A higher age has a negative effect on the participation for men as well as women. For women this can be explained partly by cohort-effects. The proportion women with a paid job is lower in the older birth-cohorts. Health is often mentioned as a reason. A higher age is assumed to relate to a weaker health, which influences participation negatively.

Most studies show a positive relation between participation and education. For men this can be explained by the relation with wage. Participation increases with the wage level. The substitution effect (i.e. persons work more because of the higher wage) appears to be larger than the income effect (i.e. persons work less for the same income). For women the studies show a positive relation between education and participation, but mention various reasons for this. Firstly, the higher the educational level, the higher the wage level. Secondly, work that requires a high educational level is characterised by favourable working conditions. Thirdly, the higher the educational level, the more job chances she has and fourthly, women with a higher educational level apparently seek more self-expression in their job.

The overview also shows that 'being married' influences women's labour supply negatively and that of men positively. An explanation for this is the social pressure that imposes labour market participation for men and no (or less) participation for women. Even in case of illness or disability 'being married' influences the participation of men positively. Another reason is the relation between 'being married' and 'having children'. These effects are smaller (albeit in the same direction) if men and women live together unmarried. The presence of children has a positive effect on the labour supply of men and a negative effect on women. A reason for this latter effect is particularly the shortage of day-care for children in the Netherlands. Especially young children have a negative effect on the participation of women. When the age of children is above 12 years, women's participation is influenced positively, as shown by

some studies. The total number of children relates to the number of persons in the family, which has a negative effect on the participation.

The studies show further that 'being non white' influences labour market participation negatively. The size of the effect depends also on gender and the specific ethnicity. The different studies do not give unanimous differences in effects for persons with an Afro-American ethnicity and persons with a Spanish ethnicity. There are not many studies which have analysed the relation between religion and participation. The study of Lehrer (1995) shows that a very orthodox (Christian) religion has a negative effect on the labour supply of women. A weak health or being disabled influences the labour market participation negatively for men as well as for women. Not or not speaking well the language at the shop floor influences the participation negatively.

'Habit formation' refers to the phenomenon that someone's present preferences depend on his or her own past behaviour and 'interdependent preferences' means that an individual's behaviour depends on other individuals' (past) behaviour. Woittiez shows that individuals are more likely to participate when they have participated in the past and when other people participate. The effect is positive.

other factors

Urbanisation has generally a positive effect on participation. It is usually related to a high concentration of employment in the service industry and many day-care facilities. A large share of the service industry, has a positive effect on the participation of women and a negative effect on the participation of men. A reason for this is that women work more often in services than men.

Commuting time appears to influence the participation of women negatively and that of men positively. This is explained by the preferences of women to work close to home and that families are less likely to migrate in case of job changing of the woman than for men. Union members appear to be unemployed longer, which could indicate initially unrealistic wage aspirations or employer reluctance to hire workers with a history of union affiliation. The share of female workers that belongs to the potential labour force appears to influence the participation of women and men negatively. However, there are no indications in the literature about the causality of these findings.

In summarising this overview, it is shown that economic factors, other (institutional) factors and also individual specific factors are important for explaining labour supply. Gender, education, age, marital status, and number of children are individual specific factors that are the mostly analysed in the various studies. Ethnicity, health, religion and language are studied less, but they also influence labour supply significantly.

3 Life-style

The preceding discussion is fairly traditional in the sense that labour market participation is determined by the different factors in an almost deterministic way. This kind of analysis is important and was sufficient for a long time. Until some decades ago most people followed a similar life course. Children were educated, and went working afterwards. They married as young adults and left the parental home then. Often a woman continued to work for a few years until the birth of the first child. Then she gave up her job to, at least for several years, devote completely to the household and raising children.

However, individualisation increased enormously. The pressure of society to behave uniformly decreased and the wishes of individuals to make their own choices increased as well as the possibilities to do so (de Feijter, 1991; Bootsma et al., 1993). The possibilities of the church, the state and the employer to influence the behaviour of an individual decreased. One uniform idea about the way one should behave accepted by almost everyone disappeared. Multiformity became the standard.

To structure the increased possibilities of choice and its effects on the size and structure of the labour supply, the life-style concept can be used. Life-style is considered as the orientation of an individual to structure his or her life and can be defined as the value someone attaches to the different aspects of life (Bootsma et al., 1993). The life-style still depends on the individual's character and background (micro basis) and the (institutional) environment he or she lives and works in (macro basis), but increasingly also on the way individuals choose between various alternatives to mix these micro and macro variables. Individuals with, for example, the same income level, gender, ethnicity and living in the same city behave differently because, having different life styles, they value these variables differently. It is particularly the valuation of the micro- and macro elements in relation to each other and with other life orientations, which results in different behaviour or, in other words, in different life-styles. Each life-style has a specific orientation and results in specific careers in the way of living, for instance the number of children, a specific type of house, location, and a specific commuting distance. Labour market behaviour can be derived from a specific life-style. To be sure, we do not 'condemn' the traditional analysis of the determinants of labour supply, but want to broaden this framework by stressing the possibilities individuals have to mix these according to the career one chooses in pursuing specific goals. This is in line with the broadening of economic factors as was done earlier with the specific human capital approach (Mincer, 1974; Becker, 1962) and the social capital approach (Kazamaki- Ottersten, 1998). These studies stress individual specific characteristics and the 'social' environment as factors that underlie variations in labour market behaviour. However, we want to go one step forward again. This is done by using the concept of life style in which micro-and macro-elements are valued to each other in the framework of specific life orientations.

Hereafter we discuss the roots of the life-style approach in various scientific disciplines and some methodological characteristics of the approach. Table 2 shows the disciplinary background, research object and methodological characteristics of various life-style studies. The discussion of these leads to the way the life-style approach can be adapted to the analysis of labour supply.

3.1 Disciplinary background and research object

The life-style concept has its longest history in consumer-research as part of marketing research and in sociological stratification research. After Max Weber (1922) who is seen as the founder of the life-style concept, the consumer researcher Mitchell (1983) and the sociologists Bourdieu (1984), Sobel (1983) and Ganzeboom (1988) have contributed significantly to the idea of life-style. Besides in these disciplines, life-style is used in spatial research and more recently also in economic analysis. Let us first dwell shortly on consumer research.

consumer research

Advertisers attempt to discover and influence the consumption patterns associated with different life-styles. Therefore marketeers construct life-style categories in relation to purchasing behaviour of consumers and, to a lesser extent, on psychographic information such as opinions, attitudes and personality. This research segments consumer groups in terms of differences in consumption patterns (Alpert & Gatty, 1969; Wells, 1975). Furthermore, depictions of desirable life-styles are the backbone of many promotional strategies that rely upon reference group influences in order to stimulate a specific consumers' purchase behaviour. This approach assumes that consumptive choices tell us what 'social type' a person is (Bearden & Etzel, 1982; Cocanougher & Bruce, 1971; Holman, 1981; Solomon, 1983). Another, recently developed, type of life-style research in consumer research is on how consumers' cognitive representations of meaningful social types relate to life-style data.

stratification research

As table 2 shows, also stratification research within sociology tries to discover social types (Kahl, 1953; Berting, 1969). In these studies, the symbolic correlates of social status, for instance housing and language, are determined and analysed. Different classes or status groups are formed and described on the basis of similarities in social status. Members of these classes show their membership and by this distinguish themselves from others.

