UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL
FACULDADE DE CIÊNCIAS ECONÔMICAS
PROGRAMA DE PÓS-GRADUAÇÃO EM ECONOMIA

DA RENDA ÀS CAPACITAÇÕES: Analisando e Avaliando o Desenvolvimento Humano

Izete Pengo Bagolin

Porto Alegre, 2005

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Izete Pengo Bagolin

Orientador: Dr. Flavio Vasconcellos Comim

Tese apresentada ao Programa de Pós-Graduação em Economia da Faculdade de Ciências Econômicas da UFRGS como quesito parcial a obtenção do título de Doutor em Economia.

Porto Alegre, 2005

Dedicatória

Dedico este trabalho a todos aqueles que mesmo ante as limitações, dificuldades e tropeços persistem na busca de um mundo melhor, mais justo e mais feliz.

" Os teimosos são sublimes. Quem é apenas bravo tem só um assomo, quem é apenas valente tem só um temperamento, quem é apenas carojoso tem só uma virtude; o obstinado na verdade tem a grandeza. Quase todo o segredo dos grandes corações está nesta palavra: perseverando. A perseverança está para a coragem como a roda para a alavanca; é a renovação perpetua do ponto de apoio. Esteja na terra ou no céu o alvo da vontade, a questão é ir a esse alvo. (...) Não deixar discutir a consciência, nem desarmar a vontade, é assim que se obtêm o sofrimento e o triundo. Na ordem dos fatos morais o cair não exlui o pairar. Da queda sai a ascenção. Os medíocres deixam-se perder pelo obstáculo especioso; não assim os fortes. Parecer é o talvez dos fortes, comquistar é a certeza deles." (Victor Hugo, p. 236)[1].

[1] Obrigada Sabino e Flavio Comim pelos e-mail(s) de Junho de 2003.Com palavras distintas vocês ajudaram a perseverar.

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RESUMO

Incialmente, este trabalho buscou entender a origem e a evolução das abordagens das capacitações e do desenvolvimento humano. Este processo exigiu o entendimento de abordagens relacionadas, tais como a do Desenvolvimento Econômico e Teorias das Necessidades Humanas (e teoria das necessidades básicas). Exigiu também, o entendimento de como essas teorias foram operacionalizadas, como são medidas, quais as limitações que apresentaram e em que contribuíram para a construção das abordagens atualmente em uso. Por fim, buscou explorar possibilidades práticas de aplicação da Abordagem das Capacitações. Utilizando dados primários, foram utilizadas diferentes técnicas estatisticas que vêm sendo exploradas na literatura internacional no processo de operacionalização dessa abordagem. Os dados são provenientes de um *survey* que avaliou o programa Você Apita.

A partir do estudo desenvolvido pode-se perceber uma evolução signficativa tanto em termos práticos quanto teóricos nas questões relativas ao desenvolvimento humano. Porém, apesar das contribuições já existentes, a operacionalização da abordagem das capacitações precisa ser melhor explorada.

No que tange a comparação entre a Abordagem das Capacitações (CA) e Teoria das Necessidades Humanas, nota-se que são abordagens similares em vários aspectos. As críticas direcionadas a Teoria das Necessidade Humanas (HNT) pelos simpatizantes da Abordagem das Capacitações, são apropriadas quando direcionadas apenas a Teoria das Necessidade Básicas, mas não a Teoria das Necessidade Humanas como um todo.

Na análise do IDH percebe-se que o indice representa uma evolução se comparado aos indices anteriores porém, não é capaz de acrescentar muito em termos de mensuração das capacitações das pessoas.

Por fim, a utilização de técnicas alternativas para avaliar a eficácia de políticas socias em termos de promoção de capacitações, evidencia robustez entre as técnicas atualmente em uso na literatura internacional e constituí-se num exemplo de operacionalização da abordagem.

ABSTRACT

This study aims to present the main characteristics of the CA, describing its contribution in the context of the alternative approaches. Specifically, it puts forward arguments that both the existing range of indicators and the available alternatives to measurements of human well-being, development and so forth, are not beyond criticism. The current debate has evolved and the practical and theoretical contributions are much broader and "inclusive" than could be explored here.

Summarising the discussions about the CA and the HNT and BNT, we conclude that the approaches are similar in several aspects. The criticisms that have been directed by the CA theorists at the HNT actually only apply to the BNT, and do not apply to the Human Need Theory as a whole. In addition, we can say that the Human Needs Theory and the Capability Approach are complementary approaches, both pointing to similar standards of evaluation and political aims.

An analysis of the HDI shows that multidimensional indicators such as HDI represent advances over the previous indicators, however they lack the capacity to measure capability categories.

The last part of this investigation discusses if alternative techniques to assess capability promotion; checking the adequacy of the current techniques to discover if they are useful for the Capability Approach measurement.

APRESENTAÇÃO

O trabalho de pesquisa que segue, constitui-se num conjunto de quatro artigos que sintetizam o exercício de pesquisa realizado durante os últimos quatro anos – período de realização do doutorado. Apesar de serem artigos independentes, todos estão diretamente ligados ao mesmo tema geral de pesquisa, voltado ao debate sobre desenvolvimento humano, fundamentado na Abordagem das Capacitações.

A Abordagem das Capacitações ainda é pouco explorada e difundida no Brasil, tanto que é ainda erroneamente chamada de 'Abordagem das Capacidades', ignorando o seu significado[2]. Entretanto, ela constitui-se numa abordagem ampla, rica e abrangente que evita erros muito comuns a abordagens baseadas no utilitarismo e que tem fundamentado as ações de organizações internacionais de desenvolvimento, tais como o PNUD e o Banco Mundial. Além disso, a Abordagem das Capacitações tem orientado a agenda de pesquisa em importantes centros universitários de diversas partes do mundo. A origem desta abordagem deve-se às contribuições do Professor Amartya Sen – economista Indiano laureado, com o prêmio Nobel em 1998. Posteriormente, o trabalho de Marta Nussbaum, passa a somar-se aos de Sen no desenvolvimento da abordagem. Atualmente existem vários pesquisadores, grupos de pesquisa, networks, seminários, workshops e conferências dedicados ao estudo do tema. O trabalho aqui desenvolvido, apesar de fundamentar-se na Abordagem das Capacitações, não restringe-se a ela pois procura contextualizá-la frente a outras abordagens.

De fato, no desenvolvimento do trabalho como um todo, buscou-se primeiro entender a origem e evolução das abordagens em estudo. Este processo exigiu também o entendimento das abordagens relacionadas, tais como a do Desenvolvimento Econômico e das Teorias das Necessidades Humanas (e teoria das necessidades básicas) bem como o entendimento de

[2] A palavra 'capability' significa a confluência de 'capacity'+ 'ability'. Ela expressa a habilidade que os indivíduos possuem para expandirem suas capacidades. No Brasil, deve-se notar que na versão em Português do livro do Professor Amartya Sen, (2000) Desenvolvimento como Liberdade, 'capability' foi traduzida como 'capacidade'. O problema com essa tradução é que ela ignora o elemento de autonomia, de agência, que aparece com o uso da expressão 'habilidade' que indivíduos possuem em moldar e escolher as suas próprias capacidades. Com isso, perde-se a dimensão de desenvolvimento humano associada à Abordagem das Capacitações.

como essas teorias foram operacionalizadas, como são medidas, quais as limitações que apresentaram e em que contribuíram para a construção das abordagens atualmente em uso.

A incursão nesse debate é muito rica, densa, controversa e aberta. No processo de leitura, entendimento e síntese surgiram muitos questionamentos, dentre os quais considerou-se importante buscar respostas para os que seguem:

1) Para monitorar o desenvolvimento humano, será que é mais relevante dedicar esforços para a construção de um novo índice de desenvolvimento ou para entender os indicadores existentes, explorando suas falhas, potencialidades e dificuldades?

2) As Abordagens das Capacitações e do Desenvolvimento Humano são realmente uma mudança de rumo em relação às abordagens anteriores? Se sim em que aspectos? Se não, em que elas diferem e presumivelmente são melhores?

3) Se estas abordagens são tão distintas em relação as previamente existentes, por que usam indicadores tão semelhantes? Se são semelhantes, por que existem tantos e tão controversos indicadores?

4) Como dialogam entre si as abordagens das Necessidades Humanas, das Capacitações e do Desenvolvimento Humano? Seriam estas três abordagens distintas ou parte de uma concepção mais ampla com diferentes facetas e contribuições?

5) Se a Abordagem das Capacitações se constitui numa alternativa às abordagens anteriores, como utiliza-la evitando os erros comuns no processo de operacionalização?

Assim, o que se apresenta nos capítulos (artigos) que seguem é um conjunto de questões interrelacionadas e voltadas à um mesmo tema central que é a concepção, mensuração e operacionalização da condição de vida dos seres humanos de acordo com as abordagens referidas acima, quais sejam: Teoria das Necessidades Humanas, Abordagem das Capacitações e Abordagem do Desenvolvimento Humano. A âncora é posta na Abordagem das Capacitações, mas as demais contribuições não são ignoradas. De forma mais específica, o trabalho está estruturado como segue.

Três dos quatro capítulos estão em Inglês por terem sido desenvolvidos predominantemente durante o meu período de Doutorado Sanduíche na Universidade de Cambridge[3], Inglaterra. Nesta ocasião tive a oportunidade de ser uma Visiting Scholar no Capability and Sustainability Centre, St Edmund´s College. Dois destes artigos foram

apresentados em Conferências internacionais. O capítulo três foi apresentado na "4th Conference on the Capability Approach: Enhancing Human Security[4]". O Capítulo dois foi aceito e apresentado na "5th International Conference on the Capability Approach: Knowledge and Public Action[5]". O quarto capítulo, que é uma aplicação empírica da Abordagem das Capacitações, com utilização dos dados de um programa brasileiro, foi escrito no período de retorno ao Brasil e é apresentado em português.

Mais especificamente, o capítulo 1 apresenta uma breve discussão sobre as questões de mensuração de condições de vida e sobre os problemas envolvidos neste processo. Este capítulo faz uma revisão de literatura, onde são elencados de forma evolutiva os principais fundamentos da Abordagem das Capacitações, enfatizando uma das questões mais controversas e não resolvidas dentro da abordagem que é o problema da adaptação das preferências e seu impacto sobre a confiabilidade dos indicadores subjetivos. São, também, examinadas algumas das críticas à abordagem existentes na literatura.

No capítulo 2 apresenta-se a Teoria das Necessidades Humanas e sua forma operacional via Teoria das Necessidade Básicas, sua evolução e uma análise das críticas que esta abordagem sofre, principalmente aquelas provenientes dos teóricos simpatizantes a Abordagem das Capacitações. São discutidas também, as interrelações entre as duas abordagens, tentando identificar elementos comuns e particularidades.

Ao longo do terceiro capítulo faz-se uma apresentação da teoria do Desenvolvimento Humano, origem e evolução; onde discute-se especialmente o Indice de Desenvolvimento Humano (IDH) como forma de operacionalizar a abordagem – analisa-se a utilidade do índice, críticas e possíveis avanços em relação aos indicadores anteriores. Também são examinadas as alterações metodológicas sofridas pelo IDH, suas limitações e avanços.

No capítulo 4, buscou-se explorar possibilidades práticas de aplicação da Abordagem das Capacitações, utilizando-se dados primários e usando diferentes técnicas que vêm sendo

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[4] Conferência realizada em Pavia, Italia no período de 5-7 de Setembro de 2004. Gostaria de agradecer a Enrica Chiaperro Martinetti, organizadora da conferência e ao comite organizador pela oportunidade e suporte financeiro que viabilizou a participação neste evento. Registro meu agradecimento a todas as pessoas que contribuiram com críticas e sugestões que foram fundamentais para o melhoramento do trabalho.

exploradas na literatura internacional no processo de operacionalização da abordagem. Para isso, foram usados dados provenientes de um *survey* que avaliou o programa Você Apita. O programa Você Apita foi um projeto desenvolvido em escolas públicas localizadas em regiões pobres de 12 cidades brasileiras em diferentes estados. O programa foi financiado pela Fiat do Brasil e visava promover o protagonismo juvenil do público participante. Entende-se que o programa é um exemplo de promoção de capacitações e os dados são úteis para exercitar a operacionalização da abordagem.

[5] Conferência ocorrida em Paris, no período de 11 a 14 de Setembro de 2005. Obrigada ao Professor Jean Luck Dobois e ao comitê organizador. Obrigada a UNOCHAPECO pelo auxilio financeiro, sem o qual não seria possível usufruir dessa excelente oportunidade.

CAPÍTULO 1

THE EVOLUTION OF HUMAN DEVELOPMENT INDICATORS AND WELL-BEING ASSESSMENT: IS THE CAPABILITY APPROACH AN ALTERNATIVE?

1.1 INTRODUCTION

In social sciences, the discussions about well-being, human development, quality of life and related concepts are often immersed in controversies about the meaning of a good life and the narrow possibilities of choosing indicators to represent it. Much has been argued about the essential or proper conditions that could potentially enable individuals to live rewarding and fulfilling lives. It is important to note that there is no academic consensus about the criteria, or informational spaces, to be used in representing well-being and choosing indicators. Yet, this seems to be a fundamental issue to be tackled by any social policy or usage of social indicators.

Assessment, evaluation, and measurement processes have been discussed in different disciplines such as economics, sociology, psychology, philosophy and statistics among others. Thus, there is no ‘right way’ to conceptualise and measure human development but a wide range of possibilities that can be articulated from a diversity of perspectives. However, it must be noted that quite often the fundamental questions about human development are not addressed: What are the main purposes of human development? Why is it important to evaluate human development? Is it really relevant? Is it appropriate to measure it? What are the main alternatives to measure human development?

On the one hand, it could be argued that the formulation of public policies requires parameters and that ‘measurement’ is useful to evaluate conditions related to equality, opportunities and social justice. Without a sense of magnitude, it is difficult to point out the importance of justice as an aspect in development discussions. But the task of finding out indicators or measures for human development is not without challenges. On the other hand, there are calls for caution over the emphasis given to ‘measurement’ in human development

work. Such a concern is against frequent attempts to express human life achievements through single aggregate indicators as MORRIS (1979:5) pointed out. "Human beings have a fascination with taxonomy and those concerned with development seem to have a special attraction to ranking and classification". Even accepting the fact that classification, quantification, assessment or measurement is not all to be considered, one cannot deny that they are part of the problem of operationalising human development.

Having said that, and being aware of the fact that human development and related research topics about human and social indicators are not a new academic field, it is important to contextualise the current contributions within the larger context of the history of indicators in the development literature. The current concern with human development evolved from the contributions of different approaches such as economic development, social indicator literature, human needs and basic needs theories and, more recently, the Capability Approach evolved. What was wrong with previous concepts and measures such as the GNP per capita and basic needs? To what extent capability indicators are better than previous indicators? How can we appreciate the added value of the Capability Approach?

The Capability Approach (henceforth CA) has been put forward by Professor Amartya Sen (1992, 1999 among other publications) and Professor Martha Nussbaum (1999, 2000) as an alternative framework to conventional approaches to normative analysis. It has been argued that the CA is rich, broad, inclusive and open (conceptually, philosophically and foundationally) and that it has a wide range of practical applicability. This is in fact a positive aspect. Nevertheless, it can bring several practical problems to policymakers and academics that want to make it operational and useful for practical public policy implementation.

Looking back to the previous approaches such as those of Economic Development Theory and the Basic Needs Theory it can be seen that the criticisms that they received were specially directed to problems with their measurement and operationalisation. Approaches can indeed be over-simplified or misused when applied to practical issues and this important acknowledgment should not be ignored. This acknowledgement is not less true for a new approach such as the CA.

The conceptual foundations of the CA were based on critiques of the weak points of the previous approaches and incorporation of some of their aspects considered positive (e.g

the consequentialist feature from Utilitarianism). These foundations provide a justification for the theoretical arguments put forward by the CA, but are by no means an automatic guarantee of successful empirical applicability. Many interesting questions concerning the applicability remain unanswered. How does the interaction between the CA and previous approaches take place during fieldwork? Is the CA able to overcome previous approaches's practical limitations and to avoid shortcomings in terms of its operationalisation? Are the CA applications going beyond previous (e.g. utilitarian) analyses, and if so, in which aspects?

Summing up, the main issues to be discussed in this paper refer to:

1) the evolution of the well-being and human development conceptions through different analytical approaches;

2) the potentialities and limitations of currently used indicators for assessing human well-being and;

3) the potentialities of the Capability Approach as an alternative to encompass the necessary conditions for theoretical and practical analysis of well-being and human development.

Following this introduction, three additional parts compose the paper. Part two presents the justification of the Capability Approach and its foundations, specifically looking at the main limitations of the previous approaches. Part three brings out some issues related to the operational aspects of the CA. The last part presents some final considerations.

1.2 THE CAPABILITY APPROACH

1.2.1 THE CAPABILITY APPROACH: JUSTIFICATION

A theoretical justification for using the CA has been provided by SEN (1999). It is based on the informational limitations presented by alternative approaches, such as Utilitarianism, Rawlsianism and Libertarianism. As argued by Sen, the main theoretical justification for using the CA as the informational space for normative evaluations is based on its encompassing properties. In other words, it could be said that because 'capabilities' represent a wider informational space, normative evaluations based on capabilities are better

than those based on alternative ethical evaluations. Having said that, it must be added that interest in the CA could also be justified on practical grounds. As PRESSMAN and SUMMERFIELD (2000) mention, the CA has been used to solve diverse practical problems. The main areas in which the approach has been used can be summarised in five large groups, which are:

1) The CA has provided the philosophical background for the conceptualisation of human development, leading to fundamental changes within the field of economic development;

2) The CA has been used to point out and forward solutions for gender issues;

3) The CA has been helpful to identify the causes and proposition of solutions of famine and hunger problems;

4) The CA has informed current work on the conceptualisation and measurement of poverty;

5) The CA has provided elements for discussions on inequality.

According to GASPER, (2002:435), the Capability Approach is "a humanist alternative theory, which has been widely accessible and adopted, it has led much empirical work, and has had significant policy impact", being central to the Human Development Reports (HDRs). At the same time, he recognises that "yet viewed from outside economics, the CA seems primitive in some ways, insufficient as a theory of well-being, and hardly a theory of the "human" in human development" (GASPER, 2002:436). These critics come from the idea that the CA has weak points such as: a strong emphasis on choice in the characterisation of human action, obscurities in key concepts (e.g. the concept of 'capability'), and its emergence from a dialogue between Economics and Philosophy without much involvement from Psychology, Sociology and Anthropology.

At a first glance, the CA seems to be very intuitive to understand and has a strong empirical appeal. At the same time, the approach is complex, deep and unfinished. The idea that it is an unfinished theory can be a positive or a negative characteristic. Its theoretical flexibility is a positive aspect, which allows the application of empirical ideas to different contexts with different aims. As pointed out by SEN (1993), there is a positive value in an incomplete theory, which is consistent with several different substantive theories, which may

be filled in by reasoned agreement. On the other hand, an open approach is also an open door to criticisms, misunderstandings and misuses of the approach.

The conceptual core of the CA is the idea that good life will be reached when human beings are free to choose and able to get what they have reasons to consider important to do or to be. In this sense, human development means human flourishing. Moreover, poverty means lack of basic freedoms to reach what is considered essential ‘doings’ or ‘beings’.

In fact, the CA evolves from Sen’s early criticisms of welfarism and resource possession as appropriate informational basis for normative evaluations. Trying to justify the importance to move on from resource, due to its impossibility to capture the conversion problem, SEN (1985:6) argues that “in getting an idea of the well-being of the person, we clearly have to move on to ‘functionings’, to wit, what the person succeeds in doing with the commodities and characteristics at his or her command”.

According to Sen, functionings are the achievements of a person, which can show up the person’s state. And he differentiates functioning from usual well-being indicators based on Utilitarian foundations. He argues that “a functioning is thus different both from (1) having goods (and the corresponding characteristics), to which it is posterior, and (2) having utility (in the form of happiness resulting from that functioning), to which it is, in an important way, prior” (SEN, 1985:7). Using Sen’s own notation we can have a better idea of the meaning and definition of the capabilities. He uses the following specification:

x_i = the vector of commodities possessed by person I,

c (.) = the function (not necessarily linear, converting a commodity vector into a vector of characteristics of those commodities,

f_i (.) = a personal ‘utilization function’ of I reflecting one pattern of use of commodities that I can actually make (in generating a functioning vector out of a characteristic of commodities possessed),

F_i = the set of ‘utilization function’ f_i, any one of which person i can, in fact, choose, and

h_i (.) = the happiness function of person I related to the functionings achieved by i.

If the person chooses the utilization function $f_i(.)$, then with his or her commodity vector x_i, the achieved functions will be given by the vector b_i,

$b_i = f_i(c(x_i))$

The happiness that he will then enjoy is given by u_i,.

$u_i = h_i(f_i(c(x_i))$.

That notation is useful to present the capability concept. Sen presents the feasible set $Q_i(X_i)$:

$$Q_i(X_i) = [b_i | b_i = f_i(c(x_i)), \text{ for some } f_i(.) \in F_i \text{ and for some } x_i \in X_i]$$

Thus, $Q_i(X_i)$ represents the freedom or the degree of autonomy that a person has in terms of the choice of functionings, given his or her personal features. F_i represents the conversion of characteristics of different goods into functionings and its command over commodities X_i (that we can call 'entitlements'). Qi can be called the 'capabilities' of the individuals given those parameters. It reflects the various combinations of functionings ('being') he or she can achieve. According to SEN (1999), the capability idea is even closer to the concept of freedom, because

> for many evaluative purposes, the appropriate "space" is neither that of utilities (as claimed by welfarists), not that of primary goods (as demanded by Rawls), but that of the substantive freedoms – the Capabilities – to choose a life one has reason to value. (1999:74).

And he adds,

> A person's "capability" refers to the alternative combinations of functionings that are feasible for her to achieve. Capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations (or, less formally put, the freedom to achieve various lifestyle) (SEN, 1999:75).

The approach in vogue is a comprehensive one, dealing with a range of important issues. In a very general sense, the CA has some key foundational objectives, aiming to constitute an alternative to:

1) the Utility Based Approach and its subjective foundations bases,
2) the Economic Development Theory and the use of Income Based Approaches, usually uni-dimensional indicators;
3) the Primary Good and/or the Basic Needs Theory and its commodity based indicators;
4) Political theories such as Libertarianism and Rights-Based Approaches.

In what follows, we present the CA's critiques of each of the above set of theories. By doing so, we establish the CA as a broader framework for understanding and assessing human well-being. Important issues, such as those regarding the use of subjective indicators, the informational bases of the traditionally utility-based approaches and the adaptive preference problem, are addressed. We start with an analysis of the resource-based approaches.

1.2.2 THE CAPABILITY APPROACH AS AN ALTERNATIVE FRAMEWORK

1.2.2.1 THE LIMITS OF UTILITARIANISM

Amartya Sen's critiques of Utilitarianism are at the root of the development of the CA. .For SEN (e.g. 1987), the main problems of Utilitarianism can be classified into three groups, namely, (i) distributional indifference; (ii) neglect of rights, freedoms and other non-utility concerns; (iii) adaptation and mental conditioning. The last referred limitation is currently widely known as the adaptive preference problem. However, the term preference adaptation was incorporated only in Sen's latter writings. In what follows, we explore in depth Sen's critiques of Utilitarianism.

1.2.2.1.1 THE LIMITS OF UTILITARIAN INFORMATIONAL BASES

According to SEN (1984, 1999), utilitarianism is a limited approach to normative analyses due to its narrow informational basis. In particular, the welfarist nature of Utilitarianism means that all non-utility information is ignored in assessing human well-being. The criticism from Sen is directed to both, old utilitarianism and modern utilitarianism. According to him, even though the utilitarian focus has changed from happiness and desire fulfilment (old utilitarianism) to people's revealed choices (modern utilitarianism), the general problem has not been solved, namely, the utilitarian exclusion problems of important aspects of human life such as freedom, rights, quality of life, and liberties in assessing human advantage. According to Sen, it is important to take note not only of the amount of

information that is included in the evaluation processes of each approach but also of the kind of information that is excluded. He argues that (1999: 56):

> Informational exclusions are important constituents of an evaluative approach. The excluded information is not permitted to have any direct influence on evaluative judgements, and while this is usually done in an implicit way, the character of the approach may be strongly influenced by insensitivity to the excluded information.

In other words, it could be said that the utilitarian exclusive emphasis on utility is very restrictive. This restriction is common to classical utilitarianism, which sees utility "as pleasure, or happiness, or satisfaction, everything thus turns on these mental achievements" (SEN,1999:56). It is also common to the modern utilitarianism which sees utility "as the fulfilment of desire, or as some kind of representation of a person's choice behaviour" (SEN, 1999:57). In Sen's view, this modern utilisation does not eliminate the indifference to freedoms, rights and liberties. The utility approach is not sensitive to inequalities and injustices once the aggregation process used has no mechanism for distinguishing them.