Table 2: Disciplinary background, research object and methodology of the life-style concept

	<i>research object</i>	<i>distinction background / life-style expression</i>	<i>life-style dependent/ independent</i>	<i>consumptive / productive</i>	<i>dynamic/ static</i>	<i>institutional framework</i>	<i>method of classification</i>
Weber (1922)	stratification	no	dependent	consumptive / productive	static	no	theoretical description
Mitchell (1986)	consumer behaviour	no	dependent	consumptive	static	no	cluster-analysis
Bourdieu (1984)	stratification	no	dependent	consumptive / productive	static	no	correspondence analysis; cross-tables
Sobel (1983)	consumer behaviour	yes	dependent	consumptive	static	no	MIMIC-model
Ganzeboom (1988)	stratification	yes	dependent	consumptive / productive	static	no	MIMIC-model
Doom (1989)	mobility	restricted	independent	productive	static	no	cluster-analysis
Salomon & Ben-Akiva (1983)	migration / commuting	yes	independent	productive	static	no	cluster-analysis
van der Ploeg (1993, 1994)	agriculture production	yes	independent	productive	static	yes	canonical correlation analysis
Bootsma et al. (1993)	general	yes	independent	productive	static / dynamic	restricted	theoretical description
Bootsma (1995)	choice housing location	yes	independent	productive	static	no	logistic regression
Camstra (1996)	commuting	no	independent	productive	static	no	logistic regression
Versantvoort (forthcoming)	labour supply	yes	dependent	productive	dynamic	yes	LISREL; loglinear analysis

spatial research

Although the amount of spatial research using the concept of life-style is not large, it is used in the studies of Doorn (1989), Salomon & Ben-Akiva (1983) and Bootsma et al. (1993). Doorn (1989) analysed how traditional dividing lines between classes or status groups (based on stratification research in sociology), are relevant to explain differences in mobility behaviour. Although Doorn does not use life-style groups, but different 'social-demo-economic groups', his approach is similar to the earlier approach of Salomon & Ben-Akiva (1983), which analysed three areas of life-style expression: family, work and leisure. Bootsma et al. (1993) use a somewhat different definition of life-style. They define life-style as the value someone attaches to different aspects of life. They distinguish five fields: household or family, work, housing, consumption and leisure.

Related to this research is that on housing and commuting behaviour. In this field three examples were found in which the researchers use life-style to explain and forecast housing and commuting behaviour: Bootsma (1995) focussed on attitudes. He used life-style as the value orientation towards female labour force participation and distinguished a gender-role orientation and a work orientation to explain the residential location choice of couples. De Wijs-Mulkens (1995) analysed the housing expression of individuals with an upper professional position. Camstra (1996) used the work- and family orientation as the pillars of life-style which explain commuting behaviour. He found significant effects of life-style. A remarkable results of his research is that gender differences are almost absent for the most 'modern' life-style group.

economic research

Also in economics life-style has been studied. Kapteyn, Woittiez & Ten Hacken (1989), and Woittiez (1990) used the concept of life-style by pointing out the importance of preferences and habits of individuals in explaining labour supply. They included changing preferences in the neo-classical theory by introducing so called 'taste shifters'. Individuals may get used to working a certain number of hours per week (habit formation). The number of hours they prefer to work depends on the number of hours other people work (interdependency of preferences). Habit formation and preference interdependency are jointly referred to as preference formation. They evade the problem of selectivity and identification for the determination of the utility function by using the desired hours of work and the desired wages. However, this approach does not consider the interdependence with other spendings of time as for education.

Also have some economic studies incorporated the effects of family background on earnings and returns to schooling and discussed the importance of, what is called, unobservable worker attributes.

Kazamaki-Ottersten, et al, (1994) and Kazamaki-Ottersten (1998) included social capital indicators into a human capital specification and found that these significantly influence earnings, both directly and indirectly, through schooling. By extending Leibowitz (1974) their model is based on the human capital tradition, but it also brings in life style characteristics by including the concept of social capital. This is defined as the properties of relationships among one's family and friends. Behaviour in relation to the family and leisure play a role in this. It is assumed that the individual's social capital varies over an individual's life cycle. In addition, a distinction in social capital is made between relational structures characterised by family and community ties. The family ties are related to the extent in which a mother stays at home when the children were young, the occupation of father, and the father's and mother's education. Strong bonds between parents and children is conceived as a form of social capital which demands both physical presence of parents and their involvement. Community ties are measured as the involvement in relations outside the family, like visiting friends. The study showed that social capital indeed affects earnings.

An example of the application of the life-style concept in labour demand is in the work of Van der Ploeg (1993, 1994). He distinguishes production styles in farming which are either technology based or market based. Each production style structures a specific production practice and has a different output and employment level. Each farming style has a different development trend, determined by the style as such and by different institutional arrangements. Employment levels are not simple derivatives of standard general trends. New arrangements on the institutional market result in different changes for the various farming styles. The interface between localised farming styles and institutional markets determines for future developments.

3.2 Methodology

Besides a different disciplinary background, there are also theoretical and methodical-technical differences between the various applications of the life-style concept. Table 2 compares the studies also on several methodological characteristics: the distinction between life-style and background, whether life-style is a dependent or independent variable, whether consumptive or productive behaviour underlies the life-style specification, whether the concept is static or dynamic, whether an institutional framework is specified and the method of classification. By comparing different approaches a choice can be made regarding the adaptation of the life-style concept to labour supply modelling.

distinction between background and life-style expressions

When background characteristics and life-style expressions are not distinguished, all characteristics of a person are considered as background variables which determine its behaviour. When there is a distinction, background variables are considered to influence life-style. Life-style expressions result from a certain life-style choice. In the earlier studies by Weber (1922), Bourdieu (1984) and Mitchell (1986) no distinction is made between background variables and life-style expressions. All characteristics of individuals determine the life-style. However, the more recent studies of Bootsma et al. (1993) and van der Ploeg (1993, 1994) that distinction is made.

dependent / independent

In the studies of Weber (1922), Sobel (1983), Bourdieu (1984), Mitchell (1986) and Ganzeboom (1988) life-style is considered as a dependent variable. The aim of their research is to stratify groups of people. Particularly in spatial sciences, life-style is an independent factor which explains commuting and migration. A life-style underlies specific behaviour. Before behaviour can be explained, the life-style is specified.

consumptive / productive

The distinction between a consumptive or productive character of the life-style is determined by the way it is defined. Life-style based on the purchase of certain goods is considered as consumptive and life-style based on behavioural expressions is seen as productive. Not surprisingly, particularly marketing studies are consumption oriented. Since consumptive expenditures as well as behavioural characteristics and background variables contribute significantly to the life-style in the studies of Weber (1972), Bourdieu (1984) and Ganzeboom (1988), the character of life-style in these studies is both oriented at consumption and production. The other studies, mainly economic and spatial research, consider behavioural characteristics as factors that form life-style. So the life-style in these studies is characterised as productive.

static / dynamic

Life-style in the different studies can also have a static or a dynamic character. To distinguish between these, we determine whether the life-style concept is considered as an established fact or as a concept that is continuously changing. The concept is static in nearly all studies. Only the study of Bootsma et al. (1993) gives some, albeit only theoretical ideas for a dynamic concept. They suggest that a chosen life-style restricts the time and money budget available in the future. So the future life-style is restricted. Because of this feedback the model is dynamic. However, Bootsma et al. do not apply these theoretical ideas into empirical work.

institutional frame-work

Only a few life-style studies take institutions into account. Van der Ploeg (1993, 1994) is one of these. As discussed he distinguishes between a 'market' and 'technology' oriented institutional framework. Production is either market or technology based and restricted by these in different ways. Bootsma et al. (1993) assume specific organisational frameworks as institutional components.

method of classification

Finally the studies can be compared by the method of classification. Labour supply categories should be as homogeneous as possible regarding to behaviour. The different researches divide the population in groups characterised by a recognisable life-style. Two groups of statistical techniques, often applied to distinguish between different labour categories, are cluster analysis and component analysis (Michell, 1986; Doorn, 1989, Salomon & Ben-Akiva, 1983). A disadvantage of these techniques is that the assumptions that underlie life-style cannot be used or tested. The impossibility to distinguish between social background and life-style expressions is another disadvantage of these techniques. However, other techniques are able to do so. One such a technique is the MIMIC-model (multiple indicators multiple causes) applied by Sobel (1983) and Ganzeboom (1988). Mimic-analysis tries to find intermediate (latent) variables, required to give the correlates between the independent and dependent variables. The latent variables are elements of the life-style. Also canonical correlation analysis is able to make the distinction between background and life-style expressions (see van der Ploeg, 1993, 1994). This technique can be characterised as a two-side component-analysis. A disadvantage of this method is, however, the limited possibilities for rotation. So it is difficult to find a solution that can be interpreted easily.

4 The adaptation of life-style to labour supply modelling

In the preceding section we have pointed out the characteristics and properties of the life-style concept. In this section the life-style concept is adapted for analysing labour supply, which is new in labour market research. The adaptation of the life-style concept to the supply of labour requires an accurate theoretical specification of factors that underlie variations in labour supply. The concept of life-style starts from the fact that *different persons behave 'strategically' different*. Because of this, persons behave also different on the labour market. So, variations in strategic behaviour or life-style explain labour supply variations between individuals. Group-formation is based on similarities in life-style. Although aggregation is necessary for analysing total labour supply groups of suppliers should be distinguished, since disaggregation results in better model estimations (Elhorst, 1997).

Figure 1 shows the different stages of the adaption of the life-style concept to the analysis of labour supply as presented in this article. First a theoretical framework is specified in which the different factors that influence life-style are described: the general model. Then on the basis of this general model a path-diagram is specified for a labour supply model in which supply is the central dependent factor. After that we analyse a specific part of the general labour supply model: the relations between different careers. These careers form the pillars of the life-style.

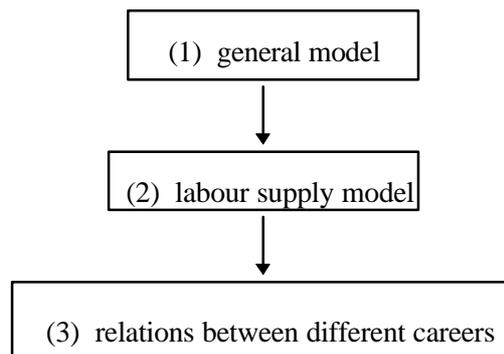


Figure 1: the adaptation of the life style concept to labour supply modelling

4.1 General model

The general model of the different factors that influence life-style are given in figure 2. Individuals have specific characteristics which they did not (completely) choose themselves, and which influence their behaviour. These are the micro and macro background characteristics. However, individuals also have characteristics which result from a specific mix of these micro- and macro variables. This behavioural choice, the life-style, result in different life-style expressions like the number of children and the kind of house. The life-style expressions result from a certain life-style. Variations in persons' behaviour depend on the micro- and macro background characteristics as well as on the manner these are mixed individually in the life-style. Micro- and macro background variables and their life-style mix result in a specific behavioural expression. So, we make a *distinction* between background characteristics and life-style expressions. The micro- and macro background variables influence the values that individual attaches to the different aspects of life and restrict the individual's life-style. Life-style depends (partly) on the variations in the background characteristics of individuals and is therefore '*dependent*'.

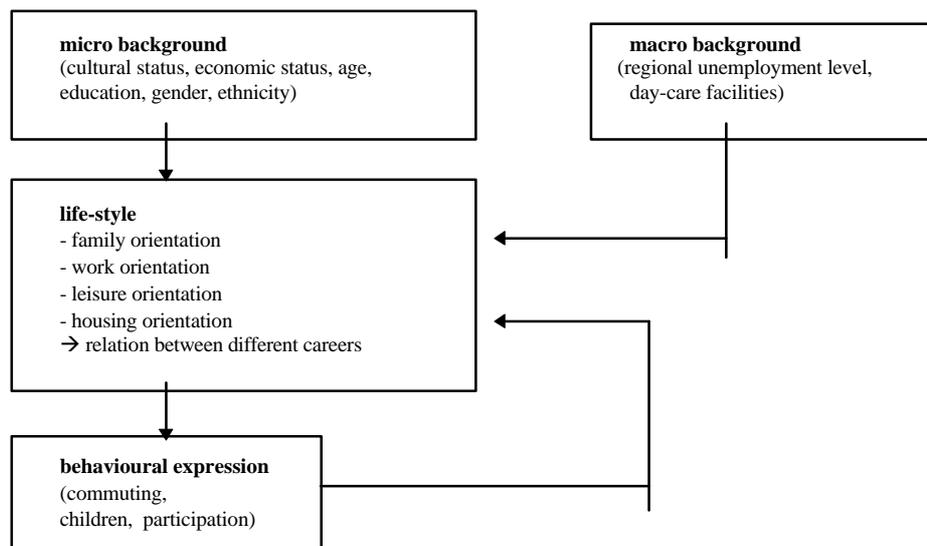


Figure 2: The general model of labour supply behaviour based on a dynamic life-style concept

As discussed, age, gender, educational level, religion, ethnicity, cultural and economic status (see table 1), are regarded as individual background variables in life-style analysis. Also in our research these variables are taken into account. Behaviour characteristics and not consumptive expenditures are assumed to characterise someone's life-style, so life-style is in our case labelled as '*productive*'. The macro environment an individual lives in restricts or offers possibilities for a certain life-style. For in-

stance more day-care facilities and a low unemployment level will stimulate a work oriented life-style. These macro background characteristics form the *institutional* elements in our model.

Besides the restrictions the individual background characteristics and the macro environment impose on the life-style, the individual can partly choose the content of the life-style by his- or herself. This choice depends on the relative value a person attaches to the different aspects of life. Each individual has an own idea and preferences about the structure of life. The life-style concept is used to differentiate between these preferences, which can change over time. Besides changing preferences also background variables vary in time, as for example individuals grow older. So life-style also varies in time. Life-style is not a life long fixed category, but a dynamic concept. Therefore the life-style changes explain variations in labour supply in time. These variations are caused by changing background variables and by the life-style at the moment of the changes. A life-style once chosen restricts the future life-style. Due to this feedback the model is *dynamic*. Since the life-style and related to this the specific organisational framework once chosen imposes restrictions on the future life-style, this organisational framework itself is again considered as an *institutional* element.

The fields of the life-style distinguished are: family, work, housing and leisure (originated from Bootsma et al. 1993). The life-style includes the relation between different careers. Working or labour orientation is specified by the number of working hours and the willingness to work. Family orientation is specified by the number of children, whether someone lives single, with a partner or with parents and the frequency of contact with family members. Housing orientation is specified by the kind and location of the house a person lives in. The leisure orientation is specified by the kind and frequencies of leisure expenditures.

A method that is able to measure (the different pillars of) life-style and which can distinguish between background characteristics and life-style expressions is the LISREL model (see Joreskog & Sorbom, 1979). In this method, life-style is considered as a latent variable specified by several manifest variables. Loglinear analysis can give probabilities of a certain life-style (like the probability to participate at the labour market for a specific number of hours) given certain background variables. So, a combination of LISREL and log-linear analysis seems suited: the modified LISREL approach.

The life-style approach has two major advantages over the approach in which only background variables determine labour supply and in which group formation is based on multiplication of these variables like age, gender and education. Comparing these approaches, two obvious differences can be observed. Firstly, in the life-style approach background variables and behavioural expressions are distinguished. Background variables are factors that restrict the possibilities of choosing a life-style. Behavioural expressions are the result of a specific life-style. Labour market behaviour is one of these expressions and is influenced by background variables as well as by behaviour on the other fields (housing, family, recreation).