Analysing utilitarianism as a theory of justice, SEN (2000) argues that the approach is deficient because of its lack of direct interest in information concerning the fulfilment or violation of rights or liberties, or, for that matter, in the levels of incomes that people enjoy. According to him, the basal restriction of this approach is its narrow interest only in the coherence between different combinations of utilities from different individuals. The concept of utility is not uniform in different utilitarian theories. However, all theories neglect direct relevance of any variable, which does not count as being part of its particular interpretation of utility. And he adds (2000:65):

> The informational limitation is made even stronger by the particular utilitarian interpretation of individual welfare, seeing it simply in terms of pleasures or desires, or as representations of choice. The last – utility as the real-valued representation of choice – does not, on its own, yield any obvious way of making interpersonal comparisons, since people do not get to choose between being one person or another.

Examples of Sen's arguments about the shortcomings of Utilitarianism can be found throughout his whole work. For instance, in an attempt to identify a proper way to define the optimum rate of saving, SEN (1961) worked with two main utility definitions and presented arguments saying that utility cannot provide a good information basis for solving that problem. The first definition takes utility as representing the magnitude which we, according to our value judgements, wish to maximise; the second definition uses utility as a synonymous for people's satisfaction. According to Sen, the second definition has two problems. One refers to the difficulty in identifying at which rate the marginal utility of consumption declines in case of any given individual and; the other refers to the non-normative definition of the utility. In Sen's view, if utility is defined in non-normative terms there is no point in the maximisation process. He summarises his critics of the Utilitarian approach pointing out that: "the trouble with the utility approach, it seems to me, is that it introduces value judgements in such a way that the only people who can appreciate the meaning of these judgements are those who can be described as "professionals" in the field" (SEN, 1961: 481)

Latter on, working with welfare and inequality, SEN (1972) criticised utilitarianism, as an informational basis for not taking inequality into account in welfare evaluations. According to him: "It is indeed strange that an approach which is concerned with maximising the sum of welfare levels of different individuals, irrespective of the distribution of these levels, should have developed the reputation of being distribution-conscious and egalitarian" (1972:348).

According to SEN (1979), utility is used as something which stands for a person's conception of his own well-being, and although this would still permit alternative interpretations in terms of "pleasure" and "desire", there is no definitional link with the "goodness of states of affairs" (SEN, 1979:463). He uses outcome utilitarianism as a term, which summarises principles from all variants of utilitarianism and factorises this term in sum-ranking and "welfarism". Sen developed his arguments showing that sum-ranking can be criticised from the moral perspective of egalitarianism once it is insensitive to inequality among utilities. On the other hand, welfarism is criticised as "imposing" an "informational constraint" in making moral judgements about alternative states of affairs" (SEN, 1979:471). The referred informational constraint results from the difficulty in getting all personal utility information. In his writings, he has suggested that other non-utility information should be used when the complete information about the states of affairs are not available.

Analysing utility as an inappropriate measure of standard of living, Sen demonstrates two different ways of seeing the standard of living in terms of utility. One of them considers utility as an object of value in itself; and the other considers utility as a valuational device, which is used to evaluate other objects of value, e.g. goods possessed (SEN, 1985). He also remarks that "there are also at least three quite different ways of defining utility, viz, pleasure, desire fulfilment, and choice" (SEN, 1985:10). SEN (1991) claims that the informational basis of utilitarian ethics includes only unit-comparable cardinal utilities, and excludes all other variables. In his words (1991: 17),

> One way of presenting a critique of utilitarianism is to argue in favour of the intrinsic importance of one or more of the excluded variables. Utilitarian judgements cannot be directly and constitutively affected by the variables not included in the informational foundation, and this "insensitivity" can give grounds for criticism if it is decided that they should have such an influence. However, being excluded from the informational foundation does not entail that the variable in question would have no effect on the evaluative judgements to be made. There can, obviously, be indirect effects through its role in the determination of the intrinsically valuable variables. The accounting of indirect influences calls for causal analysis of instruments and their consequences.

According to SEN (1985b), the problems with utilitarianism are not only restricted to its narrow informational basis but also to the way in which utility is defined. The term utility is used meaning satisfaction or happiness (classical utilitarianism), desire-fulfilment (modern utilitarianism) and in "much of modern economics, "**utility"** serves other purposes too, standing for **whatever the person maximises**, or simply for the person's well-being or advantage no matter how that is judged" (SEN, 1985b:3) (emphasis added). As he argues, the main problem does not lie on the wide range of definitions that are given to utility as we can see in the following quotation. Rather (1985b: 3)

> The real problem lies, partly, in trying to transfer the established and defended concern with utility in the traditional sense to a similar concern – unestablished and undefended – with the newly-defined utility. Further, there is a serious difficulty in giving several distinct meaning to utility at the same time, and thereby making the implicit empirical assumption that would in reality coincide with each other.

In addition to the limitations concerning the definition of utility, Sen argues that utilitarianism as an informational basis to well-being evaluation has problems in several other aspects. As he points out, “the problems lie elsewhere in fact, to wit, in the poverty of the entire utility-base approach rather than in its apparent over-richness. Both the views of utility have the twin characteristics of” (1) being fully grounded on the mental attitude of the person and; (2) avoiding any direct reference to the person’s own valuation exercise – the mental activity of valuing one kind of life rather than other (SEN, 1985b: 14).. The choice aspect of utility is considered a non-starter as an informational basis for well-being evaluation, once it represents a strong simplification of human behaviour. He argues (1985b: 13):

> To assume that binary relation underling choice must be the persons ordering of own well-being, is an heroic simplification. It is also the case, as it happens that the choice-approach to well-being starts one off on the wrongs foot altogether on the subject of interpersonal comparisons of well-being, since people do not actually face the choice of being someone else or living at another age or time. An approach that cannot easily accommodate interpersonal comparisons is seriously handicapped in substantiating the notion of well-being.

He also argues that instead of choice, the other utilitarian categories of “happiness and desire-fulfilment” are indeed serious candidates for serving as the basis of the theory of a well-being (SEN, 1985b:14). In what follows, we scrutinise the subjective metrics based on happiness and desire as discussed by Sen.

1.2.2.1.2 SUBJECTIVITY AND ADAPTATION OF PREFERENCES

From Sen’s early writings (e.g. SEN, 1979) we find criticisms of utilitarianism as an informational basis for normative evaluation. At that stage, the term “adaptive preference” or “preference adaptation” or “preference adjustment” was not used. Much earlier, since the sixties, Sen built his criticism and called attention to this problem from various different angles. Emphasis was given to the main problems connected to the subjective mental adjustment experienced by the deprived. After investigating Sen’s last 30 years of criticisms of utilitarianism, it is possible to argue that, although Sen in fact discusses what is currently known as the adaptive preference problem, it is only fair to accept the term is not a “Senian” term from its origin.

ELSTER (1982) seems to be the first existing reference to the phenomena of preference adaptation. In his view, preferences under adaptation can be bad bases for social choice –contrary to what is claimed by economists. The main reason for such dispute is related to an incompatibility between preferences and autonomy. Preferences can only be an expression of adjustment to causal mechanisms. Using the example of the "Fox and Sour Grapes", Elster showed that adaptive preferences occur as follows: people have knowledge about their different options, they know that they will be better if they get their first option (they do prefer that). However, for some reason, they assume that they are not allowed or able to have what they would like to, and because of this they change their preferences and adapt to something easier (and/or feasible) to them through a mental process of contentment.

Nevertheless, in an early work, Sen directed his criticism to the way that the adaptation process (still not using the term 'adaptation', but 'conditioning') can be manifested. According to him (1979: 12)

> Consider a very deprived person who is poor, exploited, overworked, and ill, but who has been made satisfied with his lot by conditioning (through, say, religion, or political propaganda, or cultural pressure). Can we possibly believe that he is doing well just because he is happy and satisfied? Can the living standard of a person be high if the life that he or she leads is full of deprivation? The standard of life cannot be so detached from the nature of the life the person leads. As an object of value, happiness or pleasure (even with a broad coverage) cannot possibly make a serious claim to exclusive relevance.

Similarly, 'desire' is normally seen as a strategic term, making people's wants credible and giving viability to their aspirations. The trouble is that desires face problems when interpersonal comparisons are necessary. As argued by Sen, this aspect takes into consideration the fact that the conditions under which people live can manipulate desire manifestation and transform desire, distorting it as a metric of human well-being. Thus, he believes that desire-fulfilment is a very limited informational space and that it might not be an instrument of evaluation at all (SEN, 1985). His justification concerning the biases imposed by 'desire' as a normative metrics is in conformity with the definition of preference adaptation, as we can see in the following quotation.

> It is not only that a poor person can offer less money for what he or she desires compared with a rich person, but also that even the strength of the mental force of desiring is influenced by the contingency of circumstances. The defeated and the downtrodden come to lack the courage to desire things that others more favourably treated by society desire with easy confidence. The absence of desire for things beyond one's means may not reflect any deficiency of valuing, but only an absence of hope, and a fear of inevitable disappointment. The underdog comes to terms with social inequalities by bringing desires in line with feasibilities (SEN, 1985:15).

Referring to utility as happiness, Sen acknowledges that "it is quite easy to be persuaded that being happy is an achievement that is valuable. In evaluating the standard of living, happiness is an object of value (or a collection of objects of value, if happiness is seen in a plural form)" (SEN, 1985:12). It is relevant to emphasise that the problem is not the use of being happy as an important (or valuable) category, but rather the systematic use of happiness as the only metric used to assess all different dimensions of human well-being. He adds that "in assessing the well-being and the standard of living of a person, happiness may have direct and unconditional relevance, and it is clearly one, among various objects of value". (SEN, 1979:16). Thus, he is not questioning if happiness is important or not, but how adequate it is to take happiness as an exclusive measure of well-being.

A similar problem arises from the use of the 'choice' dimension of utility. The limitations of utility as choice manifestation are more related to the wrong utilisation of the choice concept. Sen claims that choice behaviour has a strong interest in its own, but "choice is a very different activity from valuation and in so far as it has any connection with valuation, this must partly arise from choice being a reflection of desire" (SEN, 1985:18). And once used in that way, it will be under the same criticism applied to desire as a normative metrics. There is additional criticism of choice, related to motivational aspects, which is not easily or clearly possible to identify. Sen summarises his criticism of the utilisation of happiness, desire and choice as indicators of well-being evaluation:

> They do, of course, have connections with well-being and living standard, enough to give some superficial plausibility to the utility-based ways of seeing the standard of living. Happiness clearly is an object of value in the living standard (though by no means the only one), and desire and choice do have some evidential importance in

> giving information on valuation (though with ambiguities and systematic biases). Utility and living standard are related, but they are second cousins rather than siblings. (SEN, 1985:20)

Utilitarians, according to SEN (1997), rank states of affairs and actions on the basis of the calculus of utilities. And the definition of utility "has varied quite a lot over the years, and while Bentham's hedonistic view of utility as pleasure still survives in welfare economics and in political philosophy, other ways of seeing utility have also become common, including desire fulfilment and preference satisfaction" (1997:273). Sen works with three distinct components of utilitarianism: "consequentialism", "welfarism" and "sum-ranking"[6], but his criticisms refer mainly to welfarism and sum-ranking.

The welfarism component is criticised for its inadequacy in informational terms. Sen claims that, for example, "a particular set of individual utilities may be associated, in one case, with a scenario that involves some violations of liberties, civil and political rights, but also with quite a different scenario involving no such violation" (1997:273). Welfarism neglects information that can be easily considered important for the society. Emphasising the weakness of pleasure and desire-fulfilment as informational devises in welfarist analysis, Sen mentions the role of mental adjustments to unfair and unfavourable circumstances. In his view, the mentioned pleasure or desire can be expressed in a muffled way, where people's main objective in life becomes making their own lives tolerable. In Sen's words,

> …this phenomenon, which we may call "psychological adjustment to deprivation", makes the mental metrics of utility (both of pleasure and of desire-fulfilment) rather **unreliable** guides to the extent of deprivation. Indeed, it would be deeply unfair in regard the pleasures cultivated through psychological adjustment, or the fulfilment of curtailed desires, as proof positive that things are not quite so bad for the deprived people (SEN, 1997:275).

[6] "Consequentialism requires that the choice over all decision variables (such as actions, rules, etc.) be judged exclusively on the basis of the consequent states of affairs. Welfarism requires that all states of affairs be judged by the individual utilities generated and not by any other characteristic of the states of affairs (except to the extent that they influence utilities).Sum-ranking demandas that the indivitual utilities in any state of affairs be assessed by their sum-total only. This contrasts, for example, with taking serious not of the extent of inequalities in the distribution of utilities, rather than going simply by the aggregate sum" (SEN, 1997:273).

The limitation of the Sum-ranking component refers to the fact that utilitarian calculus cannot differentiate between two distributions with the same total utility. The utilisation of the Preference Theory as a basis for social choice is criticised due to the multiplicity of manifestations of the concept of preference. Sen points out that "the concept of preference has been used to refer to several different objects, including mental satisfaction, desires, choices and values" (1997b: 16). The arguments of his criticism are concentrated on four main points as follows (SEN, 1997: 16):

(1) Interpretation ambiguity of preferences: preferences seem to have no fixed meaning and have been variously interpreted as satisfactions, desires, values, binary relation of choice, etc;

(2) Evaluative insufficiency of the informational basis of individual preferences: mere preference may not tell us much about individual advantages and privileges;

(3) Importance of preference formation: why should given preferences be taken?

(4) The priority of procedures and processes in proper arrangements for social decision-making: for example, in the allegedly correct formulation of individual liberties and rights through game forms, preferences over outcomes may be unimportant in characterizing rights.

He puts emphasis on the adaptation as one of the main problems making the utilitarian theory of justice deeply unfair. He argues that (2000: 66),

> The difficulty that may be more basic in the context of a theory of justice and of inequality arises from the mental adaptation that makes the extent of pleasure or the strength of desire a very unreliable guide to real deprivation. Our desires and expectations adjust to circumstances, particularly to make life bearable in adverse situations. Such adjustments in; chronically deprived positions are easy to understand as a sensible strategy of coming to terms with the deprivation, but they also have the incidental effect of distorting the scale of utilities with the effect that the deprivation are not adequately recognized in the basal space of utilities.

Therefore, the utilitarian approach faces serious difficulties when used as the only informational basis in assessing human well-being. Among these difficulties with the utilitarian metrics, the most important are: lack of sensitivity to distributive aspects, and

denial of interpersonal comparisons and mental bases, which are common to all used utility definitions. Other difficulties are more specific, and according to Sen, more difficult to deal with, especially those related to utility as choice manifestation of individual preferences. In Sen's view, people's mental behaviour adjusts to circumstances to make life tolerable. He calls it "psychological adjustment to persistent deprivation". In the cases where the adjustment occurs, the utility metric can be deeply unfair. SEN concludes that (1999: 63) "It is thus important not only to take note of the fact that in the scale of utilities, the deprivation of the persistently deprived may look muffled and muted but also, to favour the creation of conditions in which people have real opportunities of judging the kind of lives they would like to lead".

1.2.2.2 PRIMARY GOODS AND RIGHTS BASED ON THE INSUFFICIENCY APPROACH

Concerning the Theory of Justice by John Rawls and its Primary Goods Theory, Sen acknowledges that it is an advancement in comparison to unidimensional analyses of human well-being. Indeed, much of what is claimed by Sen comes in fact from John Rawls' criticisms of Utilitarianism and Libertarianism. But John Rawl's theory of primary good is not free of Sen's critical scrutiny. Sen argues that Rawls's defence of the space of primary goods as the appropriate space for normative evaluations ignores a crucial distinction between means and ends of human development. According to Sen, primary goods are means to reach ends, and, as a result, to assess human well-being based on means can constitute a distortion. As he points out (1999: 72-3):

> The broadening of the informational focus from incomes to primary goods is not, however, adequate to deal with all the relevant variations in the relationship between income and resources, on the one hand and well-being and freedom, on the other. Indeed, primary goods themselves are mainly various types of general resources, and the use of these resources to generate the ability to do valuable things is subject to much the same list of variations we considered in the context of relationship between income and well-being.

Sen applies the same methodology of using 'broader informational spaces' for normative evaluations to criticise the Libertarian Approach, which gives complete priority to

rights. Sen argues that even if we are not questioning the importance of rights, which he agrees to be fundamental to people's lives, rights are not the only important aspect in everyone's lives. In that sense, Sen calls attention to the same problem behind the use of limited informational bases for normative evaluations, namely, the possible distortions caused by the dismissal of important information related to particular aspects of human well-being.

1.2.2.3 THE CAPABILITY APPROACH AS AN ALTERNATIVE TO RESOURCE BASED INDICATORS.

Mainstream economics has been playing the card of economic growth as a criterion for assessing human well-being for sometime (RAY, 1998). It is common to find economists using aggregated indices like the GNP per capita and average income as proxies for human well-being. Their arguments are that GNP and income are highly correlated with other aspects of human development. There is a tacit belief that GNP measures imply themselves the power to positively affect every other social outcome that we want to associate with development. Theoretically, this conception accepts the wide definition of human development as a multidimensional process. Yet, it disputes the idea that development is not strongly correlated with economic growth and that GNP per capita works fairly as a good proxy for most aspects of development.

But is economic growth the best proxy to promote human development? This belief lies on the idea that development has a core dimension associated with the possession of resources. RAY (1998:29-30) argues that: "rising income levels ultimately and inevitably translate into better health, nutritional, and educational standards in a population life. It is therefore, a useful exercise to see from cross-country data, how much "explanatory power" per capita the GDP has over other basic indicators". This empirical evidence would characterise a situation, known as 'trickle down' effect. Evidence from the literature, for instance, AHLUWALIA (1976), CHEN, DATT and RAVALLION (1993) and LIPTON (1998) provide evidence for the "trikle-down" view. These studies show that countries with higher per capita income or consumption have on average less poverty. But this evidence is far from being robust. For instance, FIELDS (1980) presents a summary of empirical studies where ten out of thirteen studies found a negative correlation between economic growth and

poverty and the other three ones found different results. DOLLAR & KRAAY (2000) and RAVALLION (2001) obtained similar results.

Moreover, there is a growing literature (e.g. WDR 2004) showing that economic growth is not enough as a means to promote poverty reduction. Economic growth needs to have specific poverty oriented characteristics to be effective in reducing the number of poor people. In other words, it can be argued that growth by itself will not automatically result in well-being improvement, nor in poverty reduction. Economic growth is a means, not an end in itself. Using economic growth (or ultimately, 'resources') as the only basis for normative assessments of well-being consists in using 'means' as 'ends' Early questioning and criticisms have been directed to the use of GNP as a development measure by the 1954 United Nations Report (NOORBAKHSH,1998).

It is important to remark that it has not been suggested that economic growth is not important. Economic growth might be essential to poor societies for reducing or eliminating poverty and deprivation. There are several studies in the present literature showing the importance of economic growth, especially when economic growth is directed to people's most fundamental needs. For example, SEN (1983) and UL HAQ (1998) emphasise that we must be careful in rejecting an automatic link between income expansions and the flourishing of human lives, avoiding the suggestion that economic growth is not relevant. In this sense, it is beyond doubt among human development thinkers that economic growth is an important 'instrument' (or mean) to reach human development. For this reason SEN (1983: 745) points out that

> the obituary of economic development theory may be premature, the original themes – while severely incomplete in coverage – did not point entirely in the wrong direction, and the discipline of development economics does have a central role to play in the field of economic growth in developing countries.

It is interesting to note that when historically contextualised, the main contributions from the mainstream Economic Development Theory and from the Basic Needs Approach were relevant to address the main problems of their times. Economic Development can be seen as a refinement of economic analysis emerging from the Keynesian Revolution.

Similarly, a better understanding of the role of the government in the provision of public services was essential during the 60s and 70s. In this sense, Economic Growth Theory is the result of times when the main social challenges were economic growth promotion and industrialisation (SEN, 1983).

Economic Development Theory aimed at improving individuals' quality of life. There is nothing intrinsically wrong with this objective. The problem with that was the belief that economic growth was the main, and the only way to reach this goal. SEN (1983:748) notes that "growth is not the same thing as development and the difference between the two has been brought out by a number of recent contributions to development economics". UL HAQ (1998) also observed that after the Second World War, an obsession with economic growth models and national accounts grew from the economists' main schools of thought. According to these ideas what matters is what can be measured. From this perspective, economic growth seemed to be the only measure of quality of life.

However, the way economic growth was promoted in the last decades provided no insurance of improvements in the quality of life of most of humanity. In several cases, the fast economic growth results were social exclusion, growing inequality in several aspects, and social conflicts. As argued by SEN (1983), in some situations the case was not only "that economic growth is a means rather than an end, it is also the case that for some important ends it is not a very efficient means either" (1983: 754). Economic growth is one important aspect of economic development, but is not the only one. According to Sen, "the real limitations of traditional development economics, arose not from the choice of means to the end of economic growth, but in the insufficient recognition that economic growth was not more than a mean to some other objectives. The point is not the same as saying that growth does not matter." (1983:753)

Indeed, resources have an important role in the development process. The point is that resources should be used to facilitate people's development. And yet, to use the amount of resources that each person commands, as the only indicator of development is a limited procedure, once people are different in many important aspects of human development. As SEN (1999: 70-71) argues, people are different in terms of: 1) personal heterogeneity; 2) environmental diversities; 3) variations in social climate; 4) differences in social perspectives

and 5) distribution within the family. These diversities are strong enough to justify the limits of resources as the only way to measure human development.

Studies such as SEN (1983, 1999), NUSSBAUM (2000), and HAMILTON (2003), demonstrate that human life is far more complex than any income measure can tell. In each mental process that is performed to evaluate human well being, we are using a conceptual approach together with our previous beliefs about what a good life means. One of the justifications for the necessity to find a better way to measure the human condition was the fact that the limitations of the most usual income-based family of measures go beyond mere statistical deficiencies towards conceptual shortcomings.

According to MORRIS (1979), the GNP is a limited measure of welfare because:

1) Many relevant productive activities are excluded and other less relevant ones which could be excluded are included;

2) The GNP does not measure subjective elements;

3) The GNP does not measure society's quality of life;

4) The growth of income does not necessarily improve well-being;

5) Improvements in well-being can occur without THE GNP growth.

The arguments presented in this section highlighted some important elements to be taken into consideration when the aim is to evaluate human development. If we look at the results presented by the literature that defends economic growth strategies (e.g. DOLLAR and KRAY, 2000) we can clearly see that their conception of well-being or human development is restricted to individuals' access to resources or income. The argument that considers that income and growth are good proxies for assessing well-being does not take the conversion and distribution problem into consideration. Moreover, this view does not consider the multidimensional aspects of human development. Saying that economic growth has a negative correlation with poverty is not the same thing than showing that it is a sufficient means to promote human development.

Taken the above-mentioned aspects into consideration, the CA can be used to evaluate important criticisms, which are usually made of previous theories and indicators. Considering the economic development theory, for example, SEN states that (1983: 754):

> Perhaps the most important thematic deficiency of tradition development economics is its concentration on national product, aggregate income and total supply of particular goods rather than on entitlements of people and the capabilities these entitlements generate. Ultimately, the process of economic development has to be concerned with what people can or cannot do, e.g. whether they can live long, escape avoidable morbidity, be well nourished, be able to read and write and communicate, take part in literary and scientific pursuits, and so forth.

According to Sen, the measurement and promotion of human development, well-being, standard of living, or freedom in the positive sense, demands the concept of capabilities. If we are trying to measure human development as a whole, the theoretical foundations behind this concept must be wider enough to catch all the dimensions it has. In this sense, the Capability Approach (CA) can be considered the broader option available, once it provides the wider informational space for normative evaluations.

The traditional economic development process can be seen as a mechanism that only contributes to an improvement in the commodity entitlements –despite the progress in individuals' basic capabilities. The amount of entitlement is a source of capability improvement, but it is not an automatic guarantee of capabilities. This means that "on the basis of this entitlement, a person can acquire some capabilities, i.e. the ability to do this or that (e.g. be well nourished), and fail to acquire some other capabilities. The process of economic development can be seen as a process of expanding the capabilities of people" (SEN,1983:755).

The arguments used by Sen in defence of improvements in people's entitlements are the main philosophical foundation for justifying the promotion of human development. In Sen's definition, entitlement refers to the set of alternative commodity bundles a person can command in a society using the totality of rights and opportunities he or she faces (SEN, 1983). Even being only a small part of the CA, the concept of entitlements deserves attention and proper interpretation. As SEN (1983: 755) argues, "we have to go not merely beyond the

calculus of national product and aggregate real income, but also that of entitlements over commodity bundles viewed on their own". In this sense the CA differs from the mental metric of utilities. The contrast is similar to the general one between pleasure, on the one hand, and positive freedom, on the other. The main idea behind the entitlements is related to its effects on capabilities. In other words, ultimately, we should be concerned with what people can or cannot do and not simply with what they have.