Secondly, a difference between the two approaches can be observed in group formation. In the life-style approach the strategic behaviour of individuals is considered to be the basis for group formation. This strategic behaviour means a specific choice of life-style related to an We assume that analysing labour market behaviour on the basis of that strategic behaviour is more accurate than analysing only similarities in background variables. Individuals with corresponding strategic behaviour behave more similar than individuals with only corresponding background variables. However, of course some resemblances can be expected. So, individuals who have similar background variables can show a more similar strategic behaviour and life-style.

4.2 Labour supply model

How can a labour supply model be deduced from the general model? Life style is used to explain the labour orientation as shown in figure 3. Since labour orientation is one of the pillars of life-style, the life-style as defined before can not be applied directly to explain labour supply as such. Therefore a restricted concept of life-style is used which is based on family-, housing- and leisure orientation. This life-style is used to explain the labour orientation as shown in the path-diagram of figure 3. As described, the modified LISREL approach is chosen to model the life-style concept. The latent variables are placed in circles and the observed variables in rectangles. The other variables, measuring in turn the latent variables, are manifest. Also the indicators of the labour orientations, the effect indicators, are manifest. The effects of latent variables on effect indicators are given in figure by a non-interrupted arrow, the effects of latent variables on other latent variables by an interrupted arrow and the effects of manifest variables on life style by a bold non interrupted arrow.

The factor that has to be explained in the model is the labour orientation. This labour orientation is explained by the life-style, which is influenced by the micro- and macro background characteristics. As discussed, life-style is defined as the relative value someone attaches to the different aspects of life, the different careers. This attachment is expressed in behaviour on different fields of life: family, housing, leisure and labour. So the content of life-style is approximated by behavioural expressions. Life-style is also influenced by the individual background characteristics. The '*macro background*' is, as a latent factor, measured by the employment level and the possibilities of day-care for children. The latent micro factor '*economic status*' is measured by the professional position and income and the latent factor '*cultural status*' is measured by the educational orientation (individuals specialised in arts are assumed to have a different cultural status than individuals specialised in engineering or business). Analysing and estimating the path-diagram in figure 3 takes place in five empirical steps. Table 3 shows these steps.

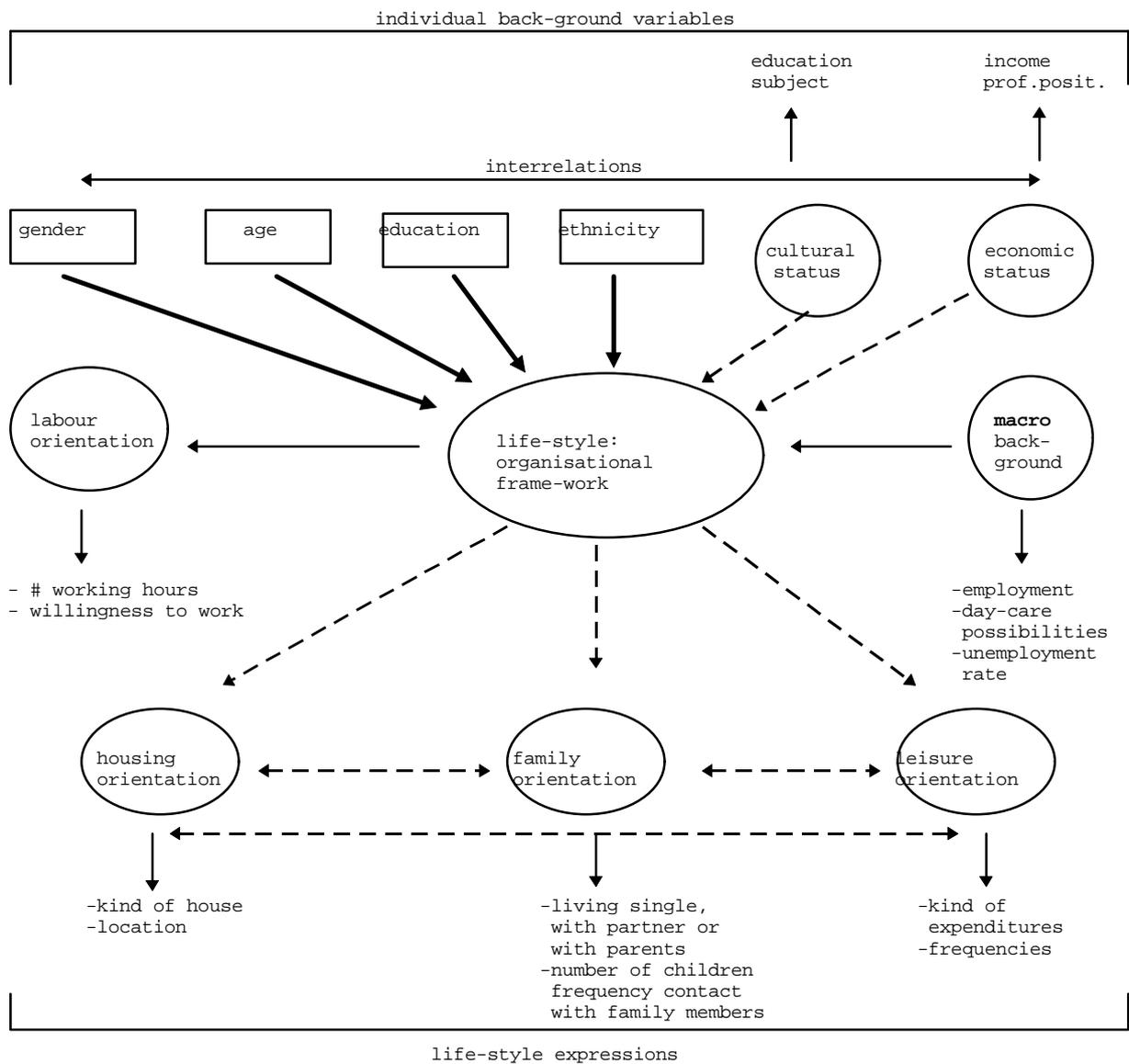


Figure 3: path-diagram labour supply model

Table 3: Five empirical steps in the development of a dynamic life style oriented labour supply model

1. a (modified) LISREL approach
2. a higher order confirmatory factor-analysis
3. measurement of the latent concepts:
 - ‘cultural status’
 - ‘economic status’
 - ‘macro-environment’
4. effects of age, education, gender and ethnicity
(path-analysis)
5. from static to dynamic modelling

In step one the relationship between family, housing, labour and leisure orientation is specified and estimated by means of the so-called modified LISREL approach. The present article reports on this *first* step. In a *second* step a higher order confirmatory factor-analysis will be applied to deal with the relationship between the various orientations. By this, the limitations of the exploratory factor model can be overcome (Joreskog, 1969)³. In the confirmatory factor model, substantively motivated constraints are imposed. These constraints determine (1) which pairs of common factors are correlated, (2) which observed variables are affected by common factors, (3) which observed variables are affected by a unique factor, and (4) which pairs of unique factors are correlated. Statistical tests are used to determine if the sample data are consistent with the imposed constraints or, in other words, whether the data confirm the substantively generated model. In this sense the model is confirmatory (see Scott Long, 1983). A *third* step deals with the measurement of the latent concepts of ‘cultural status’, ‘economic status’ and ‘macro-environment’. Following this, a *fourth* step analyses the effects of observed variables like age, education, gender and ethnicity. This is done by means of path-analysis. The *fifth* and last step deals with the transformation of static to dynamic modelling. As mentioned, the present article is limited to the first step.

³ The exploratory factor model is not able to incorporate substantively meaningful constraints and it necessary imposes substantively meaningless constraints. Furthermore the following assumptions are made: (1) all common factors are correlated, (2) all observed variables are directly affected by all common factors, (3) unique factors are uncorrelated with one factor, and (4) all ξ 's are uncorrelated with all δ 's.