According to SEN (1985, 1987, 1992, 1997 and 1999), well being evaluation could be done using an interconnected set of functionings. The whole well-being can be estimated from the constitutive elements of the functionings. Personal well-being can be represented by a functioning index of an individual. The CA is different from the conventional conception of well-being, which is mostly centred on the economic aspect. In other words, the CA also values the beings of each person, which means that the evaluation is not only restricted to the amount of resources one has. People's quality of life is evaluated in terms of capabilities to get the functionings that one considers valuable. The valuable functionings range from the most basic values until those sophisticated and complex ones.

Even being considered an alternative to human development evaluation, the CA has faced practical criticisms related to its implementation. In the following section we present a summary of the main criticisms and difficulties which have been faced by the CA in becoming operational.

1.3 ISSUES RELATED TO THE OPERATIONAL ASPECT OF THE CAPABILITY APPROACH

One of the main criticisms directed at the CA in the literature is about its restricted input in solving practical and operational aspects. The first criticisms of the CA came from YSANDER (1993), SUGDEN (1993) SRINIVASAN (1194) and ROEMER (1996). This group of critics pointed out that the CA faces problems related to the operationalisation of its multidimensional aspects, given that the approach provides no guidance about how to weight and aggregate different dimensions. The critics also refer to the CA's counterfactual aspects, associated with the choice or freedom dimension of the approach, that increases the difficulty to use the approach in practical terms.

Even so, Sen and some of his sympathisers such as ALKIRE (1998), CHIAPPERO-MARTINETTI (2000), COMIM (2001), among many others, acknowledge that the difficulties faced by the operacionalisation process can result from a lack of understanding of the approach. At the same time, the approach has been increasingly used in practical terms as a framework to evaluate standards of living, poverty, inequality, social arrangements, quality-of-life and well-being.

Indeed, the understanding of the approach can be diverse and lead to different interpretations. However, this should not be seen as a sign of embarrassment, but rather as a virtue to be explored. Sen has never proposed a single or homogeneous way of using the approach. Instead, in his view, it is better to keep the approach open to be used in the direction demanded by the different contexts. On the other hand, it is fair to acknowledge that this critique raises a huge discussion about the approach and its operationalisation problem. There are many interesting alternatives proposing to measure different subjects such as poverty, quality of life, human development, well-being and so forth using the Capability Approach. These attempts are sometimes controversial concerning what capabilities really are and how they can be measured. Some of its contributions are looking for a universal way or, in other words, trying to find a list of basic capabilities, which could work as a guide for capability measurement.

The pertinence or not of a list is a well known point of disagreement between the main capabilities thinkers – Sen and Nussbaum. According to Sen, the operationalisation process can be done without an a priory universal list of basic capabilities. In his opinion, the diversity of people, cultures and human necessities is the main justication for the openness of the approach and should not be bypassed by practical demands. Sen's argument is that a complete specification of Capabilities would be contentious. As he argues: "It is not obvious that for substantive political and social philosophy it is sensible to insist that all these general issues be resolved before an agreement is reached on the choice of an evaluative space" (SEN, 1994:49). He also notes that "there is a positive value in an incomplete theory which is consistent and combinable with several different substantive theories". In this point Sen is in agreement with the idea that the CA can be used in combination with other available contributions in the literature.

In a different direction, NUSSBAUM (2000) is clearly sympathetic to the concept of universal values and defends the idea that a list of universal central capabilities is necessary. She even presents her list, based on the idea that human beings need to reach at least a small range of central values to define what a good life is. ROBEYNS (2003) presented an extensive discussion about “the list problem”. According to her, Nussbaum’s proposition is not in agreement with Sen’s perspective of having an open approach, which can be adaptive to any difference context. Such argumentation is based on Robeyns’s understanding that Nussbaum’s list is an a priori definite list, which allows no role to people’s participation. As she points out:

> Suppose now that we apply Sen´s capability approach to a particular question, and we end up with exactly the same lista as Nussbaum´s. Would this then confirm that Nussbaum is correct in defending one particular lista? I think not. First, even if the actual list drawn up by someone using Sen´s capability approach is the same as Nussbaum´s, the underlying assumptions of what this list is, and what it is supposed to do, remain different. The theoretical status of the list will remain distinct, even if both lists contain exactly the same elements.
>
> Second, the process that generates a list is important and this could affect a list of political or academic legitimacy. Amartya Sen has repeatedly enphasized that in matters of social choice and distributive justice, processes matter a great deal. (ROBEYNS, 2003:69)

COMIM (2004) does not share Robeyns’s views, arguing that what Nussbaum has proposed is not a definite list. He also argues that much of the remaining dispute lies on a misunderstanding about the role of multiple realisability in the definition of specific capabilities. And according to Nussbaum’s proposition, he points out that “the process behind multiple realisability does not seem to be very different from what has been proposed by Sen” (COMIM, 2004:10).

1.4 FINAL CONSIDERATIONS

This paper tried to present the main characteristics of the CA, contextualising its contribution in terms of alternative approaches. It put forward the argument that the existent range of indicators and available alternatives to measure well being, human development and

so forth, are not beyond criticism. The current debate has evolved and the practical and theoretical contributions are much broader and "inclusive" than what could be explored here. However, the paper tried to delve into the main conceptual issues involved in the use of the CA.

The contributions by Sen and Nussbaum – considering the Capability Approach - brought out a new perspective in terms of human understanding, and are an alternative to be used. Nevertheless, the CA's practical application needs more research and improvement. Although the improvements have been used in many fields, they are not enough and are still very open to criticism.

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CAPÍTULO 2

THE HUMAN NEEDS (AND BASIC NEEDS) THEORY VERSUS THE CAPABILITY APPROACH: THEIR INTERCONNECTIONS AND DIFFERENCES.

2.1 INTRODUCTION

The main objective of this paper is to compare the contribution provided by the Capability Approach (hereafter CA) to previous contributions given by the Human Needs Theory (HNT) and the Basic Needs Theory (BNT). Of particular interest is an analysis of the evolution of the HNT and its recent revival. The literature related to the Human Needs Theory and the Capability Approach seems to work over the same end, and there are differences in their arguments and language used that should be clarified for a better understanding of the added-value of each contribution. With this purpose, this paper tries to identify the particularities and common elements between Needs Theory (Human and Basic) and the Capability Approach.

The Human Needs Theory originated from arguments developed by thinkers such as Hegel, Kant and Marx and consolidated the contribution of different academic fields. Because of that, the definitions and arguments found in this literature are diverse. The development and systematisation of the definitions used in what could be called ‘the first stage’ of evolution of this theory can be attributed to MINOGUE, MARCUSE (1938), MASLOW (1943,1954), TAYLOR (1943,1959), FROMM(1932), FITZGERALD (1977), SPRINGBORG (1981), and WIGGINS (1991).

During this first stage the idea behind human needs was related to needs as natural and spontaneous requirements or preconditions for moral, cultural and survival demands. The satisfaction of human needs was considered important once it could give people the opportunity to develop human powers and potentialities. In other words, needs satisfaction would promote the capacities for thinking, acting, willing, loving, enjoying and suffering (SPRINGBORG, 1981). According to Minogue, ‘human need’ is something which, by definition, has a right to be fulfilled.

The second stage in the Human Needs discourse was well-known as the Basic Need Theory (BNT). During this stage, the idea was to use the human need definition as a strategy to development policies and poverty alleviation. International Organisations, such as the International Labour Organisation (ILO) and the World Bank took the flag of human needs. However, due to practical reasons the idea of human needs was biased by imperatives from practice. The public policy implementation was much more centred in the promotion of resources and commodities possession than in certain aspects intrinsic to human needs. To a certain extent, we could argue that this second stage represented an operationalisation of the first stage by which, the broader Human Needs Theory became the Basic Needs Theory. The most important contributions considering BNT were by MOULY and KUZNIN (1978), UL HAQ (1980), STREETEN (1981) and STEWART (1988).

GASPER'S (2004) argues that the Needs Approach reached a peak of prominence in the development policies in the late 1970s, and it was marginalised in the 1980s by the neo-liberalism - the "modern resource allocation theory", focused on preferences based on money - which accuses the needs analyses of being rigid, asocial and authoritarian. In addition to that, a range of criticisms emerged, questioning the efficacy of the Basic Needs Theory as an alternative to development ethics. The main criticism of the BNT addresses the reduction of the concept to its operational aspects and the formulation of policies that promote exclusively the improvement in commodities possession. Among such criticisms, we can find SEN (1984,1985,1994) who argues that:

1) Basic Needs are usually defined in terms of commodities.
2) Commodities are assessed 'as if' they had the same value for every person;
3) Basic needs are interpreted in terms of minimum quantities;
4) 'Need' is a passive concept;
5) The Needs Theory does not work against inequalities;
6) The BNT does not attach any explicit importance to the question of positive freedom, and tends to identify commodity requirements independently of personal features and external circumstances (SEN, 1994).

From the limitations and criticisms faced by the second stage of the Human Needs Theory two new approaches emerged from the debate on development ethics, 1) the re-thinking of the Human Needs Theory and 2) the Capability Approach.

The third stage of the Human Needs Theory, or the New Human Need(s) Theory, has contributions by MAX-NEEF (1989,1991,1992), DOYAL and GOUGH (1991), GASPER (1996,2004), GOUGH (2002) and HAMILTON (2003). It is worth emphasising the high degree of diversity and richness found in these different countributions. The same feature shaped the debate during the first stage of development of the HNT.

It is within this context that the CA emerged as an alternative to both the HNT and the BNT. Even being considered by authors such as GASPER (2004) as a refinement or evolution of the Basic Needs Theory, the CA has some distinctive features that allow it to be characterised as a new approach. In particular, it provides a methodology that supports the use of broader informational spaces, including the space of needs. Its most distinguishing aspect is its emphasis on freedom, autonomy and agency as fundamental aspects of human life. Sen acknowledges the existence of links between the CA and previous development approaches. However, according to him, the CA is fundamentally different from other approaches in the sense that it does not rely upon (1) an expansion of goods and services; (2) an increase in utilities, or (3) meeting basic needs (SEN, 1984).

It is then possible to consider Sen's Capability Approach as an evolution and an alternative to previous approaches, including the HNT. Among the most known and accepted similarities between the CA and the HNT it is possible to mention a rejection of the Utilitarian Approach and a view of people's well-being as the main objective of development (SEN, 1984 and STREETEN,1981).

The main foundations of the BNT seem to have raised many questions, which are presently being discussed by the CA. The key point in this discussion is to find out whether the CA goes further than the HNT and the BNT as a development paradigm, and if it does, in which aspects. It also essential to clarify the added value of the CA as a new approach.

2.2 THE HUMAN NEEDS THEORY (HNT) AND THE BASIC NEEDS (BNT) THEORY: DEFINITIONS AND EVOLUTION.

A range of diverse contributions from different fields composes the literature about human needs and the basic need theory. Therefore, it should not come as a surprise that it is hard to achieve a consensus about the use of terminology within this area. At first glance, the notion of 'needs' is intuitive and appealing. However, as one tries to understand its different aspects, one realises that the notion of needs is complex and there are many different ways in conceptualising it. GASPER (1996, 2004) presents more than forty different uses for the meaning of need. He proposes a grouping schema using three modes, which according to him is an essential step towards understanding the needs approach. Gasper's modes are: 1) Descriptive and explanatory – in this case needs are factual entities, related to wants or desires and reflecting behaviour; 2) Instrumental – needs as requisites for meeting a given end and; 3) Normative – needs are justified as requisites or priority requisites.

The construction of the presented schema delved into the meaning and relation between needs and wants. According to Gasper, when the meaning of needs is used in a descriptive or explanatory sense, needs and wants have the same connotation, and in such a case, needs are the wants themselves. The instrumental meaning of needs reveals 'the things required in order to do other things' – the needs are means to other ends; something wanted. In a prescriptive or normative sense, needs are those things considered very important for people to have or to be something. There is no direct correlation between wants and needs – something that is needed might not be necessarily wanted.

It is important to distinguish between the Human Need Theory (HNT) and the Material Need Theory (MNT). Both are several times used as if they were the same approach, and according to Gasper, they in fact sometimes play the same role. However, in general terms it should be clarified that the HNT is broader than the MNT and embraces multiple uses. On the other hand, the MNT is much more related to practical applications of the concept of needs to the formulation of public policies. Thus, it seems appropriate to argue that, the HNT was operationalised through the use of the MNT during the 1970s. As a result, criticisms of the MNT are only relevant for some aspects of the HNT.

Many questions remain to be tackled, such as: What does Human Needs mean? Where and when was this discussion about ‘needs’ born? How did this approach evolve? Which were its main propositions? How does the Basic Needs Theory fit within the Human Needs discourse? In what follows, we explore a visual schema showing the temporal evolution of the concept of needs (Figure 1). In the sequency, we scrutinise the main stages of the HNT in order to explore its main features and links with the CA.

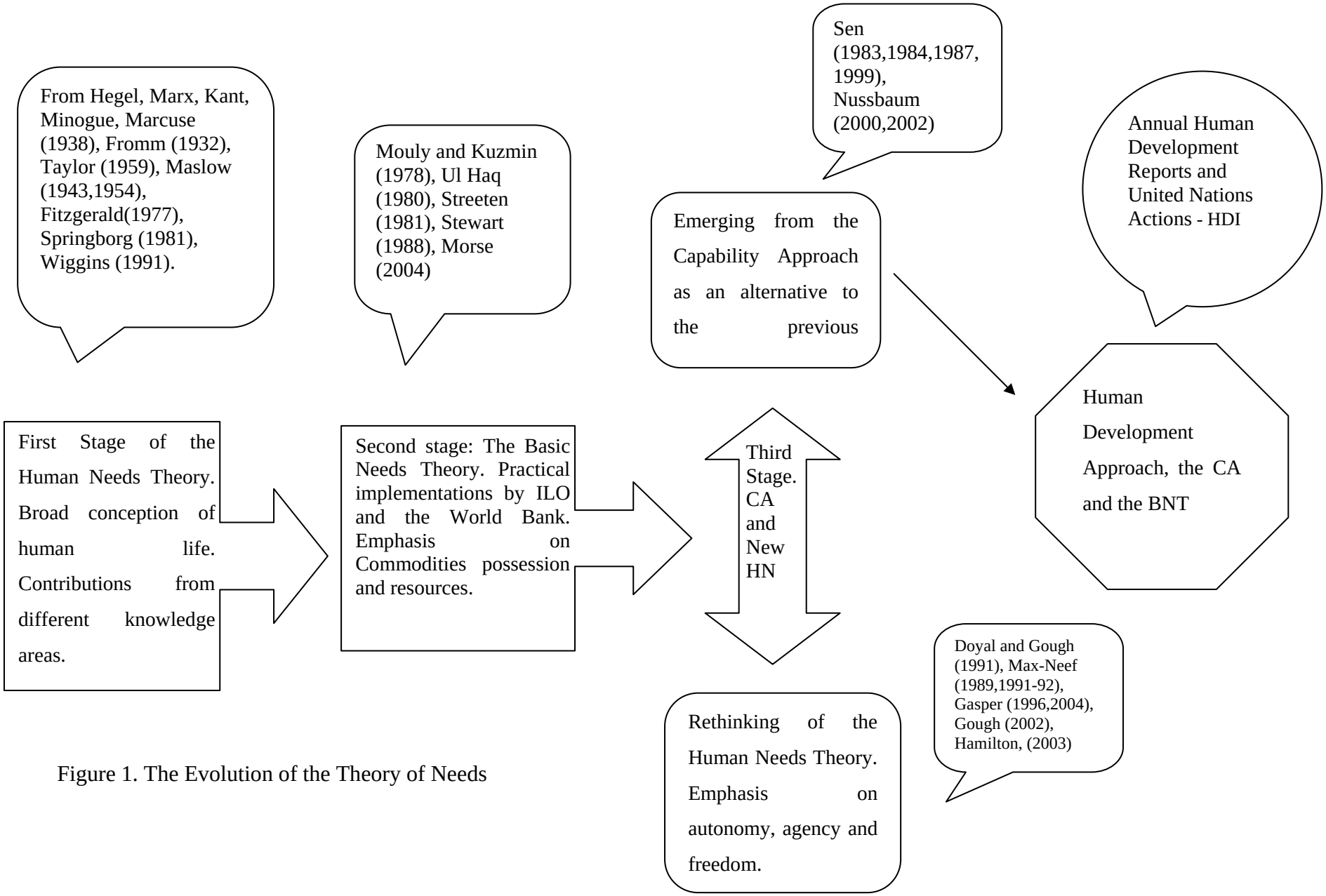

Figure 1. The Evolution of the Theory of Needs

2.2.1 – THE ORIGIN AND EVOLUTION OF THE HUMAN NEEDS THEORY (HN) - FIRST STAGE

In ordinary language, a human need seems to be an easy concept to grasp, one that most people would know its meaning. As SPRINGBORG (1981:252) argues, “the very word suggests that its content is unproblematic – that what is needed is necessary and therefore incontestable”. In other words, basic human needs can be seen as unproblematic because they are spontaneous, natural and universal. They are the demands of nature prior to all other moral or cultural requirements, which are predicated first of all on the fact of existence, or the need for individuals to survive. Although the idea of needs seems simple in principle, it turned to be a difficult concept and in practical usage. There are enormous difficulties involved in conceptualising the idea. The main problems are related to how wide a definition of needs must be.

The human need debate has a long tradition in the social, political, philosophical and economic literature. The origin of the Human Need Theory, in a more complete sense, is attributed to Marx. His ideas were especially focused on the notion of false and true needs, as SPRINGBORG (1981:253) points it out:

> In some senses it [the notion of human needs] could be traced back to Hegel, but it is more accurate to date the concept to Marx and the modifications he made to the Hegelian concept of desire. Marx was who first used the term “needs” to refer to the whole range of peculiarly human power and potentialities: capacities for thinking, acting, willing, loving, enjoying, suffering, as needs. In this way the entire contents of the Aristotelian idea of activity or praxis became subsumed under the concept of needs, on the argument that in order to actualise his nature, man needed to act out or realise these potentialities.

WIGGINS (1991:3) writes that “neither Marx nor Hegel says what a need is, or indicates what it really turns on in a given case whether this or that is needed by someone”. Hegel uses the terms needs and desires with the same meaning, without any worry about its implications. One source of difficulty is that the concept of needs is –although lurking in almost all aspects

of Marx's theory, is not fully developed as his main focus of analysis. Marx's followers, such as FROMM (in 1932) and MARCUSE (in 1938) are the first to use the conception of false and true needs. Following their writings, false needs are the output of alienation and true needs are the output of reflection and rational decision making. SPRINGBORG, (1981:6), observes that: "Briefly the doctrine of true and false needs asserts that capitalism has developed the unique capacity to perpetuate itself by introjecting into the psyche of its subjects those needs that it requires them to have in order for it to survive". Springborg argues that false needs are those created by the capitalist system and are not essential to a human being's good life. Alternatively, true needs are those essential to a human being's survival.

According to FITZGERALD (1977:ix), the Human Needs Theory that was reassured in the 1970s, "draws its inspiration from the younger Marx and also from Maslow, Fromm and Marcuse". According to her, the notion of needs is central in Marx early writings, where he defends the idea that private property does not know how to change crude needs into human needs. Following Marx, it could be argued that crude needs are inhuman, unnatural, illusory and imaginary. By contrast, human needs are expressions of our deepest natures, especially those that set us apart from brute animals (see FITZGERALD, 1977:x) In ordinary language, and in much of the political theory in the 1970s, the concept of needs not only joined but also confused normative and empirical discourses. When looked uncritically, talking in terms of "human needs", seems to bridge the logical gap between "is" and "ought to" and to overcome the "problem" of the gulf between statements of fact and of value. FITZGERALD (1977a: 196) points out that:

> The notion [of] "needs" clearly has meaning, and does make sense, in ordinary language. So too does the distinction between a "need" and a "want" and the associated distinction between "real" or "imagined" and "true" or "false" needs. Moreover "need", as opposed to "want" or "desire", carries extremely persuasive connotations. It is therefore not surprising that political theorists have seized upon it.

At the same time, the notion of needs implies that the needs people usually refer to are "good" needs. It might not be "normal" or "good" to talk about destructive features as if they were needs. In this sense, the usual conception of needs brings together the notion of social justice with current values in people's mind.

WIGGINS (1991) divide needs in absolute and entrenched needs. Absolute needs are those that can cause harm to human life when they are unmet. Entrenched needs refer to needs that are unmet for a certain period of time but not necessarily harm or damage the person future. According to him, Basic Needs are a subset of absolute and entrenched needs. An interesting point in his theory is the conceptualisation of needs as a relative concept, which can only be specified locally in a short period of time and in the same place. For him, needs are (1) relative to an account of well-being, (2) relative to culture and individual understanding and (3) relative to feasible possibilities at the time.

According to Marcuse's notion of needs, the distinction can be made between "true" and "false" or "alien" needs. True needs are the vital ones "while false needs are those which are superimposed upon the individual by particular social interest in his expression: the needs which perpetuate toil, aggressiveness, misery and injustice" (see FITZGERALD, 1977:xi). The existing notion of needs makes the problem of theorists more difficult once it is necessary to differentiate between "good" and "bad" (or "real" and "false") needs. In common language "need" is an imperative form of want or desire; "need" itself implies a claim or demand. Using K. R. Minogue arguments, FIZGERALD, (1977:201) explains that in ordinary usage "desire (or want) may be capricious; need always claims to be taken seriously. A need is something which, by definition, has a right to satisfaction". She adds that the way in which theorists wish to move "needs" is towards "individual freedom". By using "need" and "freedom" in conjunction, the two terms reinforce each other and in the process elevate the imperative power of the notion of "need".

The understanding of the human nature is the first step to define human needs, according to SPRINGBORG (1981:252).

> Man is a creature naturally insufficient, he desires objects from the external world in order to maintain and complete his existence. Desire therefore indicates the role that his own efforts to fulfil himself play in the formation and development of his identity. Desire, or need in a certain sense, is therefore expressive of man's freedom, the degree to which his nature is self-oriented in response to the insufficiency that his needs impress on him.

In her opinion, the human nature is conceived as being different from that of other animals due to the fact that the individuals' goals are open and what is good for them is not

biologically defined or prescribed by instinct. As a result, it is tempting to use the term needs with reference to the requirements of the good life. The term needs can be used to differentiate the non-physical, the moral and cultural requirements of a certain mode of self-realisation, against the innate, spontaneous impulses which are common to all animals and which might be called needs in a different sense.

SPRINGBORG (1981:253) notes, "from Marx to Erich Fromm and Abraham Maslow, needs have been used to describe the whole hierarchy of human motivations and aspirations. From those needs which, are materially based, to those which express man's ability to transcend material conditions in the exercise of his wider spiritual and cognitive powers". Current attempts to present a conceptualisation of human needs show a lack of specificity related to the term need. The absence of specificity permits flexibility in the use of the theory in wide and different ways. As a consequence, such flexibility gives the impression that 'needs' is a concept appealing to common sense.

Referring to the problems with the concept and uses of the Theory of Needs, TAYLOR (1959:107-110) pointed out four different categories in which, the need statement can be used:

1) To indicate something needed to satisfy a rule or law;

2) To indicate means to an end;

3) To describe motivations, conscious or unconscious, in the sense of wants, drives, desires, and so on.

4) To make recommendations or normative evaluations. These are sometimes difficult to distinguish from which are intended as strictly descriptive statements. So, for instance, it is asserted that men have needs for affection, identity, self-esteem, the esteem of others, etc. But what is meant by such claims when they fall into this category is that men have these needs, whether or not they actually feel them, or whether or not they in fact count them as needs. This category also covers those more obvious kinds of recommendations such as: 'what this country needs is good fighting men', or 'people need freedom', etc.

MASLOW'S writings (1943 and 1954) have considered a hierarchy of human needs. He believes in a dynamic process, where once a need is satisfied human beings will try to

satisfy more sophisticated needs in a sequential way. The referred hierarchy comprises the following five needs.

1) Physical;
2) Safety needs;
3) Affection or belongness needs;
4) Esteem needs;
5) Self-actualisation or self-development needs.

The differentiation among needs, wants, drives, motives, wishes, desires or propensities are not clear in Maslow's theory. The lack of clarification about these concepts was an open door to criticism. Maslow's theory is, sometimes, considered as metaphysical and ambiguous, due to the existence of instinctual and universal elements. According to FITZGERAL (1977), the critics have also pointed out limitations in relation to the notion of a hierarchy of needs. Another important missing clarification in Maslow's writings was the distinction between human needs (the needs of humans as humans) and personal needs (the individual needs of a particular person or of a group of people). Likewise, he has not come to grips in any depth with the problem of conflicting needs and values (conflicts within the person, or between competing people, or competing groups). In his theory, there is no reference to the possible tension between individual and social needs.

On the other hand, when analysing the situation of extreme deprivation, Maslow's hierarchy received some support. Many researchers considered Maslow's ideas as a vitalist and teleological theory. The reason for such defence lies on the fact that it is difficult to deny, at least in our society, that physical sustenance, safety, affection, self-esteem, and self-development are not extremely desirable aspects of human welfare. The notion of a hierarchy is not a consensus in the Human Needs debate. It will be better discussed later using DOYAL and GOUGH'S (1991) and MAX-NEEF'S (1992) arguments.

2.2.2 THE BASIC NEEDS THEORY OR MATERIAL NEEDS APPROACH (MNA) - A PRACTICAL OR OPERATIONAL VIEW OF NEEDS?

During the 1970s, the flag of basic needs was justified as an alternative to the growth paradigm to solve the problems of poverty, especially in developing countries. Considering

poverty alleviation as the main aim of development, international institutions made a huge effort to reach development using an alternative to the conventional money based approaches during the 1970s and early 1980s. The objective was to reduce poverty in a short period of time. The strategy became known by the concept of “development projects”. Within this context, the main purpose of development was to raise the living standards of the poor and to provide the opportunity for all to develop their full potential.

The main holders of this initiative was the World Bank, the International Labour Organisation (ILO) and related official international institutions. In this sense, the practical application of the Human Needs Theory was a result of the broad efforts made by those institutions, For instance, the World Bank worked with a broader interpretation of development, in an attempt to reduce the income inequality in poor countries. MORSE (2004), STREETEN (1981), UL HAQ (1980), STEWART (1988) and MOULY and KUZMIN (1978), among others, consider the work carried out at the International Labour Organisation (ILO) as the departure point for the application of the BNT as a development strategy.

The adoption of basic needs as the main development strategy for the World Bank and related institutions is considered an evolution from abstract to concrete objectives, from a preoccupation with means to a renewed awareness of ends, and from a negative strategy of reducing unemployment to a positive policy of meeting basic needs. By doing so, the utilisation of the BNT as a strategy had the advantage of building upon the experience gained in the past, carrying policies a step further (STREETEN and BURKI, 1978).

UL HAQ, (1980) mentioned that the strategy of meeting the basic needs was part of the World Bank program to reduce absolute poverty. It became world-wide known with the launch of a set of programs in 1978. Such programs were planned to reach their aims in a short period of time. The aims took into consideration the realisation of general studies to explore basic need concepts, measurement, and their relevance; the identification of cross-country unmet needs and sector studies (education, nutrition, etc) willing to analyse the implications of meeting basic needs.

In fact, the practical utilisation of the BNT was provided much more than a poverty reduction strategy but a full development strategy. The conceptual interpretation was based on the idea

that the Basic Needs Theory was a change in the development discussion and that the concept of needs is intrinsically broad. STREETEN at al (1981:33) argue that the Basic Need Theory "becomes not a development strategy but an adjunct to, and a modification of, existing development strategies". They also stress that basic needs became not only a slightly modification but a broader framework. STREETEN at al (1981:33) state that "a basic need approach to development attempts to provide the opportunities for the full physical, mental, and social development of the human personality and then derives the ways of achieving this objective". Other important element in the BNT is the emphasis not only on the ends but also on the means of people's lives. Thus, the authors call our attention to the important fact that the means for achievement development cannot be ignored. Referring to the 1970s version of the BNT, MORSE (2004:60) comments that

> this is a broader based definition that includes shelter, drinking water, sanitation, education, health care, etc. as well as food and clothing. Also included in this basic needs perspective are issues such as social participation, right to work, self-reliance and a voice in decision making. The basic needs approach is more relative than subsistence as it may change with time and place.

During the 1970s, the approach was interpreted in two distinct ways. The first way viewed basic needs as the culmination of twenty-five years of development thought and experience. According to this view, the BNT embraces the previous approaches such as rural development, poverty alleviation, employment strategies, redistribution with growth, and related frameworks. In short, the BNT would have the advantage of meaning several things to several people. According to STREETEN at al (1981), there were voices claiming that the approach was an all-embracing development strategy. However, according to them, difficulties to demarcate and incorporate objectives would make it difficult to justify the approach as a broad development strategy.

The second interpretation would bring out sharply the distinctive features of the BNT and would describe it as supplementing or complementing existing strategy. The emphasis was at its paradigmatic change. In STREETEN at al (1981: 33) words,

> This approach has the tactical defects of its intellectual merits: it tends to evoke controversy, arouse opposition to certain aspects, and may reduce the chances of reaching agreement on action. But it has intellectual and political appeal because it cannot be accused of simply

> pouring old wine into new bottles or of concealing behind a polemical slogan questions calling for serious analysis and experiment.

According to STREETEN et al (1981), there are four methods of practical implementation of the BNT, which are: (1) the "count, cost and deliver" approach; (2) the provision of earning opportunities for the poor, raising their productivity, and improving their access to both inputs and markets, (3) the organisational and institutional requirements of meeting basic needs, (4) the need to mobilise the social and political power of the poor and to permit full participation in the design, execution, and monitoring of anti-poverty projects.

In a contribution to the operationalisatio of the Basic Need Theory, STEWART (1985) summarises the discussion about the meaning of Basic Needs saying that there is general agreement showing that the BNT involves focusing on the fulfilment of certain "minimum human needs". However, there is some confusion about the justification for selecting a particular bundle. This is due to two different interpretations of the meaning of BNT. They are:.

1) View one: it asserts that there are certain amounts of goods and services which every human being ought to have in order to live a decent life. For Stewart, this view is attractive because it offers a well-defined set of targets for planning purposes. Deficiencies can be measured; the costs of meeting them can be estimated; and it has strong political/normative attraction. On the other hand, the problem with this view is how to justify any particular selection of items to be included in the bundle, and what are the priorities among them. Moreover, most of the items in the targets are not wanted for themselves, but instrumentally as means to improve the conditions of life (STEWART, 1985).

2) View two: it defines the BNT's main objective as being an improvement in people's conditions of life (or quality of life). The bundles of BN-goods are selected according to whether or not they contribute to this ultimate objective – which is described by STEWART (1985) as the "full-life objective". What is considered the full-life objective may be defined extensively or minimally. What Stewart calls minimal definition confines the objective to health and perhaps education. And the extensive definition would include all sorts of other characteristics such as necessary conditions for the enjoyment of art, for entertainment in general, for full participation in the political process, and so forth.

With the above definitions and difficulties in mind, STEWART tries to operationalise the BNT. She considers that the "basic need approach to development is one which gives priority to meeting the basic needs of all people"(1985:1). In her view, the demand for satisfaction of people's basic needs is not a new aim, and it was already the main aim of the development approach based on growth. She argues that (1985: 2)

> Basic need is an approach to development, not an strategy, in the sense that it consists of giving priority to a certain type of objective of development, but does not dictate the means by which this objective is achieved. In fact, as we shall see, very different types of strategies may be effective in meeting BN. Consequently; it is helpful to be clear, right from the start, that the BN approach is concerned with the objectives rather than the mechanisms of development.

Thus, the main difficulties to meet basic needs satisfaction would be:

- The translation of the idea of BN into action, into plans, policies and projects;
- The achievement of BN is complex, both in terms of identifying the appropriate measures, and in terms of mobilising the required political will.

The operationalization of the BNT could be done, choosing the bundle of goods according to the effects that they would have on the chosen objective. This may lead to a different bundle from those chosen with respect to the first view. Following Stewart, the characteristics of a truly full life would include many aspects, such as material, social, cultural and political elements. According to her, to include all these in the BN-objective would immensely complicate the process of planning for BN, since it would be necessary to ascertain the relationship between consumption of goods and services and achievement with respect to each of the characteristics of the full-life objective. Most of these relationships are not known and moreover, there is not even an agreement about how to measure achievements (e.g. with respect to culture), and without that it would be difficult to investigate these relationships (STEWART, 1985).

One option in targeting practical purposes would consist in simplifying these relationships and to emphasise the role played by health and education as the main dimensions of a full-life. The three main aspects would involve distribution, time and exclusivity. The justification for distribution concerns lies in the fact that in poor countries a large proportion of the population may be far from meeting their basic needs; some are more deprived in this respect them others. (Even the richest section of the population may have

some needs, which could be better met). But it is difficult to go from there to defining precisely how much weight should be given to different groups, and at what point zero weight should be given to further BN fulfilment.

The time dimension in BN-achievement highlights the important aspect that some needs have urgency to be filled and cannot wait until economic growth (eventually) happens. As STEWART (1985) argues, it is part of the definition of the BN-objective to give strong preference to the short-run fulfilment of basic needs. The exclusivity aspect refers to the necessity to define what will be included in a development plan and how much weight each kind of good will have in this plan. For example, what will be the importance of consuming non-BN goods? Will non-BN goods consumed by poor people have some importance in a development strategy?

STEWART'S (1985) view of the Basic Need Theory is settled on the idea that the approach comes from the early 1950s, time where two strands of criticisms were directed to economic growth as the only approach to human development. These strands indicated that 1) the development has a dependent nature and that 2) the problems of unemployment, under-employment, income distribution and poverty are the negative side of the bright side of economic growth.

2.2.3 RE-EMERGENCE OF THE HUMAN NEEDS THEORY

DOYAL and GOUGH (1991) referring to the use of the HNT argue that the notion of human needs has been widely used since its origins. It is sometimes used to justify public policies, both in a good or bad way. This dual notion of needs is matched by another dichotomy in terms of the degree of objectivity of particular needs. A human need is normally a subjective and culturally relative concept that can be considered a credo. And yet, at the same time, the "wide range of concepts concerning the evaluation of the human condition seems inextricably linked to the view that universal and objective human needs do exist" (DOYAL and GOUGH, 1981:2)

According to GOUGH (2002:7), the concept of "needs refers to a particular category of goals which are believed to be universalisable. The contrast with wants, goals which derive from an individual's particular preferences and cultural environment, is central to our

argument". DOYAL and GOUGH (1991) arguments for the universality of needs are settled in the belief that if needs are not satisfied, some goals can be seriously damaged. Damage or harm means a fundamental disability in the pursuit of one's vision of the good or an impediment to participate successfully in social life. Taking the early ideas and discussions about human and basic needs theory, DOYAL and GOUGH (1991) present a new Human Need Theory, in which they develop a different hierarchy of needs.

According to DOYAL and GOUGH, (1991) the universal human goal is the avoidance of serious harm to critical participation in a chosen form of life. To reach this goal, human beings must have to satisfy an optimum level of Basic Needs (BN) and Intermediate Needs (IN). Physical Health and Autonomy of Agency are considered the fundamental basic needs. The optimisation of these aspects will result in 'critical autonomy'. The necessary means to get the BN are considered Intermediate Needs (IN). The intermediate needs are composed by a list of 11 life important components[7]. People will satisfy the IN through specific satisfiers which can differ according to societal preconditions and specificities.

'Avoidance of serious harm' can be considered a goal to reach a good human life. According to DOYAL and GOUGH (1991), in ordinary discourse, basic needs are linked to the avoidance of serious harm. What is understood by serious harm is explicitly or implicitly the significantly impaired pursuit of goals, which are deemed of value by individuals. In this sense, a seriously harmed person is the one fundamentally disabled in the pursuit of one's vision of the good. Another way of describing such harm concerns the impact of social participation on individuals' needs. The emphasis on social participation comes from the belief that human beings are eminently social beings. For DOYAL and GOUGH (1991), humans build a self-conception of who they are, discovering what they are and what they are not capable of doing –which comprises their achievements based on their participation in social life. A formal definition of harm comes from MILLER (1976:134), who argues that "harm means whatever can interfere in people's realisations of their goal". The search for a good life must be based on universalisable preconditions that would enable a minimally impaired participation in the forms of life, in which individuals would find themselves. They

[7] 1)Nutritional food and clean water; 2) Protective housing; 3) A non-hazardous work environment; 4) A non-hazardous physical environment; 5) Safe birth control and child-bearing; 6) Appropriate health care; 7) A secure childhood; 8) Significant primary relationships; 9) Physical security; 10) Economic security; 11) Appropriate education.

should also be in a position to subsequently choose this situation if they believe that the existing form of life is wrong.

Using arguments from Kant, DOYAL and GOUGH (1991) argue that for individuals to act and be responsible they must have both the physical and the mental capacity to do so. Kant's analysis of freedom anticipated the contemporary argument that the "behaviour" of the body has to be distinguished from the "action" that accompanies it. An autonomous individual has the ability to make informed choices about what should be done and how to go about doing it. Autonomy means being able to formulate aims based on beliefs and deal properly about how to achieve such aims. It also means to have the ability to evaluate the success of these beliefs in the light of empirical evidence and have the capacity to make "one's own" mistakes performing the same roles as regards the success and failures of one's actions.

An example of a search for autonomy could be a woman who is trying to increase her understanding of actions and their consequences through working during the day and going to school at night. She will hardly appreciate the news that she already possesses the autonomy, which she is working so hard to increase. Her goal is to get the capacity to do more of the things that she believe are significant within her culture than she is capable of at present (DOYAL and GOUGH, 1991:55). The authors point out that when they are referring to survival and autonomy as basic needs, they are driving our attention to concrete ways in which individuals or collective groups can act to sustain or improve their satisfaction. However, the basic needs already have to be satisfied in some degree to account for the possibility of action in general. The success of future actions will also depend on the survival chances and the degree of autonomy, which has been acquired by the actor(s) at the time of their execution. In summary, they note that, in general terms, survival and autonomy are basic preconditions for the avoidance of serious harm.

On the other hand, it is important to be aware of the necessity to distinguish survival from physical health. If a person is only surviving in a disabling way, like someone living in coma after a serious accident, survival does not mean much. Physical health demands more than simply to be alive or breathing – it demands to be able to do things that are considered important for a full human life. Autonomy means the capacity to formulate consistent aims and strategies and to be conscious of the fact that they are realisable. According to DOYAL and GOUGH (1991), there are three key variables affecting the level of individual autonomy:

- the level of understanding that a person has about herself, her culture and what is expected of her as an individual within it;
- the psychological capacity that she has in order to formulate options for herself; and
- the objective opportunities that might enable her to act accordingly.

The understanding level is supposed to be dependent on the learning possibilities of individuals. People do not teach themselves to act – they have to learn from others – from teachers, parents, society, and so forth (DOYAL and GOUGH, 1991:60). Based on this argument, they suggest that people can be damaged by the way in which they are taught. Without having their curiosity sparked and their intellectual confidence reinforced, the scope of their potential choices will be artificially constrained along with their ability to impact upon the world and upon others.

The second argument relates to mental health or, in other words, to cognitive and emotional capacity. The idea is that the existence of minimal levels of autonomy will entail the following over sustained periods of time.

a) that actors have the intellectual capacity to formulate aims and beliefs common to a form of life;

b) that actors have enough confidence to want to act and thus to participate in a form of life;

c) that actors sometimes actually do so through consistently formulating aims and beliefs and communicating with others about them;

d) that actors perceive their actions as having been done by them and not by someone else;

e) that actors are able to understand the empirical constraints on the success of their actions;

f) that actors are capable of taking responsibility for what they do.

The third variable affecting the degree of autonomy relates to opportunities. According to that, autonomy will be increased if the ranges of opportunities for new and significant actions are open to agents. This means that when we link improvements in autonomy to increasing choices, we do not mean any old choices. To make significant choices – and to

enjoy the pride and pleasure of knowing that we have successfully done so – we must have new choices or new opportunities. Once these new opportunities are denied, freedom and autonomy are constrained.

In summary, DOYAL and GOUGH (1991) argue that certain conditions must be met before humans can assume the mantle of persons, what means that they have to be able to participate in a cultural form of life. In practice, they must have the physical, intellectual and emotional capacity to interact with fellow actors over sustained periods in a way that are value and reinforce in some sense.

MAX-NEEF (1989,1991, 1992), in his proposition for a "Human Scale Development", believes that human needs, self-reliance and organic articulations are the pillars which support human development. He emphasises that his conception of needs is not paternalist and that people should not be seen as passive receptors of resources. He argues that the referred pillars "must be sustained on a solid foundation which is the creation of those conditions where people are the protagonists in their future" (MAX-NEEF, 1992:198). In his view, people's participation must not be hierarchically organised in a top down system of needs, but instead individuals should respect the diversity and autonomy of other human beings. Specifically referring to human needs, MAX-NEEF notes that (1992: 199):

> Human needs must be understood as a system; that is, all human needs are interrelated an interactive. With the sole exception of the need of subsistence, that is, to remain alive, no hierarchies exist within the system. On the contrary, simultaneities, complementarities and trade-offs are characteristics of the process of needs satisfactions.

In 'Human Scale Development', needs are organised into two categories – existential and axiological. The existential category refers to being, having, doing and interacting; in the axiological category are subsistence, protection, affection, understanding, participation, leisure, creation, identity and freedom. For a complete matrix see MAX-NEEF (1992: 206-207). Max-Neef work brings into the analysis of human well-beings an important distinction between needs and satisfiers. To clarify this point we use one of his examples - food and shelter. He argues that neither food nor shelter must be interpreted as needs. Shelter and food are the satisfiers of the fundamental need of subsistence. It is important to have in mind that

for each fundamental need there are many different kinds of satisfiers and each satisfier can be useful for one or more fundamental needs at the same time.

Another fundamental contribution from Max-Neef's Human Needs Theory is that his definition of 'fundamental needs' allows the use of the same needs in different cultures, places and over the time. The differences among cultures, places, time and development stages will be due to the particular satisfiers used for the fulfilment of those fundamental needs.

According to DOYAL and GOUGH (1991), planning or the implementation of basic need strategies demands not only the satisfaction of individual or personal predispositions, but also the fulfilment of societal preconditions. This means that to promote individual autonomy, freedom of agency and political freedom are necessary. In the liberal political tradition, both autonomy and freedom are seen as absence of constraints on actions. The meaning for "constraint" here is not the wide one, according to which people are completely self-sufficient. Such an individualist conception of autonomy cannot be sustained. Rather, individuals are seen as members of societies, where they exercise their autonomy and freedom.

The Human Need Theory, developed by DOYAL and GOUGH (1991), gives strong importance to social interaction in the characterisation of human freedom. Thus, individuals discover whom they are through learning and what they can and cannot do in the society where they live. Individual action is social in the sense that it must be learned from and reinforced by others. The learning process follows rules, such as: people are identified and identify themselves as players with reference to the appropriate set of rules. They cannot choose to play 'the rules of the social game' unless they agree to follow these rules. But their autonomy as players is secured because there are so many different ways in which they might individually select to play.

2.3 THE EXISTENT RELATIONS OR INTERCONNECTIONS BETWEEN THE CAPABILITY VERSUS THE HUMAN AND BASIC NEEDS THEORY

GOUGH (2002) presents a comparison between his own theory and Nussbaun's list of central capabilities. According to him, despite using a different terminology, the concept of 'capabilities' in Sen's and Nussbaum's writings and the concept of 'needs' in Gough and

Doyal's theory are very close. Indeed, he points out that the goal is the same in terms of (1) a fully universal conception of capabilities/needs; (2) a critique of cultural relativism; and (3) an argument for the existence of needs/capabilities entailing strong moral claims.

To make a comparison between the two approaches, GOUGH (2002) identifies their components, derivation and levels/thresholds as headings. Figure 2 below presents the components from each approach and shows the existence of an overlap between many of the features presented .In terms of their derivation, GOUGH (2002) acknowledges that there are differences in terms of the procedures that the approaches adopt to derive their components. However, he sustains that their motivations are similar. At the level aspect, GOUGH (2002) points out that Nussbaum continually speaks of a fully human life, of a human being's truly-worthy life. On the other hand, she identifies a lower threshold level of capability, a basic social minimum which should be secured for all citizens. Much of the detailed argument in her other books (NUSSBAUM 1999 and 2000) focuses on this minimum rather than on a comprehensive list of requirements for human flourishing.

DOYAL and GOUGH'S (1991) Human Needs Theory claims that human liberation, human flourishing, critical autonomy is in fact a basic need, and that individuals should have the right to an optimal fulfilment of their basic needs. However, they end up focusing much of their attention on lower standards of satisfaction of basic needs: on avoidance of serious harm and on minimally disabled uncritical participation of one in one's form of life.

GASPER (1996) points out that SEN's (1985) and STEWART's (1985) contributions are a refinement and systematisation of the Basic Need Theory. He also argues that "the human development approach and the work of Sen, Nussbaum and associates are presented as a refined foundation for development ethics and development policy and as an alternative to neo-liberalism"(1996:72). In particular about Sen's work, GASPER (2004:164) notes that "he also offers one way of building on the strengths in needs discourse while avoiding its dangers and extending its scope".

The figure 2 below shows a summary of some of the conceptions and characteristics discussed above, emphasising the importance of the needs discourse. It makes clear that the Needs Theory is wider than its operational arm – the Basic Needs Theory (or the basic material need approach). It is interesting to note that as the CA, the BNT also deals with

aspects concerning the human being as a whole. They both consider the physical, psychological, material, cultural and social aspects of individuals as a whole.

Reference	**Needs conception, function or characteristic.**
Fromn	False and true needs
Marcuse	Vital and superimposed needs
Taylor	Needs can be: - rule or law satisfaction - means to ends - description of motivations - guide to recommendations or normative evaluations
Fizgerald	Needs are expressions of our deepest natures, especially those that set us apart from brute animals. Theorists want to move needs through individual freedom.
Springborg	Based on Marx's writings, she argues that needs represent human powers and potentialities: capacities for thinking, acting, willing, loving, suffering. - whole hierarchy of human motivations and aspirations
Wiggins	Absolute needs can cause harm to humans when unmet. Entrenched needs are those that can damage life
Doyal and Gough	Needs satisfaction is the physical and mental capacity to reach the humans' goals. Needs can be: Basic or intermediate Basic: Physical health and autonomy Intermediate: means necessary to get the basic needs
Max-Neef	Human needs is one of the pillars to support development, together with self-reliance and organic articulations. Human needs are a system – not hierarchical There are two categories – existential and axiological - Existential: it refers to being, having, doing, interacting - Axiological: it refers to subsistence, protection, affection, understanding, participation, leisure, identity and freedom. Distinction between needs and satisfiers.
Gasper	Needs conception and uses can be divided in: - Descriptive or explanatory - Instrumental - Normative And can also be subdivided in: - Human Need Approach (HNA) - Material Need Approach (MNA)

Fonte: Elaborado pela autora

Quadro 1: Concepts of needs

Another interesting aspect in the needs theory is that their contributions come from different schools of thought and have being built with different terminologies and aims. For

example, there is no agreement about the hierarchal aspects of needs: whereas in Maslow's opinion needs are hierarchical, Max-Neef's theory defends the idea that needs are systemic and there is no hierarchy.

Summing up, the main similarities and differences between the two approaches are:

Similarities:

Both approaches share similar aims such as:

1) To promote a good life;
2) To find the way to make people flourish as human beings;
3) To be a basis for political principles;

And they both are:

4) Difficult to be operationalized;
5) Alternatives to Utilitarianism;
6) Multidimensional

Specificities

Human Needs

- The approach does not tackle the 'conversion problem' of resources into beings and doings
- Resources are seen as satisfiers and as such they receive more emphasis in the promotion of development than they do in the CA
- The approach uses a more accessible language, it is easier to understand and it seems to be more political accepted in comparison to the CA,
- The HNT targets can be assessed using conventional data

The Capability Approach

- It is broader than the HNT in terms of conceptual formulation and application - it deals with a wide range of subjects and it can be used from many different perspectives.
- Its main emphasis is not on resources -they are just means to reach human ends; (good life or the life people consider important)
- It employs complex terms based on a philosophical jargon
- It is more difficult to be used with conventional (secondary) data

As mentioned earlier, the BNT can be considered the operational side of the HNT. The BNT characteristics, more deeply centred on resource possession, can, in some way, be the main culprit for the criticisms directed to the whole of the HNT. On the other hand, it must be noted that UL HAQ (1998) and ALKIRE (2001) argue that the concept of basic needs was not centred only in commodity possession. Instead, the core of this theory was concerned with the provision of opportunities for all to have a full life (in particular the poor). Several times the HNT was criticised because it was understood that it was restricted to its BNT and its emphasis on economic resources. This is an important point. Complex theories of development ethics need to be operationalised to achieve practical relevance, but in this process they are often misread or simplified. This is what seems to have happened with the HNT and there is no guarantee that the same would not apply to the CA.