4.3 Relations between different careers

This section analyses the correlation between the different life orientations: the first step in the development of a supply model. Measurement models are specified for the labour, the housing, the family and the leisure orientation. Based on the literature survey of section 2, some hypotheses are specified that will be tested using the correlations resulting from LISREL measurement models. LISREL is able to measure life-style and can distinguish between background characteristics and life-style expressions. In this method, life-style is considered as a latent variable specified by several manifest variables. In addition to this loglinear analysis can give probabilities of a certain life-style (like the probability to participate at the labour market for a specific number of hours) given certain background variables. So, a combination of LISREL and log-linear analysis seems suited: the modified LISREL approach.

Hypothetically some specific relationships between various orientations might be expected (see section 2). As far as the relationship between *family orientation and labour orientation* is concerned, many studies found a negative relationship for women who are married or live with a partner, have children and labour market participation (see table 1). An explanation for this is the social pressure or norm that imposes labour market participation for men and non (or less) participation for women. Another reason for the negative relation for women is the shortage of day-care facilities for children, particularly in the Netherlands. This result in the following hypotheses:

- a social family orientation (i.e. having children and living with a partner with frequently contact with family members) correlates negatively to a work focused labour orientation (i.e. working on the labour market or willing to work) and positively to a no-work labour orientation (i.e. not working nor willing to work);
- an individualistic family orientation (i.e. having no children and living single with less frequently contact with family members) correlates positively to a work focused labour orientation and negatively to a non-work labour orientation;

Considering the relationship between *housing and working*, most research found a positive relationship between living in an urban region and working full time. This is most strongly for women (see table 1). However, Rosenbaum & Gilbertson (1996) found a negative relationship for women and Van der Veen & Evers (1983) for men. Camstra (1994) has taken into account the urbanisation level as well as the kind of house someone lives in. For women he found positive relationships between a higher degree of urbanisation and a larger house, and working full time. We test the following hypotheses:

- a suburban housing orientation (i.e. living in a suburban region and a larger house) relates negatively to a work focused labour orientation and positively to a non-work housing orientation;

- an urban housing orientation (i.e. living in an urban region and a small house) relates positively to a work focused labour orientation and negatively to a non-work labour orientation;

Regarding the relation between *leisure and the working career* we assume in line with the neo-classical theory that someone who participates at the labour market, spends less time on leisure and also that an urban environment is attractive for leisure. This results in the following hypotheses:

- a frequent leisure orientation (i.e. spending frequently leisure time) relates positively to a non-work labour orientation and negatively to a work focused labour orientation;
- a not-frequent leisure orientation (i.e. spending rarely leisure time) relates negatively to a non-work labour orientation and positively to a work focused labour orientation;

Figure 4 summarises the hypothesised relationships.

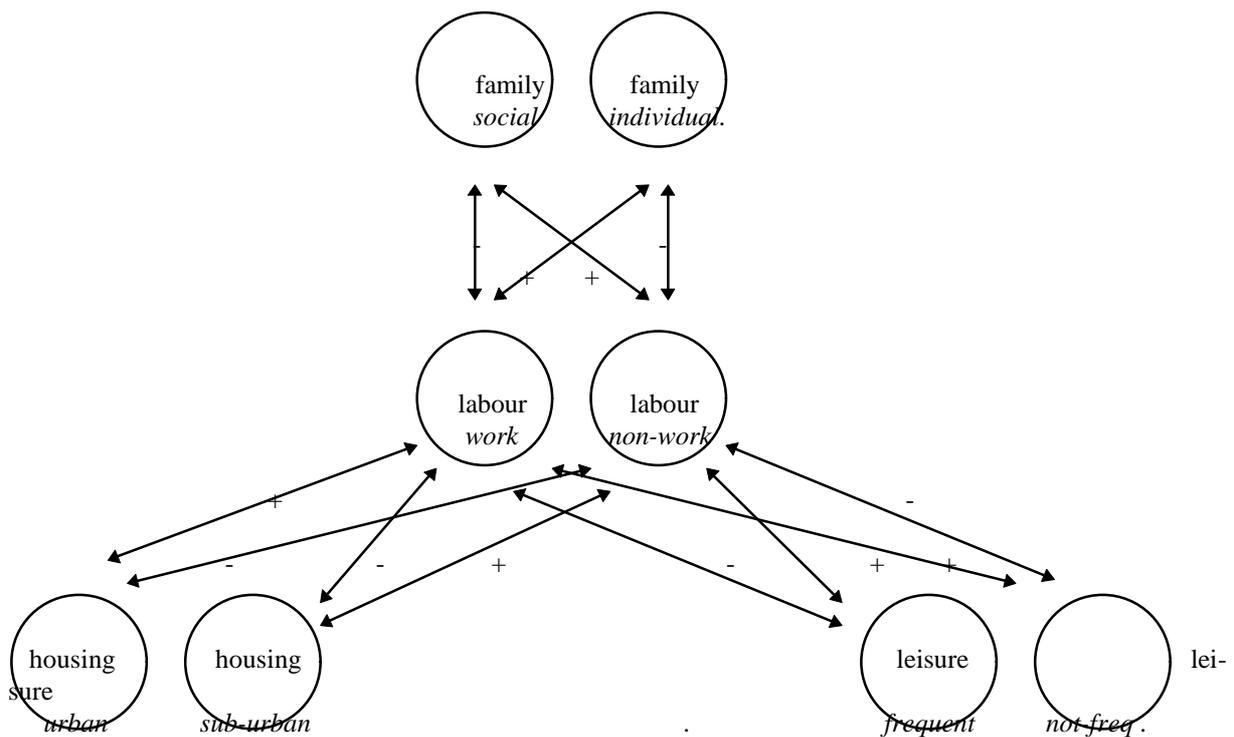


Figure 4: The hypothesised relationships between different life orientations

The following section deals with the estimation of the different measurement models and the testing of these hypotheses.

5 Measurement models

For estimating the measurement models, the DLO (Doorlopend Leefsituatie Onderzoek= continuous life situation research) 1995 data set collected by Statistics Netherlands is used (CBS, 1995). A description of the 20 variables which are used in the analysis is given in appendix II. Weighted least squares estimation is used. The correlation matrix and the asymptotic covariance matrix are analysed. The data are fit by six different latent factors: one for working, one for family, one for housing and three for leisure. Since the data regarding leisure time spending are abundant, three different latent concepts could be distinguished: recreation oriented, culture oriented, and going out oriented.

Mathematically the relationship between the observed variables and the factors is expressed as:

$$X = \Lambda \boldsymbol{\xi} + \boldsymbol{d} \quad (\text{Factor Equation}) \quad (1)$$

where X is a $(q \times 1)$ vector of observed variables; $\boldsymbol{\xi}$ is a $(s \times 1)$ vector of common factors; Λ is a $(q \times s)$ matrix of factor loadings relating the observed x 's to the latent $\boldsymbol{\xi}$'s; and \boldsymbol{d} is a $(q \times 1)$ vector of the residual or unique factors. It is assumed that the number of observed variables in X is larger than the number of common factors in $\boldsymbol{\xi}$; that is, $q > s$. In the specified model 20 observed variables are included and 6 factors, so $20 > 6$.