The contributions by BRAYBOOKE, DOYAL and GOUGH (1991), Sen (1983,84,87,1999) and STEWART (1985,1996), amongst others, systematised and better justified some BNT concepts. These contributions distanced themselves from psychological theories of well-being in terms of needs, and concentrated on clarifying the structure of an ethics of needs. In the 1990s these forms of normative analysis of needs emerged under a new flag: Human Development (GASPER, 2004).

According to GASPER (1996), at the same time that the BNT was being used as the main foundation for the Human Development Theory, it was been criticised from main different angles such as those of Orthodox economics, critics of socialism and the welfare state and feminists[8]. Despite these criticisms, the BNT could still be consider relevant for contemporary discussions. As suggested by GASPER (1996: 73), “The basic needs approach offers a counter policy discourse to liberal and neo-classical welfare economics, with ideas of basic needs taking a somewhat comparable background role to economic man but as an alternative to that dead weight”.

ALKIRE (2003) points out that the public appeal and understanding of the concepts of BNT and its operationalisation can be easier to grasp in comparison with the CA. Needs, according to her are only partly intentional. On the other hand, the CA provides a more adequate conceptual framework, even being more complex and representing precisely a potential for choice and action – capabilities are intentional. Referring specifically to Sen’s

contribution (GASPER, 2004: 164) argues that “Sen also offers one way of building on the strengths in needs discourse while avoiding its dangers and extending its scope”, adding that Sen ‘s categories have helped to put normative needs theory on an adequate footing.

2.4 FINAL CONSIDERATIONS

Summing up the discussions about the CA and the HNT and BNT, we can conclude that the approaches are similar in several aspects. The critics directed at the HNT by the CA theorists are only valid for the BNT in its expression as the Material Needs Approach, not being applicable to the Human Need Theory as a whole. In addition, we can say that the Human Needs Theory and the Capability Approach are complementary approaches, both pointing to similar standards of evaluation and political aims. Even considering the fact that they have different departure points and that they use different terminologies, both approaches can be used to solve similar practical problems, such as poverty alleviation, deprivation, famines, and so forth.

And yet, the philosophical foundations (with their ultimate emphasis on the autonomy of individuals as the main benchmark of their advantage) of the CA seem to go further than the ones put forward by the HNT. Paradoxically, whereas the CA’s diversity in terms of applications seems to be wider than that of the HNT, it is within the HNT, in particular, in Max-Neef’s contribution, that we find one of the most promising ways of handling diversity and complexity in assessing human well-being, namely, through the use of satisfiers in providing an operational metrics for needs.

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[8] See GASPER (1996:72)

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CAPÍTULO 3

HUMAN DEVELOPMENT INDEX (HDI) AND ITS FAMILY OF INDEXES: AN EVOLVING CRITICAL REVIEW.

3.1 INTRODUCTION

The demands for good social indicators are well-known: indicators should be reliable, consistent, sensitive to responses, measurable, user-friendly, cost-effective, policy-relevant and valid, among other requirements. The difficulty in building indicators with these properties and in aggregating and using them should not be underestimated. A paradigmatic case-study of elaborating and using human development indicators is provided by the Human Development Index (HDI). The HDI is currently used for many different purposes; from a comparative index to a decision-making instrument for public policy decisions. It is also used as a 'blaming and shaming' index in the media. For this reason, in this paper we delve into the foundations of the HDI, exploring to what extent it can be considered an alternative to the use of the gross national product (GNP) as the main measure of human development. Our focus is mainly on the HDI and its family of indicators, its evolution and unsolved technical issues.

The topic HDI is of particular concern for all those interested in the operationalisation of development ethics paradigms. In its own way, the HDI can be seen as a combination between the previous approaches such as those inspired by Utilitarianism (Economic Growth), Basic Needs (BN) and the Capability Approach (CA). In general terms, the HDI was the main instrument through which the HD approach became widely known. The HDI tries to measure the level of the HD and to represent human well-being at national, regional or municipal levels. By doing so, the HDI tries to provide a summary indicator of the BN and CA goals.

According to ANAND AND SEN (1994), the motivation behind the creation of the HDI was the search for an index that could be able: "to focus directly on the lives that people lead – what they succeed in being and doing" (1994:2). The information from the index should be able to answer the following questions about people lives:

> Do they have the capability to live long? Can they avoid mortality during infancy and childhood? Can they escape preventable morbidity? Do they avoid illiteracy? Are they free from hunger and undernourishement? Do they enjoy personal liberty and freedom?" (ANAND AND SEN (1994:2).

The general motivation among the HDI creators was the willingness to provide an alternative index to the GNP (or GDP) and income based measures. The first difference to be noted is that the HDI is a multidimensional index that tries to portray a measure of capability achievements. Although the HDI is supposed to measure capabilities, ANAND AND SEN (1994:12) acknowledge that the index "has been concerned only with the enhancement of very basic capabilities of people". In their view, the HDI can suffer from a limitation concerning the lack of power to capture the differences among the industrialised and advanced countries. Once income and literacy are very similar in terms of achievements among developed countries, the only differences are due to small variations in life expectancy. But they recognise that if the aim is to capture a slightly high level of development, there is the need for a more complex indicator. In their words: "Yet once we take of the high and similar levels of achievement of basic capabilities, it becomes relevant to assess performance using more refined capabilities" (ANAND AND SEN, 1994:13).

What is being measured as High Human Development in developing countries, for example, can be rather different from the same index in developed countries or regions. In this paper, without ignoring these general limitation of the HDI, we focus on the following aims:

1) To analyse the HDI's evolution since its creation, looking at the contributions and criticisms put forward;

2) To investigate the correlation between high HDI and people's real capabilities and/or opportunities and;

3) To examine the conditions under which the HDI can reflect human development and the necessity to build a set of related indicators.

The paper is structured into six parts Following this introduction, the second part presents the main characteristics of the HDI, since its origins, emphasising its evolution. In the third part, the construction of the HDI is scrutinised and the main criticisms of the index are discussed. Part four examines the most important reactions to the criticisms (mostly from

UNDP). In the fifth part, the technical modifications in the HDI are investigated. Finally, the paper concludes with an overall assessment of the HDI as a measure of human development.

3.2 THE HUMAN DEVELOPMENT APPROACH

The first part of this section refers to the origins and the evolution of the Human Development Approach. It is important to keep the approach in mind because the indicator is nothing else (or at least should not be) than a representation of the categories highlighted by the approach. Subsequently, the last part discusses the creation of the HDI (as a representation of human development) and its measurement problems. The origin of the HD concept goes back to more than thirty years ago. However, considerable progress has been achieved in the last decade, especially in the conceptualisation of the theme. The high point of this debate comes after the 1990s, when the United Nation Development Program (UNDP) published the *Human Development Reports* (HDRs)and the *Human Development Indexs* (HDIs).

The Human Development Approach emerged as an attempt to put people back in the centre of the discussions and actions related to economic and social policies. The HD paradigm is defined as a process that covers all aspects of development – whether economic, international trade, budget deficit, fiscal policy, savings, investments in basic technology, social services or safety nets for the poor. “No aspect of the development model falls outside its scope, but the main advantage is the widening of people’s choices and the enrichment of their lives. All aspects of life are viewed from that perspective” (UL HAQ, 1998: 20).

The arguments present at the HDR (1990: 9-10) are that the core ideas of the HD refer to the fact that human well-being is central to the goal of development and that human beings constitute the major economic resource. Sen has emphasised that human development is a process to improve people’s capability to do or to be what they consider valuable. In other words it means to improve people’s positive freedoms (SEN, 1985, 1987, 1992, 1997, 1999). As STEWART (1996) argues, the HD definition draws on elements from Basic Needs (BN) and from the Capability Approach (CA), intending to focus on people as a priority in themselves. The attempt is to promote all aspects of their lives, from their basic physiological needs until psychological necessities, feelings, freedom and autonomy of choice.

The concept of Human Development can be seen as a natural follow-up from previous critiques of economic growth as a measure of social well-being. But it is more than that. This conception brings intrinsically a deep concept of human life, which is closely related to poverty and well-being discussions. Human Development provides a wider concept of the meaning of 'good life'. In this sense, human development is a concern for all human beings, not limited to those who are under economic deprivation. This is not a new, nor an original idea, but a result from long previous discussions (UL HAQ, 1998, STREETEN,1994, DESAI, 1991).

The first ideas about human development were born from issues related to the sustainability of economic development and the existing doubts about economic growth sufficiency. These references are dated from the end of the last World War. During the sixties, doubts about the desirability of growth were added to the sufficiency problem. At this time the poverty issue started to emerge and high economic growth rates were not helping to reduce poverty. In the following years, in the early seventies, the occurrence of environmental problems was added to previous discussions on human development (DESAI, 1991).

The economic effects of the 1970s' oil shocks moved this debate away from the middle to the end of the seventies. In the eighties, themes concerning poverty, income distribution and environment received again a central place in academic and policy-making discussions. During the eighties, many problems emerged as an outcome of economic growth, in particular, much damage was done to the environment and income became more concentrated, resulting in social problems. Doubts were raised about the efficiency of economic growth as an appropriate instrument for quality-of-life (DESAI, 1991).

An investigation about the roots of the idea of human development paradigm would identify two main strands. One would come from studies about economic inequality, social choice and poverty (informed by the BN and CA frameworks). The second would come from the search for an independent non-economic indicator/measure of development, which was highlighted by the Physical Quality of Life Index (PQLI) proposed in 1979 by Morris. These two roots, from where the human development concept was born, suggest that the concept can be interpreted as going back to earlier discussions about human welfare and to later thoughts about capabilities. As put forward by DESAI (1991:534), "the [HD] concept relates to the

guaranteeing of sufficient resources, so basic capabilities are assured and examines the use people make of these capabilities".

Current and well-known definitions of human development were formulated and shaped in the nineties. They benefited from the contributions of Mahbul Ul Haq and Amartya Sen for the United Nations Development Program. According to UL HAQ (1998), there are five ideas that are common for all societies sharing a conception of human development. The first idea is the proposition that people must be in the centre-stage of human development. Each activity should be assessed in relation to the degree of participation allowed to people. The second one brings the idea that human development can be analysed in two ways – one referring to the formation of human capabilities and the other about the use that people might make of their acquired capabilities. The third idea tackles a careful distinction between ends and means - the idea is to focus on the ends of development without forgetting the means. The fourth idea is that thinking about human development paradigm embraces all aspects of society – not only in economic terms. Finally, the last idea is that people are both, means and ends in the human development process.

UL HAQ (1998) emphasised that people must be the core of the discussions about HD, which means that all other resources need to be managed to reach human well-being. In that sense, the HD idea contrasts with the radical environmentalist view, which puts the environment before humans. According to the Human Development Approach, sustainable environment is a useful strategy to help people to improve their lives now and in the future. But sustainable development should not emphasise the environment at the expense of the human dimension. The reasons why human development provide the contents for the most important development goals to be pursued by nations can be illustrated with six reasons presented by STREETEN (1994):

(1)First and above all, HD is an end in itself that needs no further justification;

(2)HD is a means to higher productivity;

(3)HD slows human reproduction by lowering the desired family size;

(4)HD is good for the physical environment;

(5)HD reduces poverty and contributes to a healthy civil society, improving democratic processes and great social stability;

(6)HD has political appeal, and so it may reduce civil disturbances and increase political stability.

The richness of the human development perspective can, however, be an embarrassment for those trying to operationalise. For instance, it has been argued that the concept of human development is clearly much wider and richer than what can be captured in any index or set of indicators (UL HAQ 1998). The paradox that can be created is that, if on the one hand, it is desirable to explore a complex conceptual basis for HD, on the other, it might decrease the chances of seeing the approach being operationalised. The problem is that ideas that cannot be operationalised are open to misunderstanding and improper use.

This is a fair concern, because, according to UL HAQ (1998) and ALKIRE (2001), it was precisely what happened to the Human Needs Approach. The concept of basic needs was not centred in commodity possession, but in its process of operationalisation, that was the main message that survived the approach. The core of the BNT was concerned with the provision of opportunites for all to have a full life, with particular emphasis on the well-being of the poor. And yet, the approach was criticised for focusing on the promotion of economic needs. By no means, this acknowledgment implies that economic growth has no role in the promotion of human development. As SEN (1983: 745) remarks, “I shall argue that the obituary may be premature, the original themes – while severely incomplete in coverage – did not point entirely in the wrong direction, and the discipline of economic development does have a central role to play in the field of economic growth in developing countries” (SEN, 1983:745).

So, it could be argued that both Economic Development theory and the Basic Needs theory were pointing in the right direction, trying to promote a broader view of human life, but that the mechanisms put forward for their operationalisation as development approaches led to narrowness and misunderstanding. The Economic Development’s emphasis on economic growth can be historically justified, within the context of the Keynesian Revolution. From this perspective, economic growth theory can be seen as a result of a time where economic growth promotion and industrialisation were understood as the most important development challenges (SEN, 1983). It is essential to keep into perspective that the main aim of Economic Development theory was to improve quality of life. The problem with that was to believe that economic growth was the only way to reach this goal.

It seems evident that the main problem with the economic development theory was to take into consideration only one dimension of human development. Surely, economic growth is one aspect of a good life, but it is not the only one. This argument is reinforced by SEN (1983: 753) who points out that "the real limitations of traditional development economics, arose not from the choice of means to the end of economic growth, but in the insufficient recognition that economic growth was not more than a mean to some other objectives. The point is not the same as saying that growth does not matter." Similarly, UL HAQ (1998) reports that the original ideas of economic theory were related to an improvement of people's quality of life, but that later, after the Second World War, an obsession with economic growth models and national account grew from the economist's main schools of thought. Other dimensions that were not passive of measurement were ignored.

It is for this reason that the HDI tried to rescue the multidimensionality aspect of human well-being that was lost with the exclusive promotion of economic development. For a long time, the main measure used to differentiate between developed and underdeveloped countries was the GNP. In due time this measure started to receive a large amount of criticisms. NOORBAKHSH (1998) mentions how early critiques of GNP measures first appeared at the United Nations report (UN, 1954). This report detailed arguments against the use of the GNP as the only way to measure standards of living. When using market values to assess human development, some distortions might appear. For instance, market prices attach greater value to guns then to milk..

The discussions about how to measure economic development in the last decades resulted in a range of different socio-economic indicators. There were important advancements in data collection, and some attempts to get a complete, practical and comparable indicator were partially successful. The most well-known result was the physical quality of life index (PQLI), calculated by Morris (1979). However, even PQLI did not become world-wide accepted. It was difficult to achieve international consensus about the use of an indicator for human development, until the HDI Report in 1990. The HDI, as presented in the 1990 Report, meant to provide i) an alternative measure to GNP indicators and ii) a concrete way of expressing the HD framework.

But the operationalisation of the HD paradigm, did not come without challenges, as explained by UL HAQ (1998). To develop and build HD indicator demands to face some difficulties had to be addressed: 1) First, some researchers proposed score economic indicators and social indicators without any composite aggregation procedure. Policy makers rejected it as a hard procedure to digest. 2) Secondly, several composite measures lacked a sound methodological base and were abandoned after brief trials; 3) Finally, the elaboration of wide-scale indicators were costly and there was a difficulty in building an alternative to GNP measures that were financially feasible. According to UL HAQ (1998), work on national income accounts had five decades of investment and research, and yet many aspects of these accounts were still being investigated, pointing out weaknesses. During the search for the HDI, the following six principles were used as guidelines:

1 - The new index would measure the basic concept of human development to enlarge people's choices.

2 - The new index would include a limited number of variables to keep it simple and manageable.

3 - A composite index would be constructed rather than a plethora of separate indices.

4 - The HDI would cover both social and economic choices.

5 - One of the most important decisions was to keep the coverage and methodology of the HDI quite flexible – subject to gradual refinements as analytical critiques, once better alternatives became available.

6 - Lack of reliable and up-to-date data series should not be allowed to inhibit the emergence of the HDI. An index can be only as good as the data fed into it, but the creation of indicators should be seen as a long-term process.

Currently, it could be said that the conceptual discussion improved significantly and that the general public has become more aware of the human development concept. However, simple issues about how to evaluate and how to promote human development, still remain controversial and sensitive to different interpretations and interests, even if there is broad acceptance about the practical applications of the index. The development of the HDI prompted a new wave of discussions about human conditions. At the same time, the HDI has been widely criticised in different ways. Sometimes, it is considered to have the same limitations as the GNP measures, as discussed below, that were traditionally used to measure economic development. The only widely-shared agreement among researchers is that poverty

and human development are multidimensional concepts and therefore, they need to be measured multidimensionally.

3.3 THE HDI, ITS PROPERTIES AND ITS CRITICISMS

3.3.1 THE HDI CONSTRUCTION AND ITS PROPERTIES

In 1990 the United Nations Development Program published the Human Development Index (HDI) for the first time. It was part of the Human Development Report (HDR). As mentioned, the main motivation of the UNDP research group was to build an indicator able to replace the GDP or the GNP. There was a consensus within UNDP that the GNP and the GDP were not adequate as well-being or capability measures. The new indicator should present characteristics such as: i) being a multidimensional index, ii) focusing on the ends of people's lives instead of on survival means, iii) being simple to calculate, iv) being easy to use and to understand, v) being feasible within the available data, and vi) being able to express capabilities. FOSTER et al (2003) argue that the HDI has the following intuitive and technical properties. It is 1) symmetric in dimensions; 2) symmetric on people; 3) replication invariant; 4) monotonic; 5) linearly homogeneous; 6) normalised and 7) continuous.

In the process of building the index, UNPD used previous UN works to shape the development of the Human Development Index (HDI). Consensus was achieved around three basic variables: life expectancy, literacy and GDP per capita. These three basic variables were considered representative of the most basic capabilities – the ones that are considered fundamental for people to develop as full human beings. The construction of the index, according to the 1990 HDR, was done in three steps:

1) First of all they defined a measure of deprivation in each dimension for each country. Maximum and minimum values were determined for each of the three variables using current actual values from the data set. The variables were named as following:

X1 – life expectancy (years)

X2 – literacy (%)

X3 – GDP per capita (log)

$$I_{ij} = \frac{(\max_{j} X_{ij} - X_{ij})}{(\max_{j} X_{ij} - \min_{j} X_{ij})}$$

The maximum and minimum values were taken from the data set and X_{ij} represented actual values for the country.

2) The second step was to define an average deprivation indicator (I_j) (UNPD, 1990:109).

$$I_j = \sum_{i=1}^{3} I_{ij}$$

3) Finally, the last step involved a compilation of the different dimensions:

$$(HDIj) = (1 - I)$$

The original formulation and presentation of the HDI raised a considerable amount of interest, suggestions and criticisms from different research fields. The next section presents some of these criticisms and related issues. In section four we present UNDP's counterarguments and the methodological changes suffered by the HDI.

3.3.2 CRITICISM TO THE BASIC HDI AND TO ITS FAMILY OF INDICES

3.3.2.1 MAIN CRITICISMS

After the publication of the first HDR in 1990, it was evident that the aspect that caught more attention from the academia and media was the proposal of a human development index. Critics expressed strong reactions against the idea of an indicator and against some statistical properties shown by the index. Critiques can be organised into four groups.

The first group of critiques accuses the HDI of not accurately representing the concept of human development by ignoring important dimensions. DASGUPTA AND WEALE (1992) point out that the HDI is an index restricted to the socio-economic sphere of life and that the political and civil spheres are ignored by the HDI. RAM (1992) criticises the HDI for not reporting inequality measures. Furthermore, he argues that there is a sub-estimation of inequality among countries, which means that this dimension is not being taken into consideration appropriately in the indicator. HICKS (1997) added that inequalities inside countries and between genders are not considered by the index.

The second group of criticisms focuses on the quality of data used for the HDI and on some methodological aspects of the index (SRINIVASAN, 1994; UNDP, 1993; MURRAY, 1993). SRINIVASAN (1994) argues that the HDI is conceptually weak and empirically unsound. This strong criticism is based on the claim that both components of the HDI are problematic. The GNP in developing countries suffers from incomplete coverage, measurement errors and biases. Also the conversion of international currencies into USA dollars using purchasing power parity (PPP) is problematic, according to SRINIVASAN (1994: 241). He also stresses the problem of missing data, arguing that life expectancy, “is not available for as many as 87 out of 117 less developed countries”. Under-five mortality data, in many countries is a mathematical estimation and does not come from collected data. The same happens to the definition and measurement of literacy rates, not only because they follow different methodologies in different countries, but also because that have not been available since 1970 in a significant number of countries.

The third group of arguments against the HDI methodology criticises its aggregation procedures. It can be represented by DESAI’S (1991) suggestions. According to him, better information and techniques need to be found to solve issues such as the way longevity is considered; how much importance is to be given to each level of education and especially how the standard of life is represented by GNP or GDP per capita. He argues that the way that each component is weighted and the quality of the data should be improved. (DESAI, 1991: 355-356)

The last group of criticisms focuses on the technical limitations of the index. They can seen in the contributions by Hopkins (1991); MCGILLIVRAY (1991), MACGILLIVRAY

AND WHITE (1993), TRABOLD-NUBLER (1991) DOSSEL AND GOUNER (1994), GORMELY (1995) and NOORBAKHSH (1998) among others.

HOPKINS (1991:1471) criticises the weights that are used to aggregate the three dimensions, arguing that "there is no *a priori* rationale that allows one to add life expectancy to literacy. It is akin to adding bananas and oranges". MCGILLIVRAY (1991) questions the composition and the usefulness of the HDI. His critique is that "the HDI, generally, reveals little more than any one of the pre-existing development indicators alone reveals" (1991: 1462). Such a limitation means that the HDI fails as a way to provide insights into inter-country development comparisons, as pre-existing indicators did. MCGILLIVRAY (1991) also considers that the HDI as a development indicator has a problem of redundancy. The point is that, if there is a significant and positive correlation between the HDI and any other of its components, we might find more additional insights into an investigation of inter-country development levels. "Intuitively, a necessary, although not sufficient, property of a good composite indicator is that its components are themselves insignificantly correlated" (MCGILLIVRAY, 1991: 1462). This does not seem to be the case of the HDI.

DASGUPTA AND WEALE (1992) raise problems related to the cardinal treatment of an ordinal index, criticising the HDI for ignoring successful ordinal correlations between ordinal GDP and social variables. TRABOLD-NUBLER (1991) noted the shortcomings in using the Atkinson formula for scaling income in the HDI. LUCHTERS AND MENSKHOFF (1996) showed that there were problems with the application of a composite formula that aims to transform GDP values into human development values.

3.3.2.2 A BRIEF OVERVIEW OF THE HDI CONTRIBUTIONS.

A fair assessment of the HDI should not only acknowledge its limitations but its main contributions and progress in relation to previous indicators. For instance, LUCHTERS AND MENKHOFF, (1996) have observed how the HDI contributed to a better modelling of the income dimension by referring to it in terms of marginal returns to income and how it constitutes an important step in putting forward a multidimensional indicator, exploring the use of longevity and knowledge as human indicators. Indeed, even with its limitations, it

seems that the index can be considered more consistent and wider than previous measures of GNP per capita

STREETEN (1994 and 1995) makes a case for the HDI providing results that help illuminating inadequacies of previous indicators. According to him, the information provided by the HDI is more complete and helpful to public policy decision-making (even considering that the HDII is an aggregated measure). On similar lines, DESAI (1993) emphasises the fact that the HDI captures better distributional aspects of income, once it works more efficiently than simple GDP averages. UL HAQ (1998) stresses that the HDI's main contribution is its multidimensional characterisation of human development. He recognises the wider nature of the HD concept, but argues that, anyway, the HDI can capture many crucial aspects of human life that were not captured before by income measures. DASGUPTA AND WEALE (1992) recognise the methodological improvement brought in by the HDI, acknowledging that the HDI represents a good package of indices at a very aggregate level.

In summary, it can be argued that, despite criticisms, the HDI has been praised for its capacity to reflect the human condition in a more appropriate way than previous economic measures. The complexities that are involved in the formulation of the Human Development concept are also an open door to criticism in its measurement process.

3.4 UNDP'S REACTION TO EARLY CRITICISMS

The HDI, as we know it today, has been through deep revisions that resulted from acceptance of some of the major criticisms. HDRs' technical notes are a rich source of information about the evolution of the HDI and the consequent attempts to address the criticisms. They discuss the rationale for the changes and their implications to the development of the final index. Yet, it is interesting to note that the UN started changing the HDI, even before the academic criticisms.

In the first HDR, the main expressed concern was related to the presentation of an index that would be able to replace the early measures. The discussion was about the evolution and statistical properties of development measures aiming to contextualise the main contribution of the HDI. There was a clear emphasis on the conceptualisation of poverty and

its measurement, exploring the main differences and importance of the absolute versus the relative approaches to measure poverty and deprivation. The HDI was first understood and put forward as a deprivation measure and the suggested discussion on poverty was very informative and relevant at that stage. In the 1990 HDR, UNDP acknowledged the problem related to data availability and consistency. More specifically, they referred to the problems of: 1) inadequate data; 2) incomplete country coverage; 3) lack of reliability and timelines in data sets. UNDP argued that in the absence of better-quality data, HDI ranks and international comparisons could at least provide an incentive for country improvements in their data collection procedures.

HOPKINS' (1991) criticism of the unweighted nature of the HDI components did not go without being addressed by UNDP. It put forward two arguments in defence of the HDI. The first was a normative argument saying that the three HDI´s components have in fact equal intrinsic value. Due to that "all three of the HDI components thus deserve equal weigh" (HDR, 1991:88). The second argument presented empirical results, from simulations, showing that the applications of methods such as the "Borda rule" and the "geometric mean" result in similar ranks as those provided by the original HDI. The significance of the ranks similarities was tested by the Spearmen rank correlation coefficient and it showed positive at a high significance level.

The income dimension was more criticised than the other two, and it demanded more work from the UNDP team. Different HDIs were simulated and gave alternative treatments to the income aspect. In the 1990 HDR the log of the GDP was used and it was put a cap at the poverty level[9]. To show the robustness of the used methodology, alternative indexes were calculated using simulation based on: dropping the log and keeping the cap; removing the log and the cap; and keeping the log and removing the cap. According to the correlation coefficient obtained, the differences between the alternative methodologies were not significant, and this figures were used as part of the main argument in defence of the HDI methodology.

[9] The official income poverty line was obtained from a group of 9 industrial countries, adjusted by purchasing power parities. The nine countries were Australia, Canada, the Federal Republic of Germany, the Netherlands, Norway, Sweden, Switzerland, the UK and the US (HDR, 1990)

This argument tested for consistency but not for an identification of the marginal returns to income once the levels of income above the poverty line got zero weight. Due to that, UNDP adopted an alternative methodology based on Atkinson's formula (as it will be shown below).

In the 1991 HDR, UNDP called attention to the progress made in measuring the HDI. The trouble with these methodological changes was that a country's HDI could not be intertemporally compared. Changes in methodology involve the introduction of different technical properties and procedures. The utility of the index was then only for inter-country comparisons over the same period of time. For example, an improvement in an HDI component could be hiden within an overall decline of a HDI for a specific country over time. Such a possibility is a result of the "relativist" methodology used to define the deprivation value for each HDI dimension. Once the maximum and minimum values were defined in relation to the data set and could change over the time, the relative position of each country would be dependent on the others countries' progress.

A solution to make the HDI comparable over time was proposed by UNDP, where fixed values for maximum and minimum standards were introduced, leaving the countries' actual values in each dimension as the only source of variation. As they put it, "The way to tackle this problem, without changing the logic of the HDI, is to say that the minimum and maximum should be defined, not for each point in time, but over a period of time" (HDR, 1991:96). Such a change was better presented in the 1994 HDR.

In addition to the simulation related to aggregation procedures, the 1993 HDR presented an illustrative example of the possibility of obtaining new HDIs within each country, if better datasets became available. This consideration put emphasis on the possibilities of disaggregating the data and likely benefits from an extension of the same methodology to human development dimensions such as gender, region, age, and race.

Criticisms by DASGUPTA AND WALE (1992), RAM (1992) and HICKS (1997) on the limitations of the HDI in capturing the concept of human development, were addressed by UNDP, that suggested that "the concept of human development is broader than any measure of human development. Thus although the HDI is a constantly evolving measure, it will never perfectly capture human development in its full sense" (HDR,1993:104).

The 1993 HDR presents differences between several development perspectives, such as the HD, the standard welfare economics, basic need theory and social indicators. The report also introduced an extensive explanation and justification of the choice of the three HDI dimensions. The promotion of capabilities was accredited as one of the main aims behind the HDI. As they put it,

> The three dimensions of the HDI relate to one or many capabilities that they are expected to capture. Thus, longevity captures the capability of leading a long and healthy life. Educational attainments capture the capability of acquiring knowledge, communicating and participating in the life of the community. Access to resources needed for a decent standard of living captures the capability of leading a healthy life, guaranteeing physical and social mobility, communicating and participating in the life of the community (including consumption) HDR, 1993:105.

DASGUPTA'S (1990) rises a point related to the lack of the freedom aspect in the HDI. Acknowledging the importance of freedom, the UN presented the Human freedom index (HFI) in the HDR 1991. The referred HFI, worked only to show the insufficiency of data and the need for improvements, once the proposed data were missing for the majority of the countries. About the HDI measurement errors, it must be noted that the HDR recognised the importance of quality information, calling attention to the interpretation of the HDI under conditions of poor data quality. "But while this remains a distant prospect, there is clearly a need for caution in taking the HDI values (or any similar estimates) as firm guides in decision-making. At the same time, more resource can profitably be used in improving statistics"(HDR, 1993:108). MCGILLIVRAY AND WHITE (1993) presented several simulations showing that the HDI is robust to measurement errors.

More importantly than the limitations imposed by the presence of measurement errors, is the difficulty in making intertemporal HDI comparisons. UNDP has taken this criticism into account, arguing that

> If the maximum an minimum values were to change over time, this might lead to an anomaly in which a country's actual life expectancy could go up while its score goes down. This may happen because the minimum has gone up or the range has widened over time, or both. Thus, "moving the goalposts" makes comparing the HDI over time more difficult (HDR, 1993:108)

Recently in almost all the UN publications they call our attention to dangers in indulging into year-to-year comparisons. Trying to solve this problem, the UN presents a HDI trend, where the countries' HDI was built using same methodology for selected years from 1975 to 2002. When seen within a historical perspective, the HDI has proved to be a flexible index that has evolved, incorporating a series of changes and criticisms raised by critics. Indeed, UNPD started to process modifications from the second year of the HDI launch.

3.5 TECHNICAL MODIFICATIONS IN THE HDI AND ITS FAMILY OF INDEXES

3.5.1 HDI TECHNICAL MODIFICATIONS

In 1991, the second HDR put forward the first round of modifications in the HDI. The change occurred in all three dimensions of the index. The health dimension moved from flexible posts (max and min values) to fixed posts of a maximum and minimum of 78,4 and 41,8 years respectively. The knowledge dimension started to be considered in years of schooling, with the weight of 1/3 and the literacy rate with the weight of 2/3. In the income dimension, the log was changed to the Atkinson's formula. The justification was that the 1990 methodology, that attributes zero weight to income above the poverty line, was too harsh. The inclusion of the Atkinson's formula aimed to compute the decreasing returns of income utility to well-being. The Atkinson's formula allows different weights to different levels of income and it was used as showed below:

$W = y$ for $y \leq y^*$

$W = y^* + 2(y-y^*)^{1/2}$ for $y^* \leq y \leq 2y^*$

$W = y^*+2(y^{*1/2})+3(y-2y^*)^{1/3}$ for $2y^*<y<3y^*$

Where

W = the transformed income variable

y = the actual income level

y* = the poverty line for the country

The fractional weight assigned to income above the poverty line was derived from the general formula:

$$W(y) = \frac{1}{1-\varepsilon} \times y^{1-\varepsilon}$$

If $\varepsilon = 0$ income has its full weight (no diminishing returns)

If ε gets closer to 1, W(y) becomes log y. The assumption is that ε =0 for y < y* and $\varepsilon = \frac{1}{2}$ for y > y*.

During 1992 and 1993 the HDI methodology remained the same.

The second round of revisions occurred in 1994 and again it contemplated the three dimensions of the index. In the health dimension the maximum and minimum values the fixed posts were fixed in 85 and 25 years respectively. The fixed values aimed to allow intertemporal comparisons. The knowledge dimension also incorporated fixed posts, with a fixed maximum and minimum: 100% and 0% rate for literacy and 15 and zero for years of schooling, respectively. With this change maximum and minimum values stopped to be derived from the data set. The maximum and minimum posts for the income dimension used in 1994 were PPP$ 40.000 and $ 200. A new threshold value was taken to be the global average real GDP per capita of PPP$ 5.120. This methodological change addressed the criticism related to the use of a poverty line based on a small sample of industrialised countries.

The third round of changes took place in 1995 and it reached two of the index dimensions – education and income. Years of schooling in the education dimension were replaced by a combination of enrolment ratios in primary, secondary and tertiary education (%). The weights stayed the same – 2/3 for adult literacy rate and 1/3 for the enrolment ratio. For the income dimension the minimum was changed from $ 200 to $ 100. This change was due to the launch of the GDI and the GEM indexes - the lower income earned by women in development countries demanded this reduction.

In the application of the Atkinson's formula, the poverty line (seen as the world average income) started to be used as the minimal income value for all countries with an income level below the poverty line. The argument for this use was based on the idea that the world average income represents a good proxy for the minimal level of income that any country should have.

$W = y^*$ for $y \leq y^*$

$W = y^* + 2(y-y^*)^{1/2}$ for $y^* \leq y \leq 2y^*$

$W = y^* + 2(y^{*1/2}) + 3[(y-2y^*)^{1/3}]$ for $2y^* < y < 3y^*$ and so on.

Where

W = the transformed income variable

y = the actual income in PPP$ level

y* = the threshold per capita income (PPP$) at the world average income in the year for which the HDI is constructed.

New rounds of modifications, that could be called 'the fourth to the sixth round of modifications', took place during the period 1996 to 1998. Annual updates were introduced to the minimum of the income dimension used in the Atkinson's formula application. A seventh round of modifications happened in 1999, when the income dimension suffered again an important change. The Atkinson's formula stopped to be used and the logarithm of the GDP per capita was re-introduced. The maximum (PPP 440.000) and minimum ($ 100) values remained the same. The main argument for this replacement was:

> The main problem with this formula is that it discounts the income above the threshold level very heavily, penalising the countries in which income exceeds the threshold level. It reduces the $34.000 (PPP$) between the threshold and maximum level of income to a mere $321 (PPP$). In many cases income loses its relevance as a proxy for all dimensions of human development other than a long and healthy life and knowledge (HDR, 1999:159).

From this year on the adjusted income began to be calculated according to the following formula:

$$W(y) = \frac{\log y - \log y_{\min}}{\log y_{\max} - \log y_{\min}}$$

According to UNDP, the advantages of this new methodology lies in the fact that all income levels are submitted to the same treatment and there is no heavy penalty for the high income level countries. Consequently, there is no need for using poverty lines. Currently, the calculation of the HDI follows the two steps below.

1) Asssement of average achievements for each dimension

1.1 – The ‘long and healthy life’ dimension (life expectancy index) is measured by life expectancy.

Life expectancy index = Actual value for life expectancy in country j – minimum fixed value (25 years)/Maximum fixed value (85 years) – minimum fixed value (25 years).

1.2 – Knowledge (X2) is measured by literacy rates (weight 2/3), and by primary, secondary and tertiary gross enrolment rates (weight 1/3).

Adult literacy index = Actual value for the country – minimum (0%)/ Maximum value (100%) – minimum value (0%)

Gross enrolment rate = Actual value for the country – minimum (0%)/ Maximum value (100%) – Minimum value (0%)

Education Index = 2/3 (adult literacy index) + 1/3 (gross enrolment index)

1.3 –The Living standard dimension. It is measured by the log of the average GDP per capita (PPP U$).

GDP index = log of actual value for the country – log of minimum income ($100) / log of maximum income ($40.000) – log of minimum income ($100)

2 – HDI calculation

HDI = 1/3 (life expectancy index) + 1/3 (Knowledge index) + 1/3 (GDP index)

3.5.2 THE HDI FAMILY OF INDEXES

The HDI introduced a new methodology for handling the information that could not be included within the HDI without changing its original bases. The new methodology consisted in thinking in terms of a ‘family of indexes’, instead of trying to develop comprehensive indicators. Acknowledging the importance of many other dimensions for a good human life,

in addition to those already included in the HDI, UNDP introduced sets of related indicators. By doing so, UNDO tried to answer previous criticisms regarding the exclusion of relevant variables from the HDI domain. As a result, it developed a full methodology about the possibilities of incorporating different dimensions of human development: a methodology on the "HDI family" indexes was created. The gaps left by the main HDI were then filled by different HDI indicators.

3.5.2.1 GENDER RELATED INDEXES – THE GDI AND THE GEM

The 1990 HDR tackled the issue of gender disparities and argued for the necessity to build gender sensitive indicators. However, the datasets then available posed limitation to this task. The female and male indexes presented by the 1990 HDR were based on incomplete data for many countries. The only variable that presented specific gender estimates was life expectancy. For income, there was no specific gender data available and for literacy the statistics in many countries were incomplete or absent. Despite that, a specific HDI was built and the results highlighted the importance of addressing the gender dimension in human development studies.

The importance attributed by the UNDP to gender issues was stressed even further in the 1991 HDR. According to the Report "of the many inequalities in human development, the most striking is that along gender lines" (HDR, 1991:92). Being aware of the difficulties and limitations faced in the 1990 HDR, UNDP made another attempt to build a more accurate gender index. Income data was not available, but they used an alternative data set composed by the relative wage ratios and the relative ratios of labour force participation on gender lines – UNDP multiplied these two ratios and obtained the female-male wage-income ratio. The referred female-male ratio was collected only for 30 countries. Again the exercise was carried out by calculating separate HDIs for male and female. Though there were available datasets only for 30 countries (from which 20 were developed countries[10]) the results showed significant inequalities in male-female HDIs (HDR, 1991:92). For this year, UNPD also identified the level of gender inequality reflected in the overall HDI. It was done multiplying the overall HDI for each country by the ratio of female-male HDI (if a country had full equality its HDI would remain unaffected).

Gender inequalities were measured only by obtaining a specific HDI for female and male in 1990 and the female and male plus a gender adjusted HDI from 1992 to 1994. During the referred period the male-female HDI used the same dimension as the basic HDI to build the gender specific indexes. In 1995, UNDP made an additional effort and presented gender-equity-sensitive indicators. The gender-related development index (GDI) and the gender empowerment measure (GEM) have the aim to capture the gender specificity in human development achievements and the relative empowerment of men and women. For the construction of the GDI, the same HDI structure was kept, followed by a consideration of the inequalities in the three HDI dimensions. There is an interesting discussion related to the GDI background in HDR (1995) that shows the necessity to consider the particularities of each of the three dimensions together with the statistical properties of the GDI. For more details see (HDR, 1995: 125-129).

To capture the gender differences the average achievements were adjusted according to the degree of disparity in achievements between women and men. As was argued:

> For this gender sensitive adjustment, we use a weighting formula that expresses a moderate aversion to inequality, setting the weighting parameter, $\in$, equal to 2. This is the harmonic mean of the male and female values" (HDR, 1995:130)

For life expectancy, due to potential differences in achievement, the fixed maximum and minimum values are different, namely, 82,5 and 22,5 years for men, and 87,5 and 27,5 years for women. Educational attainments were established with a maximum and minimum value of 100% and 0% respectively. A composed index is used, including adult literacy (2/3) and gross combined primary, secondary and tertiary enrolment (1/3) To calculate the income dimension of the index for females and males, the same methodology has used since the 1991 report. The only difference is that currently used methodology used extrapolates the data for those countries where data are missing[11]. The GDI is therefore built as following:

Step one: Indices for life expectancy were calculated using the same HDI procedures

[10] For this reason, it is possible to subestimate or to bias some gender inequality measures.
[11] "The average ratio of female to male wages (75%) derived, for these 55 countries is then applied to the countries among the 130 for which ILO sources lack such data". (HDR, 1995:130)

Step two: Proportional income shares were obtained by using the percentage of the economically active male and female population, the percentage share of the total male-female population, the ratio of female non-agricultural wages to male non-agricultural wages and the adjusted real GDP per capita.

Step three: Application of the GESI formula (ε is assumed to be equal to 2). As defined in the Report,

> The equally distributed equivalent achievement X_{ede}, applied to gender differences, yields a measure that is, in fact, a gender-equity-sensitive indicator (GESI). This is, of course, an index of overall achievement taking note of inequality, rather than a measure of gender equality. But it uses –explicitly or by implication – equity-sensitive weights on the achievements of the two groups, rather than the unweighted means of the two sets of achievements that is more commonly used. It incorporates implicitly something like a gender equality index. The index of relative equality E that underlies X_{ede} can be defined simply as $E = X_{ede}/X$" HDR (1995:126)

Step four: Calculation of the gender related index

The calculation of the gender development index.

GDI = 1/3 [life expectancy index + education index + income index]

The evolution of gender related measures highlights important changes that took place not only in methodological aspects but also in improvements and changes in data collection. In 1996 the technical notes called attention to the progress achieved. The income dimension, before 1999 HDR, was not reflecting female and male GDP (PPP$) per capita differences and was subject to double discounting. It was a result of the relative wage ratios and the relative ratios of labour force participation used as proxies for the female-male earnings. The HDR (1999) addressed the referred inconsistency that was originally raised BY BARDHAN AND KLASEN'S (1999) paper and it was rectified later by the UNDP research team.

From 1999 onwards, the procedure to calculate the female-male income shares is as follows.

$$\text{Female share for wage bill} = \frac{(w_f / w_m \times ea_f}{[(w_f / w_m \times ea_f)] + ea_f}$$

$$s_f = \frac{(w_f / w_m) \times ea_f}{[(w_f / w_m) \times ea_f] + ea_m}$$

where,

s_f and s_m are the female and male shares of earned income

w_f and w_m are estimated from the female and male wage ratios

ea_f and ea_m are the percentages of men and women in the economically active population.

The HDI assumes that the total GDP (PPP$) of a country is (Y) and that being divided between women and men according to s_f, the total GDP (PPP$) going to women would be given by $(s_f \times Y)$ and the total GDP (PPP$) to men by $[Y - (s_f \times Y)]$.

The treatment of income is the same as in the HDI, only being adjusted for female and male's corresponding values.

$W(y_f) = \frac{\log y_f - \log y_{\min}}{\log y_{\max} - \log y_{\min}}$ where $y_f = s_f \times Y / N_f$. and N_f is the total female population.

$W(y_m) = \frac{\log y_m - \log y_{\min}}{\log y_{\max} - \log y_{\min}}$ where $y_m = [Y - (s_f \times Y)] / N_m$ and N_m is the total male population.

Summing up, the gender-related HDI highlights differences in potential achievements for males and females. It is noticeable that in life expectancy men and women have different biological potentials. The knowledge aspect faces measurement problems, but there are well-know inequalities that remain hidden within countries with very low educational achievements. Data inadequacy or simple lack of income data are presented as a harsh limitation for the proposed index.

Gender empowerment measure - GEM

The gender empowerment measure was built using two clusters of variables. The first cluster conveys women's *economic* participation and decision-making power. The included variables are women and men's percentage shares of administrative and managerial positions and male-female percentage shares of professional and technical jobs. The second cluster of variables reflects *political* participation and decision-making power – the indicators are women and men's percentage shares of parliamentary seats. The GEM is built in three steps.

Step one – Calculation of parliamentary representation and administrative, managerial, professional and technical positions using:

Percentage share of parliamentary representation;

Percentage share of administrative and managerial positions;

Percentage share of professional and technical positions;

Percentage share of total population

The index then calculates the equally distributed equivalent percentage (EDEP) for each indicator, which is: "For each occupational category, we use the population-weighted (1-ε) averaging of the GESI methodology to derive an equally distributed equivalent percentage (EDEP) for both sexes taken together" HDR (1995:132). To be consistent with the GDI, ε is considered equal to 2.

Step two – Calculation of male-female share of earned income. It follows the same procedure established for the GDI income index.

Step three – Computation of the gender empowerment measure.

GEM = 1/3 (parliamentary representation + combined index for economic and decision-making participation + income index). The GEM methodology was kept the same since the index was launched.

3.5.2.3 HUMAN FREEDOM INDEX (HFI)

The HDR (1991) claimed that the HDI indicators somehow reflect information related to the freedom aspect of human development. According to the 1991 Report, research on human rights provided the background for a more extensive account of the HF dimension. Using insights from the world guide for human rights, UNDP raises some questions about implementation processes and the consequent difficulties to build such a complex index of human rights for a large set of countries. One important conclusions of the 1991 HDR is that despite the importance of freedom for Human Development, there is an urgent need to improve datasets and methodologies to handle the freedom dimension. Without that no one might be able to produce a trustful and widely representative freedom indicator.

> Clearly, there is an urgent need for more systematic work on human freedom: the issue of data availability needs to be addressed; the concept of human freedom needs clarification – especially its historical and socio-cultural and traditional implications; and methods of measuring various human freedoms have to be designed. We are still very much at the beginning of a systematic analysis and debate of human freedom (HDR, 1991: 130).

The 1991 attempt was apparently unsuccessful and the HFI was not calculated anymore.

3.5.2.4 POVERTY MEASUREMENT IN THE UNDP SYSTEM – CPM, HPI-1 AND HPI - 2

Conceptual and statistical issues related to poverty were emphasised in the first HDR, but paradoxically the subject was left aside in the following years. In 1996 the subject was reintroduced and a capability poverty measure (CPM) was developed. The justification for construction of such a measure was based on the inadequacy of income as the only poverty or well-being indicator of the poor. It was argued by UNDP that:

> What is needed is a more people-centred measure of poverty that recognises that human deprivation occurs in a number of critical dimensions. Lack of income is just one dimension, and it is focused on means rather than ends. The capability poverty measure (CPM) is a multidimensional index of poverty focused on capabilities" (HDR, 1996:109).

The CPM was supposed to measure only very basic capabilities, the essential ones required from individuals to function as human beings. As presented,

> Deprivation in capabilities is the result of lack of opportunity – signifying that society has not provided people with access to the means to develop or maintain essential human capabilities" (HDR, 1996:109).

Furthermore, as argued by UNDP,

> The capability poverty measure is a simple index composed of three indicators that reflect the percentage of the population with capability shortfalls in three basic dimensions of human development: living a healthy, well nourished life, having the capability of safe and healthy reproduction and being literate and knowledgeable (HDR, 1996:109)

The indicators that composed the CPM were:

- The percentage of children under five who are underweight,
- The percentage of births unattended by trained health person,
- The percentage of women aged 15 years and above who are illiterate,

The CPM, according to UNDP, differed from the HDI, because the CPM focuses on people's lack of capabilities rather than on the average level of capabilities in a country. The CPM has not included the income dimension in its composition. The CPM measure uses international standards to establish the thresholds required for a poverty classification. The CPM was calculated for 101 developing countries with the aim to work as a policy-laden indicator (HDR 1996). UNDP produced in 1997 a successor for the CPM measure: the Human Poverty Index (HPI)

The HDR 1997 built the Human Poverty Index (later known as HPI-1) based on previous ideas put forward by the Capability Poverty Measure. According to UNDP, the HPI is broader than the CPM and follows more closely the HDI methodology. The perspective of the HPI differs from that of the HDI once it focuses on deprivation, while the HDI is built within a conglomerative perspective. To be consistent with this perspective, the indicators chosen for the HPI are different from the ones used by the HDI, even when measuring deprivation in the same dimensions. The dimensions used to identify human deprivation are longevity, knowledge and living standards.

1) Longevity is measured by the percentage of people expected to die before the age of 40 (P_1),

2) Knowledge is assessed by the percentage of adults who are illiterate (P_2),

3) Living standards is a composite index that consists of three variables (P_3). The percentage of people with access to safe water (P_{31}), the percentage of people with access to health services (P_{32}), and the percentage of malnourished children under five (P_{33}).

The variable P3 is a result from averaging the three aspects mentioned above as following:

$$P_3 = \frac{P_{31} + P_{32} + P_{33}}{3}$$

The final HPI formula is

$$HPI = [\frac{1}{3}(P_1^3 + P_2^3 + P_3^3)]^{\frac{1}{3}}$$

The HPI index, as built in 1997, was designed in order to identify the basic deprivations in developing countries. According to the HDR, there is no possibility to build a general poverty index that could be used efficiently in all (rich and poor) countries. As was pointed out in the HDR: “The nature of poverty in rich countries deserves a specialised study – and a more specialised index – focusing on those deprivations particularly relevant for those countries” (1997:18).

Since 2001, ‘access to health services’ data is missing and the standard of living dimension is measured by using only two indicators – the percentage of the population not using improved water sources and the percentage of children under five who are underweight. Calculating HPI-1 is more straightforward than calculating the HDI. The indicators used to measure the deprivations are already normalised between 0 and 100 (because they are expressed as percentages), so there is no need to create dimension indices as for the HDI (HDR, 2001:241)

The HPI-2

To better reflect the particularities from different realities of poverty in distinct groups of countries, the 1998 HDR divided the HPI into two different indexes - one for developing

countries – the HPI-1 and one for developed (industrialised) countries – the HPI-2. The HPI-1 (developing countries) was kept exactly as it was in 1997.