Both the observed and latent variables are assumed to be measured as deviations from their means. Thus, the expected value of each vector is a vector containing zeros:

$$E(X) = 0; \quad E(\boldsymbol{x}) = 0; \quad E(\boldsymbol{d}) = 0 \quad (2)$$

Since this assumption involves only a change in origin, it does not affect the covariances among the variables. The covariances among the common factors are contained in Φ , an $(s \times s)$ symmetric matrix. An individual element of Φ , say ϕ_{ij} is the covariance between the latent variables ξ_i and ξ_j . Since the factors have zero expectations, $\phi_{ij} = E(\xi_i \xi_j)$ or $\Phi = E(\boldsymbol{\xi} \boldsymbol{\xi}')$. The covariances among the residual factors are contained in the population matrix Θ , a $(q \times q)$ symmetric matrix. The $(i,j)^{\text{th}}$ element of Θ , θ_{ij} , is the covariance between unique factors δ_i and δ_j . The unique factors are assumed to have means of zero. $\theta_{ij} = E(\delta_i \delta_j)$, or in matrix notation, $\Theta = E(\boldsymbol{\delta} \boldsymbol{\delta}')$. Further it is assumed that all common factors are uncorrelated with all unique factors, $E(\xi_i \delta_j) = 0$ for all ξ_i and δ_j (in matrix notation $E(\boldsymbol{\xi} \boldsymbol{\delta}') = 0$ or $E(\boldsymbol{\delta} \boldsymbol{\xi}') = 0$). This results in the following covariance equation:

$$\Sigma = \Lambda\Phi\Lambda' + \Theta \quad (\text{Covariance Equation})$$

(3)

5.1 Specifications

For the *family* orientation the following equations are specified:

$$X1 = \lambda_{1,1} \xi_1 + \delta_1$$

$$X2 = \lambda_{2,1} \xi_1 + \delta_2$$

$$X3 = \lambda_{3,1} \xi_1 + \delta_3$$

The latent concept family orientation ξ_1 is measured by the effect-indicators: the number of children (X1), living with a partner, single or with parents (X2), and the frequency of contact with family members (X3) (see appendix II for their operationalisation).

For the *housing* orientation the following equations are specified:

$$X4 = \lambda_{4,2} \xi_2 + \delta_4$$

$$X5 = \lambda_{5,2} \xi_2 + \delta_5$$

$$X6 = \lambda_{6,2} \xi_2 + \delta_6$$

$$X12 = \lambda_{12,4} \xi_1 + \lambda_{12,2} \xi_2 + \delta_{12}$$

The latent concept housing orientation ξ_2 is measured by the manifest variables: the type of house (X4), the urbanisation grade (X5), the frequency of contact with neighbours (X6) and the frequency of repairing and constructing things at home (X12).

For the *working* orientation the following equations are specified:

$$X7 = \lambda_{7,6} \xi_6 + \delta_7$$

$$X8 = \lambda_{8,6} \xi_6 + \delta_8$$

The labour orientation ξ_3 is measured by the effect-indicators: the number of working hours (X7) and the willingness to work on the labour market (X8).

For the *recreation oriented leisure* orientation the following equations are specified:

$$X9 = \lambda_{9,4}\xi_1 + \lambda_{9,6}\xi_6 + \delta_9$$

$$X10 = \lambda_{11,4}\xi_1 + \delta_{11}$$

$$X12 = \lambda_{12,4}\xi_1 + \lambda_{12,2}\xi_2 + \delta_{12}$$

$$X18 = \lambda_{18,4}\xi_1 + \delta_{18}$$

$$X19 = \lambda_{19,4}\xi_1 + \delta_{19}$$

$$X20 = \lambda_{20,4}\xi_1 + \lambda_{20,6}\xi_6 + \delta_{20}$$

Recreation oriented leisure ξ_4 is measured by the frequency of being on holiday (X9), the frequency of sporting (X10), the frequency of repairing and constructing things at home (X12), the frequency of visiting a social evening (X18), the frequency of visiting a restaurant (X19) and the frequency of visiting a movie theatre (X20).

The *culture oriented leisure* orientation is specified by the following equations:

$$X11 = \lambda_{11,4}\xi_5 + \delta_{11}$$

$$X14 = \lambda_{14,5}\xi_5 + \delta_{14}$$

$$X16 = \lambda_{16,5}\xi_5 + \delta_{16}$$

$$X17 = \lambda_{17,5}\xi_5 + \delta_{17}$$

The culture oriented leisure ξ_5 is measured by the frequency of singing or making music (X11), the frequency of visiting a museum (X14), the frequency of visiting a concert or musical performance, and the frequency of visiting a theatrical performance (X17).

Finally, the *going-out oriented leisure* orientation is specified by the following equations:

$$X9 = \lambda_{9,4}\xi_1 + \lambda_{9,6}\xi_6 + \delta_9$$

$$X13 = \lambda_{13,6}\xi_6 + \delta_{13}$$

$$X15 = \lambda_{15,6}\xi_6 + \delta_{15}$$

$$X20 = \lambda_{20,4}\xi_1 + \lambda_{20,6}\xi_6 + \delta_{20}$$

Going-out oriented leisure ξ_6 is measured by: the frequency of being on holiday (X9), the frequency of visiting a café (X13), the frequency of visiting a disco or dance evening, and the frequency of visiting a movie theatre (X20).

The various equations show that X1, X2 and X3 only load on ξ_1 , that X4, X5 and X6 only load on ξ_2 , that X7 and X8 only load on ξ_3 that X10, X18 and X19 only load on ξ_4 , that X16, X11, X17 and X14 only load on ξ_5 , and that X15 and X13 only load on ξ_6 . Three observed variables are linked to two latent concepts. The observed variable X9 loads on ξ_4 and ξ_6 , X20 loads on ξ_4 and ξ_6 , and the observed variable X12 loads on ξ_4 and ξ_2 . The observed variables do not have direct links to all common factors. For example, while X1 loads on ξ_1 , X1 does not load on the other ξ 's. δ_i is the unique factor affecting X_i . $\lambda_{i,j}$ is the loading of the observed variables X_i on the common factor ξ_j . ϕ_{kl} corresponds to the covariance between ξ_k and ξ_l . Since $\xi_1, \xi_2, \xi_3, \xi_4, \xi_5$, and ξ_6 are not assumed to have unit variances, covariances are used. The measurement errors δ_5 and δ_6 are assumed to correlate.

The number of independent parameters in this model is 39 (23 (non fixed) λ 's, 15 ϕ 's and 1 θ). The T-rule tells us that there are 210 distinct variances and covariances in Σ [210 = 20 (20 + 1)/2]. Since 39 < 210, the model is overidentified and can be tested.

5.2 Results

Weighted Least Squares estimation of the equations as specified earlier results in the following parameter estimates. Also the t-values and percentages explained variances are given. This model has a goodness of fit index (GFI) of 1.00 and an adjusted goodness of fit index (AGFI) (corrected for degrees of freedom) of 0.99. This indicates a good fit (Joreskog & Sorbom, 1994). The root mean square error of approximation is 0.049, which is acceptable.

Considering the relatively high R^2 and factor loading between X2 and the latent factor 'family orientation', family orientation is highly loaded by whether someone lives single, with a partner or parents. Taking into account the value ranges of the different variables (see appendix II), these equations for family orientation show that high values for ξ_1 relate to living with a partner, having children and often contact with family members. This family orientation is characterised as 'social'. Low values of ξ_1 relate to having no children, living single and nearly never contact with family members. This family orientation is characterised as 'individualistic'.

Higher values of ξ_2 (housing orientation) relate to living in a larger house, an urbanised environment and little or no contacts with neighbours. We describe this combination as urban, although this 'urban' housing style is not similar to that specified in the hypotheses in section 4.3. There an urban

housing orientation comprised living in an urban region but in a *small* house. Lower values of ξ_2 relate to living in a smaller house, a sub-urban or rural environment and often contact with neighbours. This housing orientation is characterised as ‘*sub-urban*’.