The index for the developed countries concentrates on four dimensions. Three dimensions are the same than those used in the HDI and in the HPI-1. The added dimension was social exclusion. The variables are represented as following:

1) Longevity - percentage of people expected to die before the age of 60 (P_1),
2) Knowledge - percentage of adults who are functionally illiterate (P_2),
3) Living standard - percentage of people living below the poverty line set at 50% of the average personal income (P_3)
4) Social exclusion - rate of long term unemployment of the labour force (P_4)

In 1999 the knowledge dimension started to be assessed by the percentage of people who are functionally illiterate as defined by OECD.

3.5.2.5 THE INEQUALITY ISSUE IN THE HDI

According to UNDP, inequalities are not stark only in the gender dimension but also in other dimensions such as race, region, ethnicity, etc. There are many inequalities in the world, manifesting themselves at a social or individual scale, overlapping with many orders of inequalities. Being an average index, the HDI hides inequalities in the same way that the GNP and the GDP do. A strong criticism of the HDI was just that: it does not take existent inequalities into consideration.

The 1990 HDR highlighted the prevalence of the income inequality problem and built a distribution sensitive HDI. The proposed index was the result of the multiplication of income per capita by 1-G (Gini coefficient) and it was expected to interfere with the country ranks. The inequality or distribution adjustment was done only for the income dimension. The assumption by the HDR 1991 was that two of the HDI dimensions – literacy and life expectancy - are distributed much more equally than income. Based on this claim, the distributive efforts were concentrated on the income dimension. As the HDR put it,

> Apart from per capita income, all the other variables used in the HDI have an obvious maximum and minimum. Life expectancy will rarely go beyond 100, literacy never beyond 100% and mean year of schooling beyond, say, 15. Income however, has no upper bound. For GNP per capita the inter-country range is $100 to $ 27.500, a range of 275:1. As for real GDP per capita the range is $350 to $19850, or 57:1. Such inequalities in income are reproduced even more sharply within countries (HDR,1991:94).

Taking these arguments into consideration, an income distribution sensitive HDI was calculated for 45 countries for the period 1990-1994. The inclusion of this inequality adjustments did not seem to be enough to solve the above-referred problems and their inconsistencies. Criticism amounted. Currently, the inequality issue remains an open question. If inequality should be included, should it be for all dimensions? Why? How?

Anand and Sen (1994) reckon that there is a natural demand for indicators that are sensitive to distribution, instead of merely using aggregative averaging indicators. The reasons for such attractiveness can be related not only to the fact that equity sensitive indicators give more relevant information, but can also be related to arguments of efficiency and equity. Looking specifically at the three HDI dimensions, Anand and Sen (1994) argue that the income dimension has clearly more appeal to include inequality adjustments. According to them, income in the HDI is a proxy for a set of important human ends that relate both to efficiency and equity arguments.

The link between the efficiency argument and life expectancy is not evident *per se* once life expectancy has value in itself. Even so, life expectancy has the property to be also a means to reach other ends. In any case, the problems with inequality in life expectancy go much further: once life expectancy is a value obtained from a set of group characteristics by statistical estimates, and it is by its own definition an average value; how is it possible to have an individual distribution of life expectancy? Similarly, the distribution aspect in the knowledge dimension, was not, for ANAND AND SEN (1994:6) a “terribly central one for an index of education that is based simply on whether or not the person is literate”. They do make a case for this point, arguing that once more sophisticated indicators are included, then taking inequality into consideration shall start to make more sense.

Anand and Sen call attention to the fact that there is no proper data set available for both life expectancy and education. For the income dimension the most reliable information is the Gini Coefficient,and even so, it is available only for a very restricted group of countries.

HICKS (1997) put forward the Inequality-Adjusted Human Development Index, which was meant to include inequality measures into all the HDI dimensions through the use of the Gini coefficient for income, education and life expectancy. According to Hicks, income has prominently both efficiency and equality arguments. But this does not imply that life expectancy and education cannot be justified on the same grounds. In his words equality in all its dimensions “is a matter of justice” (1997:1284) once life expectancy and education have intrinsic value and all people should posses at least a minimum amount of both. Human beings as primary ends and as main means of development are the two human sides of development. The history of the HDI is the history of an evolving struggle to capture this dichotomy between means and ends.

3.6 FINAL CONSIDERATIONS

The evolution of the HDI showed a remarkable resilience of this index, keeping its original ideas, dimensions and aggregation procedures, at the same time that it showed great flexibility in incorporating sensible criticism and methodological advancements (as illustrated by the HDI related indexes. It is worth mentioning that much remains unaccounted and that even after all the technical modifications implemented by UNDP, the HDI has not proved able to reply to the majority of the criticisms that it has received. Trivial and basic problems related to low-quality and lagged data are still not solved. Aggregation procedures and other statistical issues were simply justified but not effectively addressed. For example, education represents 1/3 of the index weigh. Higher education has the same weigh as fundamental education. It is almost frivolous to question if higher education has the same intrinsic value as fundamental education. It is also possible to ask why income, that represents all standard of living aspects, goes through a diminishing returns scale in the HDI and why the same does not apply to education? Could higher education be considered a basic capability?

So, was the HDI successful? Given that the established goal was to provide an alternative index to the unidimensional and income centred previous indicators, HDI

represents indeed advancement, both in terms of the characterisation of the multidimensional nature of development as in terms of its refined theoretical basis. On the other hand, arguments claiming the introduction of a completely new paradigm, showing a change from the concentration on means towards the promotion of human ends, are far from being settled. The claim that HDI is a capability measure, considered the most basic human capabilities, also remains elusive. The HDI assesses achievements such as education, life expectancy, and income, not freedoms. Having said that, it is important to remark that all HDI dimensions are essential for the development of human capabilities.

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CAPÍTULO 4

OPERACIONALIZANDO A ABORDAGEM DAS CAPACITAÇÕES – USO DE DIFERENTES TÉCNICAS ESTATÍSTICAS PARA DADOS ESPECIALMENTE COLETADOS

4.1 INTRODUÇÃO

A Abordagem das capacitações pode ser considerada uma das alternativas mais abrangentes no atual debate relacionado ao desenvolvimento. Esta abordagem tem sido usada com diferentes propósitos em estudos multidisciplinares nas mais diversas áreas do conhecimento. Mesmo assim, as aplicações práticas e ou empíricas ainda são limitadas e passíveis de críticas e discussões. Não existe consenso a respeito de como operacionalizar a abordagem, ou de como avaliar políticas públicas implementadas a partir dos princípios da abordagem. Desta forma, a operacionalização e aplicação da abordagem ainda pode ser consideradas como dois aspectos restritos e que demandam esforços adicionais de pesquisa.

Sendo assim, este artigo visa contribuir no debate concernente a operacionalização da abordagem das capacitações. Para isso, será usada uma base de dados proveniente de uma pequisa que buscou avaliar uma experiência brasileira em escolas de ensino médio e fundamental – o chamado programa Você Apita. O referido programa foi implementado pela Fiat do Brasil com o objetivo de promover protagonismo juvenil. Entende-se que a forma de implementação do programa está perfeitamente de acordo com as proposições da abordagem das capacitações e, por isso, a base de dados que estamos ultilizando constitui-se numa fonte fértil para explorar técnicas capazes de auxiliar no processo de operacionalização.

O programa Você Apita foi desenvolvido durante o período 2002-2004, sendo que a implementação obedeceu as seguintes fases: (1) Conscientização; (2) Diagnóstico; (3) Propósitos de ação; (4) Implementação e (5) Registro da memórias. A forma como o Você Apita foi implementado é uma característica de fundamental importância, uma vez que o qualifica como um programa que visa promover as capacitações dos estudantes. A adesão das escolas ao programa foi espontânea, porém, os implementadores exigiam dos grupos que

escolheram participar que estes participassem de todas as fases: implementação, execução e avaliação. Esta é uma característica importante pois garante o aspecto de "agência" dos envolvidos, dando-lhes a oportunidade de escolherem as ações a serem implementadas e, assim, tornarem-se comprometidos tanto com a implementação quanto com o sucesso do programa.

O Você Apita visava promover a conscientização dos alunos, o comprometimento e a autonomia. Estes aspectos estão de acordo com o conceito de capacitações, porém na linguagem usada pelo progama, o objetivo central era promover protagonismo juvenil. Deste objetivo central, derivam três outros objetivos, que são:

1) Incentivar os estudantes a participarem na solução dos problemas da comunidade;
2) Desenvolver habilidades cognitivas, verbais e psicomotoras dos estudantes;
3) Melhorar as relações de convivências entre professores e alunos.

O processo de implementação do programa foi desenvolvido através da promoção de ações relacionadas aos quatro aspectos a seguir (na terminologia utilizada pela abordagem das capacitações, este aspectos podem ser considerados funcionamentos).

(1) Direitos Fundamentais;
(2) Meio ambiente;
(3) Condições de vida;
(4) Mobilidade.

A metodologia de implementação do programa previu que cada escola, por meio de seus alunos, professores e comunidade escolheriam um ou mais dentre os quatro aspectos acima para serem trabalhados. Conforme exposto anteriormente, o engajamento das escolas foi por livre inscrição ao programa, porém existia o requisito de que fossem escolas públicas localizadas em áreas pobres. Isto evidenciava que ele era voltado para o atendimento de estudantes que enfrentavam restrições em termos de condições de vida.

O questionário de avaliação, do qual estamos usando os dados, foi aplicado em escala nacional. As entrevistas ocorreram durante o período de Julho a Setembro de 2004 onde foram pesquisadas escolas de 12 cidades brasileiras em diferentes estados do país. Foram aplicados dois questionários distintos; um destinou-se aos alunos e outro aos professores. No

que concerne ao questionário aplicado aos alunos, este cobriu duas amostras, uma englobou os alunos que participaram do programa e a outra amostra os alunos das mesmas escolas mas que não participaram para serem utilizados como grupo de controle. No total foram entrevistados 9.408 alunos, sendo 5.033 alunos participantes e 4.374 não participantes. Dos questionários aplicados aos alunos, buscava-se coletar a opinião dos mesmos sobre o programa e também avaliar se ocorreu evolução no desempenho destes. Além da pesquisa direta aplicada aos alunos, foram obtidas avaliações provenientes dos professores, os quais foram solicitados a avaliar tanto as condições da escola e as condições de trabalho, quanto a opinarem sobre o impacto da implementação do progama sobre o desempenho dos alunos participantes. Lembre-se aqui, que os dados dos professores apenas se referem a alunos que participaram do programa. No total foram entrevistados 746 professores (versões completas de ambos os questionários podem ser vistas em anexo).

Utilizando os dados do programa acima apresentado, este capítulo busca atingir os seguintes objetivos:

1) Avaliar os impactos do programa em termos de promoção de capacitações, comparando os efeitos identificados entre as cidades pesquisadas;

2) Usar técnicas estatísticas alternativas, visando identificar sua adequação à operacionalização da abordagem das capacitações.

Destacam-se como possíveis contribuições deste capítulo, os seguintes aspectos:

1) Trabalha-se com dados adequadamente coletados para operacionalizaçao da abordagem das capacitações, uma vez que o programa foi estruturado de forma diferenciada desde sua implantação;

2) Os resultados compõem-se de dados objetivos e subjetivos, coletados de forma direta e indireta;

3) São considerados diferentes aspectos do desenvolvimento dos estudantes, o que contempla a multidimensionalidade;

4) A base de dados coletada permite a avaliação de promoção de capacitações;

5) É possível comparar resultados obtidos a partir de diferentes técnicas estatísticas, que até então só foram aplicadas a dados secundários.

É importante, porém, chamar a atenção do leitor de que esta-se trabalhando com uma base de dados proveniente de um programa específico, que permite a realização de exercícios

empíricos interessantes. No entanto, este trabalho não tem o objetivo de propor lista de capacitações, nem discutir se os aspectos em análise são ou não os mais relevantes para o desenvolvimento humano dos alunos. Estas questões, apesar de relevantes e interessantes, não são objeto deste estudo.

O desenvolvimento do capítulo está estruturado da seguinte forma: Seguindo esta introdução, na parte dois é apresentada uma breve revisão de literatura composta de trabalhos que buscaram operacionalizar a abordagem das capacitações; na parte 3, é feita uma apresentação e análise descritiva dos dados que serão utilizados; a parte 4 é composta pela aplicação das técnicas de análise fatorial exploratória, confirmatória e estimação de modelos MIMIC; a parte 5 apresenta brevemente a teoria dos conjuntos *fuzzy* e os resultados obtidos e; a seguir, na parte 6 são apresentadas algumas considerações finais.

4.2 TÉCNICAS ESTATÍSTICAS PREVIAMENTE UTILIZADAS E/OU SUGERIDAS PARA OPERACIONALIZAR A ABORDAGEM DAS CAPACITAÇÕES.

A operacionalização da abordagem das capacitações tem sido uma meta perseguida por vários pesquisadores. Existem tentativas propondo uma forma padrão ou universal de operacionalizar a abordagem, porém outras propõem técnicas e procedimentos específicos para solucionar casos particulares. Dentre as aplicações empíricas e sugestões teóricas relativas a procedimentos metodológicos, destacam-se as contribuições de BRANDOLINI & D´ALESSIO (1998), CHIAPERRO MARTINETTI (2000), KLASEN (2000), LELLI (2000), KUKLYS (2003), BURCHARDT (2003), DI TOMASIO (2003), ADDABBO, et all, 2004), KRISHNAKUMAR (2004).

Os trabalhos dos autores referidos acima são de particular importância para nossa pesquisa, pois constituem-se em diferentes exercícios de operacionalização a partir de diferentes técnicas. A seguir, serão apresentados alguns breves elementos e procedimentos de cada um dos trabalhos acima mencionados.

BRANDOLINI & D´ALESSIO(1998), procuraram operacionalizar a abordagem das capacitações visando avaliar bem-estar na Itália. Para isso, usaram informações relativas ao

espaço dos funcionamentos. Neste sentido, do ponto de vista da abordagem das capacitações, apenas o aspecto da multidimensionalidade foi levado em consideração. No que tange as técnicas de agregação utilizadas, foram sugeridas diversas estratégias; para a análise empírica, os autores utilizaram-se de uma lista de funcionamentos, ao invés de uma lista de capacitações. Os argumentos para tal procedimento são de que medir capacitações pode defrontar o pesquisador com os seguintes problemas:

1) A avaliação de capacitações requer a existência de possíveis alternativas para as realizações efetivadas (escolhidas);

2) A dimensão tempo do conjunto capacitário é de difícil avaliação. As possibilidades enfrentadas por uma pessoa, num certo período de tempo, refletem, no minímo parcialmente as escolhas dessa pessoa no passado;

3) Existe também um problema de natureza prática pois, na maioria dos casos, as bases de dados disponíveis refletem fatos efetivamente ocorridos, ao invés de dados sobre fatos que poderiam ocorrer ou poderiam ter ocorrido.

Em termos práticos de acordo com BRANDOLINI & D´ALESSIO (1998:16), existem as seguintes estratégias disponíveis para trabalhar com a operacionalização da abordagem das capacitações.

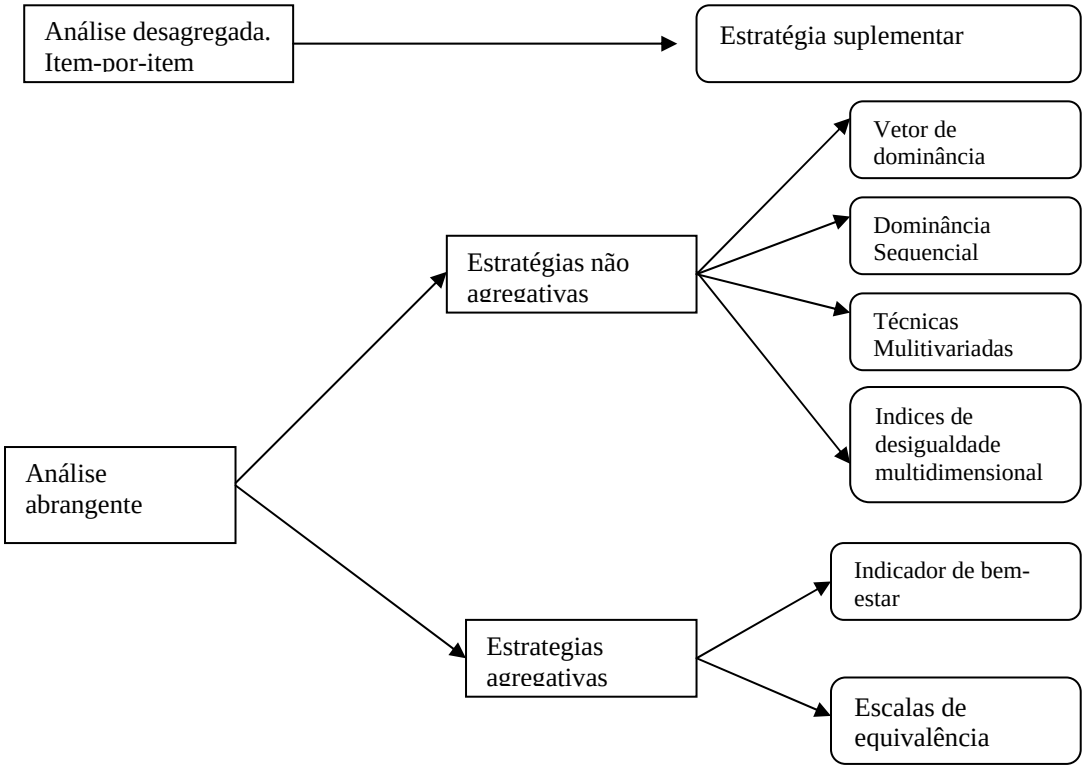

Figura 2 Técnicas de agregação na construção de indicadores de bem estar

Apesar de ter trabalhado com dados secundários, que não eram propriamente adequados para identificar funcionamentos, BRANDOLINI & D´ALESSIO construíram indicadores agregados e não agregados para avaliar a realização de bem-estar nas diferentes regiões da Itália.

Obedecidas as características de cada variável, foram definidas arbitrariamente 6 categorias de funcionamentos. Para cada variável, os autores levaram em consideração as características da variável e construíram um indicador. A medida final resultou num indicador multidimensional, que reflete o bem-estar agregado obtido por cada categoria. Os resultados obtidos pelos autores constituem-se num avanço em relação a outras medidas de bem-estar baseadas unicamente na dimensão renda, porém ainda demandam melhorias para refletir adequadamente o conceito de capacitação.

CHIAPPERO MARTINETTI (1998) é um importante exemplo de operacionalização da abordagem da capacitação, o qual utilizou a teoria dos conjuntos fuzzy (chamada de Fuzzy set Theory), como uma técnica alternativa para medir bem-estar. Apesar da inovação em termos de técnica utilizada, o trabalho de CHIAPPERRO MARTINETTI (1998), também foi desenvolvido utilizando dados secundários, o que acarreta certas limitações. Em decorrência disso, a autora trabalhou apenas com o conceito de funcionamentos.

Os procedimentos de CHIAPPERO MARTINETTI (1998) fundamentam-se nas sugestões propostas pelo próprio SEN (1985,1992,1993,1994) para avaliação da abordagem, os quais demandam que seja considerado: 1) todo o conjunto de opções disponíveis para a pessoa; 2) a opção efetivamente escolhida; 3) a opção de maior valor do conjunto capacitário. De acordo com CHIAPPERO MARTINETTI (1998:5), para uma aplicação prática da abordagem das capacitações é necessário escolher corretamente:

a) o espaço avaliativo: capacitação versus funcionamento realizado;

b) uma lista de capacitações ou funcionamentos essenciais;

c) um conjunto de indicadores relacionados às dimensões selecionadas de bem-estar e um critério de medida adequado para representá-los;

d) Como (e se) agregar os indicadores para obter uma avaliação geral de cada dimensão (funcionamento/capacitação) ou bem-estar;

e) Como (e se) somar todas as dimensões e encontrar uma avaliação geral de bem-estar.

Na opinião de KLASEN (2000), bem-estar ou privação de bem-estar são geralmente entendidos como sinônimos de pobreza ou privação e, sendo assim, podem ser medidos de duas formas distintas. A primeira refere-se ao entendimento da pobreza como a falta de recursos e, em decorrência disso, dimensões como renda ou recursos seriam boas medidas de avaliação. Por outro lado, bem-estar e/ou pobreza podem ser vistos como fenômenos multidimensionais, os quais precisam ser medidos como tais. Aceitar a multidimensionalidade destes fenômenos implica na necessidade de encontrar medidas mais completas, que sejam capazes de refletir a complexidade do conceito. Numa tentativa de colocar esta idéia em prática, KLASEN (2000) realizou um exercício empírico, no qual construiu indicadores multidimensionais de pobreza a partir da concepção da abordagem das capacitações.

Em sua contribuição, LELLI (2000) usou duas técnicas alternativas para verificar se os resultados seriam afetados pelos procedimentos estatísticos adotados. Ela trabalhou com teoria dos conjuntos fuzzy e com análise fatorial buscando identificar funcionamentos. Novamente, os dados utilizados são dados secundários, provenientes de um survey nacional, o que impõe restrições a identificação de capacitações.

KUKLYS (2003) e KULKYS E COMIM (2003) aplicaram técnicas de estatística multivariada para identificar capacitações. KULKYS (2003) usou modelos de equações estruturais via modelos com múltiplos indicadores e múltiplas causas, que são conhecidos na literatura internacional como “MIMIC models”, para medir realização de bem-estar na inglaterra. De acordo com a autora, a utilização da técnica é útil porque permite passar do espaço dos funcionamentos para o espaço das capacitações. Isto é possível, pois as capacitações podem ser entendidas como variáveis latentes, as quais são originárias dos funcionamentos realizados. Em outro trabalho, KULKYS E COMIM (2003), usaram modelos de equações estruturais para transformar capacitações individuais em capacitações socias. Em tentativas semelhantes DI TOMMASO (2003) and ADDABO at al (2004) propuseram uma medida de bem estar baseada na abordagem das capacitações, utilizando as mesmas técnicas de análise multivariada propostas por Kulkys.

Em artigo recente, KRISHNAKUMAR (2004) apresentou um modelo teórico para identificar capacitações. A contribuição da autora tem como ponto de partida as mesmas técnicas de análise multivariada propostas por KUKLYS (2003), DI TOMMASO (2003), ADDABO at al (2004), no entanto, ela vai além, apresentando justificativa teórica e propondo um modelo econométrico alternativo que tem como ponto de partida os modelos MIMIC, porém Krishnakumar sugere extensões, segundo ela capazes de superar as limitações dos modelos MIMIC. No entanto, a autora não realiza aplicação empírica para testar o modelo proposto.

O quadro a seguir apresenta uma síntese das principais contribuições disponíveis em termos de operacionalização da abordagem das capacitações via diferentes técnicas estatísticas e/ou econométricas.

Ano	Autor(es)	Técnicas propostas	Técnica aplicada	Objetivos do trabalho	Dados utilizados
1998	Brandolini & D´Alessio	I – Análise item-por-item – usando estratégias de suplementação, ou; II – Análise abrangente, que pode ser dividida em: 1) Estragégias não agregativas - Vetor de Dominância - Dominância Sequencial - Técnicas Multivariadas - Indices de desigualdade multidimesnional - 2) Estratégias agregativas - Indicadores de bem-estar - Escalas de equivalência	- Estratégias de agregação para construir um indicador de bem-estar.	Operacionalizar a abordagem das capacitações e explorar os aspectos multidimensionais da abordagem.	Dados secundários provenientes de pesquisa familiar sobre renda e riqueza. SHIW – Bank of Italy
2000	Chiappero Martinetti	- Teoria dos Conjuntos Fuzzy (Fuzzy set theory)	Fuzzy set theory	Realização de uma avaliação multidimensionalidade bem estar de acordo com os a concepção Sen.	Microdados provenientes do Italian Central Statistical Office (ISTAT\0
2001	Lelli	- Análise fatorial - Teoria dos Conjuntos Fuzzy (Fuzzy set theory)	- Análise fatorial - Teoria dos conjuntos fuzzy	Comparar os resultados obtidos a partir da aplicação de diferentes técnicas estatistícas para operacionalizar a abordagem das capacitações.	Dados de uma pesquisa com unidade familiares na Belgica – the Belgian Household (PSBH)
2003	Kuklys	-Modelos de equações estruturais (SEM) – MIMIC models.	- SEM e MIMIC Models	Avaliar realizações de bem-estar individual	Dados da pesquisa familiar britãnic the British Household Panel Survey (BHPS)
2003	Di Tommaso	- Múltiplos indicadores e Múltiplas causas (MIMIC)	- Multiple indicators Multiple Cases (MIMIC)	Avaliar bem-estar infantil na Índia	Dados da pesquisa desenvolvida pelo National Council of Applied Economic Research (NCAER)
2004	Addabbo, Fachinetti and Di Tommaso	- Extent fuzzy set theory - Modelo de equações estruturais	- MIMIC models	Medir bem estar infantil na Italia	Dados do Italian National Statistical Office – ISTAT
2004	Krishnakumar	Uso de variáveis latentes, incluindo: - Análise fatorial - MIMIC model (MMIC) e extensões	- Proposição de um modelo teórico para além dos modelso MIMIC.	Sem aplicação, apenas construção teórica do modelo.	-

Fonte: Elaborado pela autora

Quadro 2 Aplicações empíricas da abordagem das capacitações.