Further, the equations show that higher values of ξ_3 (working orientation) relate to working 12 or more hours a week or more and willing to work (*work focused working orientation*) and that lower values of ξ_3 relate to working less than 12 hours a week or not-willing to work (*non work working orientation*).

High values of recreation oriented leisure orientation ξ_4 relates to high frequencies of the different recreation oriented leisure activities. This recreation oriented leisure orientation is characterised as ‘*frequent recreation*’. Low values relate to low frequencies of the different recreation oriented leisure spendings. This orientation is characterised as ‘*no-frequent recreation*’. The equations also show that high values of ξ_5 (culture oriented leisure style) relate to high frequencies of culture oriented leisure spendings (*frequent culture*) and that low values relate to low frequencies of culture oriented leisure spendings (*no-frequent culture*). High values of ξ_6 (going out oriented leisure style) relate to high frequencies of going out oriented leisure style (*frequent going-out*) and low values relate to low frequencies (*no-frequent going out*).

Table 4: estimation results

<i>factor</i>	<i>observed variable</i>	<i>X_i</i>	<i>I_{1,i}</i>	<i>t-value</i>	<i>R²</i>
family	number of children	X1	0.71	19.59	0.51
	living single, partner, parents	X2	0.95	24.50	0.90
	frequency family contact	X3	-0.11	-2.79	0.02
housing	type of house	X4	0.59	12.67	0.34
	urbanisation grade	X5	-0.39	-10.05	0.16
	frequency of contact with neighbours	X6	0.31	7.29	0.09
	frequency of repairing things at home	X12	0.55	13.71	0.32
working	number of working hours	X7	0.98	68.48	0.91
	willingness to work	X8	0.97	64.69	0.95
recreation	frequency of being on holiday	X10	0.72	14.20	0.37
	frequency of sporting	X11	0.47	15.08	0.22
	frequency of repairing things at home	X13	0.26	6.83	0.32
	frequency of visiting a social evening	X18	0.48	15.32	0.23
	frequency of visiting a restaurant	X19	0.79	34.15	0.62
culture	frequency of singing, making music	X10	0.43	12.42	0.19
	frequency of visiting a museum	X14	0.78	33.53	0.61
	frequency of visiting a concert	X16	0.85	39.64	0.71
	freq. of visiting a theatrical performance	X17	0.72	27.66	0.51
going out	frequency of being on holiday	X9	-0.19	-3.19	0.37
	frequency of visiting a café	X13	0.81	29.71	0.66
	frequency of visiting a disco or dance ev.	X15	0.78	27.07	0.61
	frequency of visiting a movie theatre	X20	0.38	7.96	0.58

5.3 Testing hypotheses

By analysing the correlation matrix of the latent concepts of table 4, we can test the hypotheses specified in section 4.3 (see figure 4):

- a social family orientation correlates negatively to a work focused labour orientation and positively to a non-work labour orientation;
- an individualistic family orientation correlates positively to a work focused labour orientation and negatively to a non-work labour orientation;
- a suburban housing orientation relates negatively to a work focused labour orientation and positively to a non-work labour orientation;
- an urban housing orientation relates positively to a work focused labour orientation and negatively to a no-work labour orientation;
- a frequent leisure orientation relates positively to a non-work labour orientation and negatively to a work focused labour orientation;
- a not-frequent leisure orientation relates negatively to a non-work labour orientation and positively to having a work focused labour orientation;

Table 5: Correlations between working orientation and other orientations

	family	housing	recreation	culture	going out
R ²	-0.19	0.10	0.61	0.29	0.41
standard error	(0.04)	(0.05)	(0.03)	(0.04)	(0.04)
t-value	-4.97	1.93	19.25	7.43	9.74

Table 5 shows that the correlation between family orientation and working orientation is although small, significantly negative. This means that persons with a social family orientation are more likely to work than persons with an individualistic family orientation. So, the first two hypotheses should be rejected. This result contrasts earlier research. In relation to this, the effect of age should be investigated (young persons are more likely to have no children and more likely to live single and are less likely to work for reasons like a study and military services) as well as the effect of gender. Also the role of part-time jobs may be important for the negative relationship. If many employees combine small jobs with work within the household it can be expected that a stronger work orientation goes along with a social family orientation. There are many indications that, for the Netherlands, such a combination of

parttime - and household work exists. In 1995 more than 67% of the employed women worked parttime (Employment, 1996).

The correlation between working orientation and housing orientation is positive but not significant. Therefore we cannot reject or accept the third and fourth hypothesis. However, the sign of the correlation is in line with the expectations: an urban housing style relates positively to a work focused working orientation and negatively to a non work working orientation. Also in this case it probably would be helpful to distinguish between various categories on the urban and suburban labour market. And, again, the gender perspective may be useful. In an urban setting at least two kinds of male labour supply can be distinguished. On the one hand, there are higher educated and employed males oriented at jobs in banking, business services and education. On the other hand, older lower educated, and with quite often an ethnic background, are (unemployed or) outside the labour market. Women in an urban setting show high levels of participation. In contrast to this women in a suburban setting participate much less. Males in the suburbs have high participation rates. In other words, the labour supply in the suburbs shows the traditional pattern of males working outside the home and females taking care of the family at home. If all these various categories in the urban and suburban setting are aggregated, as in our case, low correlations between working and housing orientation may result. The aggregated approach blurs our view on specific significant relationships at a desaggregated level.

The correlation between working orientation and recreation oriented leisure orientation is strongly positive. Persons who work or are willing to work are more likely to spend time on different types of recreation. These correlations are remarkable since persons who work are supposed to have less time for leisure. The last two hypotheses should be rejected too. This correlation can be caused by the effect of income. Persons who work are more likely to have a higher income, so they can spend more time for recreation, going out and culture oriented leisure.

There are indeed indications that people who work, particularly in an urban setting, combine an intense work orientation with an intense orientation at recreation, culture and going out. Particularly the emerging of 'two cheque households' with larger consumptive possibilities but with less 'free time; has increased the time pressure. This 'hurried leisure class'; shows a higher demand for personal services like household help, baby sitting and eating out. Because they have more money but less time, part of the necessary activities are 'outsourced' in the nearly central urban service sector. Moreover, they spend more time out of doors and 'go out' more often (Terhorst & Van de Ven, 1986).

6 Conclusions

Many labour market theories developed in the past and the models based on these appear to consider especially 'economic' factors as variables that explain labour supply. Individual factors as age, gender or ethnicity are not considered. However a comparison of 29 studies with regard to labour supply, has shown that individual specific factors influence labour supply substantially.

Explaining individual behaviour becomes more complex since individualisation has increased enormously during the last decades and multiplicity has become standard. To structure behaviour and the increased possibilities of choice, the life-style concept can be used. Life-style is defined as the value an individual attaches to the different aspects of life, the different careers. It is the organisational framework in which an individual wishes to live and to work. Observing a specific life-style, specific behaviour including that on the labour market can be deduced.

This life-style approach has advantages over an approach in which traditional background variables are considered as the only labour supply determining factors and in which group formation is based on multiplication of traditional background variables. In the life-style approach a theoretical distinction is made between background variables and behavioural expressions. Labour supply is determined by individual background variables as well as behavioural expressions. In the life-style approach strategic behaviour of individuals is seen as the factor that underlies group formation. Analysing labour market behaviour based on similarities in strategic behaviour is assumed to be more precise than analyses based on similarities in only background variables.

The life-style concept is mainly applied in sociology and in consumer research in marketing, but more recently also in spatial and economic sciences. Mostly it is applied as a static concept without an institutional framework. Because we assume that the content of the organisational framework, the life-style, is dependent on institutions and (external) developments and choices made earlier, the challenge for model development is to make the concept dynamic and to incorporate institutional restrictions. The modified LISREL approach offers possibilities for that.

Analysis of the relations between the pillars of life-style: working orientation, housing orientation, family orientation and leisure orientation using LISREL measurement models shows that a work focused working orientation correlates positively with a social family orientation, an urban housing orientation and frequently spending leisure time on recreation, culture and going-out.

In the next step of our research a higher order confirmatory factor-analysis will be applied: the life-style concept will be measured by the different orientations. Following this the next step concerns the measurement of the latent concepts 'cultural status', 'economic status' and 'macro-environment'. After that the effects of the observed variables age, education, gender and ethnicity will be taken into

account; a path analysis with latent variables will be applied there. The last step concerns the transformation from a static model to a dynamic one.

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Abstract

Traditional labour supply theories stress economic variables as unemployment and wages to explain differences in labour supply behaviour. Nowadays a number of trends can be observed in the literature about labour supply theory and modelling: the integration of market-based and power based perspectives; the realization that social and cultural ‘non-economic’ factors influence economic functioning and the increasing importance to space. In this paper a concept will be presented, which contributes to the operationalization of these new perspectives in regional labour supply modelling: the life-style concept.

Life-style is the relative importance to different careers and can be considered as a latent variable. Life-style groups are formed based on similar life-course patterns. These groups have different goals and choose a specific organizational framework in line with these goals. Various back-ground characteristics of persons are assumed to determine the life-style category someone belongs to.

In this paper a review is made of the theory of the concept and its use in spatial research on the labour market. The life-style concept that will be used to model labour supply is specified and operationalized.

Appendix I : Overview of the literature of economic and individual determinants of the supply of labour

STUDIENUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
YEAR OF PUBLICATION	1976	1982	1982	1983	1983	1984	1984	1984	1984	1985	1988	1988	1989	1989	1989	1989
COUNTRY	VS	A	NL	NL	NL	UK	NL	UK	US	US	A	Isr	US	US	US	1989
SUBPOPULATIONS	M F	On Un Sc Ms	M F	F	M F	Fg	F	Fg	Mo Fo	M F	P	F	P	P	Fmi	NL
economic factors																
unemployment	- -	+ + + -	- -	-	- -	-	-	-	- -	-	-	-	-	-	-	-
wage	+	+ - - +				+		+	- -		+	+				+
other income	- -	- - - +	- -						+	-	-	-	-		-	
employment					+ +											
underemployment													+			
social security									- -				-			-
taxes																
person specific factors																
gender															-	
age general													-	-		-
age man	+ -	- - - +	+ - +							+		+				
age womam	- +	- + - +				-				+		+	+			
education general												+			-	
education man												-				+
education woman													-	+m -v	-	
marital status (married)			+ -						+ -							
# persons in family													-			
number of children		+ - - +	-	-							+				-	
children 0 - 5	-					-	-	-					-		-	
children 6 - 11						-							-		-	
children 12 -													-		-	
ethnicity 'non white'	- -									+	-		-	-		
religion																
weak health													-	-		
speak language not well										- -						-
habit formation																
depentent preferences												-				+
other factors																
urbanisation grade				+	- +		+		+	+						+
sectoral composition	- +		+	+												
capacity child-care		+ + + +				+	+				+					
commuting time										+	-					
industry union																
% women in pot.work. pop.		- - - -														

STUDYNUMBER	17	18	19	20	21	22	23	24	25	26	27	28	29		total	
YEAR OF PUBLICATION	1990	1992	1993	1993	1993	1993	US	1994	1994	1995	1995	1996	1996		effect	
COUNTRY	NL	Norw	Can	US	US	NL	M F	US	US	US	US	S	US		P	
SUBPOPULATIONS	P	Fng	Mhd	F	Fbm	Fg Fs		Fnw	Fbb	Fg	Fe Fh	F	M F		M F	
economic factors																
unemployment						- -	- -	-							- -	
wage	+			+	+	+	+	+							+	+
other income			-		-	- -	- -			-	-				- -	
employment															+	+
underemployment															+	+
social security															-	-
taxes							- -								-	-
<u>person specific factors</u>																
gender															-	
age general															-	
age man													+		-	-
age womam		+		+	-	- -		-	+	-	- -	-	+		-	-
education general															+	
education man			-				-						-		-	+
education woman					-		-	+	-	+	+	+	+		+	-
marital status (married)		-	-	-				-	+				+	-	+	-
# persons in family			-									-			-	
number of children		-	-	-	-	- -	-	-		-		-			-	-
children 0 - 5				-	-	- -					- -	-			-	
children 6 - 11				+		- -										
children 12 -				+							+	+			-+	
ethnicity 'non white'			-					-	+		+	-		- -	-	-
religion										-					-	
weak health			-		-		- -							- -	-	-
speak language not well															-	-
habit formation	+														+	
deparent preferences	+														+	
<u>other factors</u>																
urbanisation grade										-					+	+
sectoral composition															+	
capacity child-care															+	+
commuting time												-			+	-
industry union									-						-	
% women in pot.work. pop.															-	

abbreviations table 1: NL = Netherlands, US = United States, UK = United Kingdom, A = Austria, Norw = Norway, S = Sweden en Can = Canana, for the different subpopulations, M = men, V= women, On = unschooled workers, Un = University educated, Sc = schooled workers, Hs = High-school graduated, Fg = married women, Fs = divorced women, Fo en Mo = older men and women, P = whole population, Fmi = married, immigrated women with a husband who has paid work, Fng = women who have a child, Mhd = disabled men, Fnw = fired women, Fbb = baby boom generation women, Fe = married mothers who have a husband with paid work, and Fh= female head of household.

Appendix II

The meaning of the variables that are considered in the analyses is given in the following table as well as the ordering and the code.

<i>Code</i>	<i>variable</i>	<i>meaning</i>	<i>ordering</i>
X1	KIDS	number of children	0=non, 1=one,.....,7=seven
X2	SINGPART	living with parents, single, or with partner	0=living with parents, 1=single, 2 = with partner
X3	CONFAM	frequency family contact	1=once a week or more often, 2=once every two weeks, 3=less then once every two weeks, 4=never
X4	WOONTYPN	house type	1=detached house, 2=house build one to the other, 3=flat, 4=student or elderly flat
X5	STEDGEM	urbanisation level	1=very strongly urbanised, 2=strongly urbanised, 3=urbanised, 4=weakly urbanised, 5=not urbanised
X6	CONTBUUR	frequency contact with bours	1=once a week or more often, 2=once every two weeks, 3=less then once every two weeks, 4=never
X7	WERK12	working hours	1=12 hours a week or more, 2=1-12 hours a week, 3=0 hours of week
X8	WILWERK	willing to work 12 hours	1=yes, 2=no
X9	VAKANTIE	holidays last 12 months	1=more then once, 2=once, 3=no once
X10	ZINGMUZI	singing, making music	1=five hours a week or more, 2=1-5 hours a week, 3=less then 1 hour a week, 4=never
X11	LICHSPRT	sports	1=five hours a week or more, 2=1-5 hours a week, 3=less then 1 hours a week, 4=never
X12	DHZEIGWO	repairing and constructing things at home	1=five hours a week or more, 2=1-5 hours of week, 3=less then 1 hour a week, 4=never
X13	CAFEBZK	visiting a bar	1=five hours a week or more, 2=1-5 hours of week, 3=less then 1 hour a week, 4=never
X14	MUSEABZK	visiting a museum	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never
X15	DANSDISC	visiting dance and disco evenings	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never
X16	CONCMUZI	visiting a concert	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never
X17	TONEEL	visiting a theatre	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never
X18	GEZELLIG	visiting a social evening	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never
X19	RESTAUR	visiting a restaurant	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never
X20	BIOSCOOP	visiting a movie	1=at least once a month, 2=more often then three times a year, but not monthly, 3=less then 3 times a year, 4=never