4.3 RESULTADOS EMPÍRICOS A PARTIR DAS RESPOSTAS DOS QUESTIONÁRIOS

4.3.1 APRESENTAÇÃO E DESCRIÇÃO DOS DADOS DOS ESTUDANTES

O objetivo desta seção é apresentar uma análise descritiva dos dados. Uma vez que o principal objetivo do programa era promover o protagonismo juvenil, o questionário de avaliação usou questões diretas e indiretas para captar a existência de elementos que pudessem diferenciar as respostas dos estudantes que participaram do programa daquelas dos estudantes que não participaram (grupo de controle).

Neste estudo, foram escolhidos cinco ítens do questionário para serem analisados. Tais questões foram pensadas especialmente para capturar aspectos de promoção de capacitações. Entende-se que estas cinco dimensões são medidas úteis para identificar capacitações. Os referidos indicadores foram construídos e descritos conforme segue.

Conhecimento - Para construir este indicador, a questão solicitava aos alunos que respondessem três perguntas relacionadas a sinais de trânsito. O indicador recebeu valores de 0 a 3. Zero se o aluno não obteve nenhum acerto e 3 se todas as tarefas foram resolvidas de forma correta.

Raciocínio lógico - Este indicador buscava avaliar o raciocínio lógico, a capacidade de entendimento e a memória dos alunos. Ele foi construído solicitando aos alunos que desenhassem uma sequência lógica de eventos que tivessem acontecido na vida escolar. O indicador varia de 0 a 2. Foi atribuído valor zero às respostas que não pareceram lógicas, 1 às respostas que apresentaram o Você Apita em qualquer desenho ou no quadro durante a ação e, 2 às respostas que apresentaram uma sequência lógica.

Confiança – Este indicador originou-se de uma pergunta direta, que apresentava aos alunos se confiavam ou não em seus colegas. Foi atribuído valor 1 se a resposta foi sim e 0 se a resposta foi não.

Motivação - Este indicador foi construído a partir de uma questão que defrontava os alunos com um conjunto de desenhos que refletiam diferentes estados de ânimo ou sentimentos. Foi solicitado aos alunos que identificassem os desenhos de acordo com o estado de ânimo na hora de ir para a escola. O indicador apresenta valores de 1 a 5, sendo o valor 1 atribuído a pior situação e 5 ao melhor estado de ânimo, aquela que expressa motivação e felicidade.

Sociabilidade - Este último indicador foi obtido a partir de uma tarefa que defrontava os alunos com 4 desenhos e um espaço vazio. Os desenhos expressavam diferentes formas de composição de grupos. Os estudantes deveriam escolher o desenho que melhor refletisse sua sensação de inclusão ao grupos de colegas da escola. Caso o aluno não se identificasse com nenhum dos desenhos propostos, ele deveria tentar expressar-se através da confecção de seu próprio desenho no espaço vazio. O indicador possui valores de 1 a 6, sendo 1 para a pior sensação, aquela que refletia isolamento total, e 6 para a opção que refletisse completa inclusão ao grupo.

Na tabela 1, são apresentadas as médias das respostas de todos os estudantes participantes e não participantes do programa. Os dados correspondem a 5033 questionários aplicados a estudantes participantes do programa e a 4374 questionários aplicados a estudantes que não participaram do programa. É fácil perceber que os resultados dos estudantes participantes apresentam médias levemente superiores. Este resultado está de acordo com o que se espera do programa. No entando, esta análise agregada pode estar dificultando a visualização dos efeitos positivos do programa, uma vez que algumas cidades incluídas na avaliação aderiram ao programa bem mais tardiamente, tendo ainda poucas chances de apresentar resultados efetivos. Assim, na Tabela 2 são apresentados os resultados por cidade participante no programa. Estes resultados permitem visualizar o efeito regionalizado das ações do programa sobre o desempenho dos alunos.

Tabela 4.1. Resultados médios provenientes do questionário dos alunos.

	Alunos participantes do programa – todas a cidades		**Alunos não participantes do programa – todas as cidades**	
	Média	Desvio Padrão	Média	Desvio Padrão
Conhecimento	2.69	.83	2.45	1.09
Raciocínio lógico	1.25	.92	.71	.91
Confiança	.61	.49	.51	.50
Motivação	3.63	1.08	3.48	1.17
Sociabilidade	3.74	1.32	3.70	1.36

A tabela 2 mostra os resultados para cada dimensão analisada obtida dos questionários dos estudantes participantes do programa em cada cidade. É interessante notar que, para a maioria das cidades, os estudantes participantes no programa obtiveram médias superiores àquelas obtidas pelos estudantes não participantes. Isto é válido para um número significante de cidades e para quase todas as dimensões analisadas, exceto para a variável sociabilidade. No aspecto sociabilidade, em apenas quatro cidades, os estudantes participantes do programa

obtiveram desempenho superior aos estudantes não participantes. Apenas este resultado não permite uma conclusão sobre as causas, porém, permite levantar hipóteses sobre possíveis rivalidades e/ou sensação de exclusão que a forma de implementação do programa tenha provocado.

Tabela 4.2. Desempenho de estudantes participantes e não participantes para cada cidade avaliada.

	Estudantes Partic.		**Estud. Não part.**	
	Media	Des.Padrão.	Media	Des. Padrão.
BELO HORIZONTE				
Conhecimento	2.64	.82	**2.86**	.57
Raciocínio lógico	**1.52**	.79	1.00	.97
Confiança	**.46**	.54	.34	.49
Motivação	**3.63**	1.20	3.32	1.09
Sociabilidade	**3.68**	1.32	3.45	1.05
BETIM				
Conhecimento	**2.81**	.66	2.76	.76
Raciocínio lógico	**1.38**	.87	1.27	.92
Confiança	**.59**	.50	.57	.50
Motivação	3.67	1.12	**3.79**	1.03
Sociabilidade	**3.90**	1.32	3.84	1.35
BRASÍLIA				
Conhecimento	**2.69**	.85	2.56	1.00
Raciocínio lógico	**1.30**	.93	1.03	.99
Confiança	**.51**	.51	.45	.50
Motivação	**3.52**	1.06	3.40	1.10
Sociabilidade	3.54	1.15	**3.57**	1.25
CANAÃ				
Conhecimento	**2.88**	.44	2.83	.56
Raciocínio lógico	1.79	.41	**1.95**	.22
Confiança	**.62**	.49	.52	.5
Motivação	3.91	.77	**4.05**	.64
Sociabilidade	3.33	1.31	**3.69**	1.55
CAXIAS				
Conhecimento	2.91	.37	2.9	.41
Raciocínio lógico	**1.84**	.38	1.83	.38
Confiança	.51	.5	**.54**	.5
Motivação	3.4	1.11	**3.46**	1.06
Sociabilidade	**3.7**	1.23	3.52	1.13
CURITIBA				
Conhecimento	**2.85**	.46	2.79	.56
Raciocínio lógico	**1.98**	.23	1.78	.42
Confiança	.71	.45	**.72**	.45
Motivação	3.91	.87	**3.95**	.97
Sociabilidade	**4.4**	1.35	3.9	1.46
FLORIANÓPOLIS				
Conhecimento	**2.92**	.34	2.87	.43
Raciocínio lógico	**1.89**	.32	1.83	.42
Confiança	**.7**	.46	.65	.48
Motivação	**3.63**	.92	3.59	1.05
Sociabilidade	3.54	1.16	**3.57**	1.05
PARAUAPEBAS				
Conhecimento	2.87	.46	**2.84**	.52
Raciocínio lógico	**1.49**	.5	1.23	.42
Confiança	**.69**	.46	.41	.49
Motivação	**3.93**	.63	3.66	.96
Sociabilidade	3.85	1.28	**3.95**	1.24
PORTO ALEGRE				
Conhecimento	2.84	.47	**2.85**	.41
Raciocínio lógico	**1.75**	.44	1.7	.48
Confiança	**.6**	.49	.48	.5
Motivação	**3.78**	.93	3.52	.99
Sociabilidade	3.91	1.38	**4.1**	1.43
RIO DE JANEIRO				
Conhecimento	**2.9**	.38	2.87	.39
Raciocínio lógico	1.77	.42	**1.88**	.32
Confiança	**.55**	.5	.39	.49
Motivação	**3.74**	.88	3.58	.95
Sociabilidade	3.8	1.22	**3.82**	1.22
SALVADOR				
Conhecimento	**2.91**	.34	2.04	.9
Raciocínio lógico	**1.68**	.47	1.42	.32
Confiança	**.84**	.37	.41	.49
Motivação	**3.84**	.82	3.30	1.17
Sociabilidade	4.04	1.17	**4.06**	1.2
SÃO PAULO				
Conhecimento	**2.9**	.37	2.89	.36
Raciocínio lógico	1.92	.28	**1.94**	.26
Confiança	**.58**	.49	.51	.5
Motivação	**3.63**	.92	3.55	.92
Sociabilidade	3.61	1.05	**3.78**	1.15
SOROCABA				
Conhecimento	**2.97**	.22	2.95	.27
Raciocínio lógico	**1.92**	.28	1.61	.49
Confiança	**.69**	.46	.68	.47
Motivação	**3.68**	.95	3.53	1.01
Sociabilidade	3.57	1.18	**3.61**	1.16

4.3.2 APRESENTAÇÃO E DESCRIÇÃO DOS DADOS DOS QUESTIONÁRIOS DOS PROFESSORES

Dos questionários dos professores, foram obtidos indicadores indiretos que refletem a opinião deles sobre os impactos do programa na evolução dos estudantes. É importante deixar claro que os professores apenas responderam questões avaliando os alunos participantes do programa. Dos questionários dos professores, serão utilizados os seguintes indicadores:

Expessão verbal, expressão escrita, desenvolvimento cognitivo, grau de independência, responsabilidade, comportamento durante as aulas, cooperação com os colegas, motivação, cumprimento de normas e auto-confiança. Para cada categoria, os professores deveriam escolher, de acordo com a opinião pessoal, entre os seguintes scores:

1 = se o professor considerava que os alunos pioraram significativamente naquele aspecto por terem participado do programa;

2 = se os alunos pioraram levemente;

3 = se o desempenho dos alunos não foi alterado por terem participado do programa;

4 = se os alunos melhoraram levemente e;

5 = se os alunos melhoraram consideravelmente por terem participado do programa.

Tabela 4.3 Percepção dos professores sobre o desempenhos dos alunos

	Todas as Cidades	*Belo Horizonte*	*Betim*	*Brasilia*	*Canaa*	*Caxias*	*Curitiva*	*Florianópolis*	*Parauapeba*	*Porto Alegre*	*Rio De Janeiro*	*Salvador*	*São Paulo*	*Sorocaba*
Expres. Verbal	3.57	2.85	3.90	3.47	2.72	3.80	4.07	3.96	2.81	3.90	3.00	4.28	3.74	4.17
Expres. Escrita	3.35	2.12	3.73	3.33	2.53	3.67	4.04	3.96	2.57	3.55	2.54	4.15	3.48	3.75
Desenvolvimento	3.55	2.38	3.83	3.57	2.76	4.07	4.07	4.08	2.92	3.80	2.87	4.14	3.69	3.95
Independencia	3.66	3.04	3.86	3.51	2.56	4.07	3.93	4.00	2.84	4.24	3.18	4.69	3.90	4.05
Responsabilidade	3.64	2.42	3.89	3.66	2.68	4.07	3.96	3.92	2.69	4.33	2.41	4.65	4.03	4.13
Comportamento	3.51	2.69	3.60	3.46	2.84	3.73	4.04	3.68	2.95	3.76	2.74	4.31	3.76	3.75
Cooperação	3.69	2.69	3.84	3.71	3.12	4.20	4.14	4.16	3.05	4.05	2.82	4.27	3.98	3.82
Motivação	3.77	2.58	3.94	3.73	3.04	4.40	4.36	4.24	2.89	4.19	2.67	4.49	4.23	4.18
Normas	3.55	2.58	3.62	3.53	2.96	4.00	4.07	3.96	2.89	3.90	2.69	4.46	3.75	3.73
Auto-confiança	3.76	2.15	3.96	3.79	3.25	4.20	4.25	4.28	2.77	4.29	2.36	4.60	4.18	4.07

Tabela 4.4 – Percepção dos professores sobre o atingimento dos objetivos do programa – ou promoção de capacitaçãoes

	Todas as Cidades	*Belo Horizonte*	*Betim*	*Brasilia*	*Canaa*	*Caxias*	*Curitiva*	*Florianópolis*	*Parauapeba*	*Porto Alegre*	*Rio De Janeiro*	*Salvador*	*São Paulo*	*Sorocaba*
Protagonismo	3.58	**2.85**	3.44	3.03	**2.68**	3.62	3.14	3.46	**2.78**	3.70	3.44	3.71	3.48	3.60
Participação	3.40	**2.77**	**2.94**	3.04	3.14	3.85	3.04	3.33	**2.53**	3.55	3.13	3.43	3.20	**2.87**
Iniciativa	3.69	**2.81**	3.30	3.06	3.20	3.77	3.79	3.96	3.01	3.45	3.49	3.48	3.34	3.58
Condições de Vida	4.07	3.62	3.58	3.29	3.67	3.69	3.64	4.04	3.60	4.00	4.08	3.57	3.80	4.30

4.4 ANÁLISE FATORIAL

4.4.1 ANÁLISE FATORIAL EXPLORATÓRIA

As tentativas de identificar ou medir capacitações vêm trabalhando com a idéia de que elas podem ser interpretadas como variáveis latentes, as quais resultam de um conjunto multidimensional de indicadores provenientes dos funcionamentos realizados das pessoas. Deste ponto de vista, capacitações podem ser identificadas usando técnicas estatísticas tais como Análise Fatorial, Equações Estruturais ou Modelos de Múltiplos Indicadores e Múltiplas Causas – MIMIC - models.

Nesta parte do estudo, a análise fatorial será utilizada com o objetivo de obter resultados exploratórios e confirmatórios. Inicialmente será aplicada a análise fatorial exploratória, buscando entender a estrutura das relações entre as variáveis com as quais estamos trabalhando. Busca-se também, se possível, reduzir as variáveis em uso a um número menor de fatores, tornando assim, a interpretação mais fácil. Posteriormente, será aplicada análise fatorial confirmatória.

Na operacionalização da abordagem das capacitações, a análise fatorial exploratória foi usada para avaliar bem-estar por LELLI (2001). A técnica permitiu reduzir 43 indicadores (qualitativos, categóricos, dicotômicos, subjetivos, objetivos, diretos e indiretos) em 6 categorias ou fatores. Os resultados deste estudo evidenciam que a análise fatorial foi uma técnica útil, pois auxiliou a autora na confirmação das categorias de funcionamentos incialmente propostos.

De acordo com HAIR JR at all (1998) o propósito geral da técnica de análise fatorial é encontrar uma forma de condensar (ou sumarizar) informações contidas nas variáveis originais, transformando um número elevado de variáveis num novo conjunto de dimensões compostas por "*variates*", que na linguagem de análise fatorial, são chamados fatores[12]. Resumindo, a análise fatorial é útil para atingir dois objetivos: (1) identificar a estrutura dos dados através da sumarização ou; (2) reduzir os dados.

[12] A factor is a linear combination of the original variables, and represents also the underlying dimensions that summarise or account for the original set of observed variables.

Por se estar inicialmente tentando reduzir as características dos respondentes num menor número de variáveis ou dimensões, será aplicada a chamada *R factor analysis*[13], que significa aplicar análise fatorial usando a matriz de correlação das variáveis, o que irá permitir identificar as dimensões que são latentes.

Antes de aplicar a técnica de análise fatorial é necessário checar se os dados são adequados. Para fazer isso, vamos seguir os procedimentos e estágios sugeridos por HAIR JR at al (1998) e verificar as propriedades das medidas, a existência de correlações suficientes e a adequação da amostra.

No que se refere as questões da mensuração, HAIR JR at al (1998) destacam que as variáveis para o uso de análise fatorial são geralmente assumidas como apresentando medida métrica. No entanto, em alguns casos variáveis *dummies* podem ser usadas, mesmo que sejam consideradas medidas não métricas. Os dados deste estudo compõem-se de variáveis métricas, assim podemos proceder com o exercício.

A existência de correlações suficientes pode ser analisada através da inspeção visual, do grau de significância das correlações existentes e também por meio dos resultados das correlações parciais. Em nosso caso, a inspeção visual da matriz de correlação, mostra um número baixo de correlações, que excedem 0.30 quando se analisa os dados dos alunos, e um número moderado quando se analisa a matriz de correlação para os dados dos professores. A partir destes resultados checa-se a significância estatística das correlações. Quando se olha para as significâncias estatísticas, percebe-se que, apesar de baixas, as correlações são, em sua grande maioria, significantes, mesmo para os dados dos alunos. Além disso, usou-se o teste KMO para verificar o tamanho da amostra, o qual evidencia que, para ambas as bases de dados o tamanho da amostra é adequado. Assim, em termos de propriedades estatísticas, a base de dados dos professores apresenta-se adequada em todas as especificações e os dados provenientes dos questionários dos alunos, mostram propriedades mais fracas, mas mesmo assim são aprovados nos testes de significância das correlações existentes e tamanho da amostra. Decidiu-se, então, proceder a análise, conscientes de que os resultados para a base de dados dos alunos devem ser interpretados e/ou utilizados com a devida cautela.

[13] There is also the *Q factor analysis* which, is applied to the correlation matrix of the individual respondents willing to identify their characteristics.

4.4.1.1 ANÁLISE FATORIAL EXPLORATÓRIA – APLICAÇÃO AOS DADOS DOS ALUNOS

Para a base de dados dos estudantes aplicou-se, inicialmente, análise fatorial exploratória buscando verificar se os cinco aspectos analisados poderiam ser agrupados em um número menor de dimensões latentes, que puderiam vir a representar as capacitações que o programa buscou desenvolver. Os resultados deste exercício podem ser vistos nas tabelas 5 e 6. É possível observar que as cinco variáveis analisadas, quando não se impõe nenhuma restrição a técnica de análise fatorial, resultam em dois fatores ou capacitações. No fator 1, agrupam-se as variáveis conhecimento, motivação e sociabilidade e, no fator 2, as variáveis confiança e desenvolvimento. Como pode ser visto na tabela 5, as variações nestas variáveis são pouco explicados pelos fatores extraídos, sendo que o fator 1 explica apenas 26,82% da variância total das variáveis e o fator 2 explica 20,64%. Conjuntamente, os dois fatores não chegam a explicar 50% das oscilações das variáveis originais.

Estes resultados, apesar de pouco explicativos e conclusivos do ponto de vista estatístico, são úteis para esclarecer a importância da técnica neste tipo de trabalho. É importante ter em mente que os testes iniciais já deixaram evidente que as correlações entre as variáveis não eram elevadas, o que de certa forma é um indicativo de que a análise fatorial pode não ser a técnica mais apropriada para a análise destes dados, além do número de variáveis a serem reduzidas ser muito pequeno para justificar o uso de análise fatorial. Porém, uma vez que não se tem como objetivo fazer inferências, e sim, única e exclusivamente, buscar alternativas de operacionalização da abordagem das capacitações, decidiu-se prosseguir com a aplicação, mesmo sabendo que os resultados poderiam não ser conclusivos. Por outro lado, o fato das variáveis não revelarem comportamento homogêneo é um indicativo interessante da existência de múltiplas dimensões no espaço das capacitações. O que pode estar confirmando a necessidade de estar atento às formas de agregação utilizadas na construção de indicadores.

Tabela 4.5 – Fatores obtidos e variância explicada para os estudantes participantes do programa.

Fator	*Eigenvalues*	% da Variância explicada	Total var. explicada
1	1.341	26.826	26.826
2	1.032	20.648	47.474

Fonte: Elaborada pela autora

Extraction Method: Principal Component Analysis. SPSS 10.0

Tabela 4.6 – Matriz de Componentes e pesos para os dois fatores identificados – alunos participantes.

	Componente	
	1	2
Conhecimento	.500	.361
Desenvolvimento	.325	.765
Confiança	.519	-.533
Motivação	.659	-.150
Sociabilidade	.531	-.102

Extraction Method: Principal Component Analysis.
2 components extracted.

Exercício semelhante foi realizado, utilizando os dados dos questionários dos estudantes que não participaram do programa. Nas tabelas 7 e 8 são apresentados os fatores identificados e a matriz de componentes. Pode-se perceber que a técnica reduz os dados para o mesmo número de fatores, porém as dimensões são agrupadas de forma diferente. Novamente, o pequeno número de variáveis e o fato das diferenças de resultados, mesmo na análise descritiva, ser baixo, não nos permite uma explicação mais apurada das causas desse agrupamento diferenciado. Porém, o fato das dimensões provenientes dos alunos não participantes explicarem um percentual maior da variância total é um indicativo relevante. Isto parece sugerir que os alunos não participantes são um grupo mais homogêneo do que os alunos que participaram do programa. Pode-se sugerir que o fato dos alunos terem participado do programa gerou heterogeneidade.

Outra informação que merece destaque é o comportamento da variável sociabilidade. Quando se olha para os resultados médios por cidade, conforme visto na seção anterior, percebe-se que os alunos não participantes obtiveram resultados superiores aos alunos participantes em 8 das 12 cidades. Com a utilização da análise fatorial percebe-se que esta variável se comporta de forma distinta entre os dois grupos. No grupo dos alunos participantes do programa, Sociabilidade contribui com um peso de 0.53 para o fator 1 e com peso negativo de –0.10 no fator 2. No grupo dos alunos não participantes o peso significativo desta variável é no fator 2 com 0.56 contribuindo positivamente para esse fator.

Tabela 4.7 – Fatores identificados e variância explicada para os alunos não participantes do programa.

Componentes	Eigenvalues l	% da Variancia explicada	% Var. Acumulada
1	1.465	29.301	29.301
2	1.054	21.076	50.377

Extraction Method: Principal Component Analysis.

Tabela 4.8 – Matriz de Componentes e pesos das variáveis em cada fator. Estudantes não participantes.

	Component	
	1	2
Conhecimento	.587	-.407
Desenvolvimento	.446	-.660
Confiança	.568	.250
Motivação	.682	.271
Sociabilidade	.367	.562

Extraction Method: Principal Component Analysis.
2 components extracted.

4.4.1.2 ANÁLISE FATORIAL EXPLORATÓRIA APLICADA AOS DADOS PROVENIENTES DAS RESPOSTAS DOS PROFESSORES.

Os seguintes resultados são uma tentativa de agrupar as dez dimensões avaliadas pelos professores em um número menor de indicadores. A tabela 9 mostra que as dimensões são altamente correlacionadas e passíveis de serem agrupadas núm único fator ou, em outras palavras, podem facilmente constituir numa variável latente (refletindo o aumento na capacitação dos alunos). Conjuntamente, as dimensões utilizadas explicam 64,23% da variância total da variável latente (ou capacitação).

Tabela 4.9 – Fatores identificados e variância explicada – dados dos professores.

	Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.424	64.236	64.236	6.424	64.236	64.236
2	.716	7.156	71.392			
3	.500	4.998	76.391			
4	.459	4.588	80.978			
5	.411	4.112	85.090			
6	.371	3.706	88.797			
7	.317	3.175	91.971			
8	.312	3.124	95.095			
9	.256	2.563	97.658			
10	.234	2.342	100.000			

Extraction Method: Principal Component Analysis.

A Matriz de componentes, tabela 10, mostra que todas as variáveis contribuem positivamente com o fator identificado e todos os pesos são significativos. Neste caso, a qualidade estatística dos resultados é superior aos resultados obtidos para os dados dos alunos.

Os testes de especificação já mostraram que a amostra apresentava as propriedades adequadas para aplicação da análise fatorial.

Table 4.10 – Matriz de Componentes para as dimensões avaliadas pelos professores

	Component
	1
Expressão Verbal	.780
Expressão Escrita	.788
Desenvolvimento	.781
Independência	.759
Responsabilidade	.850
Comportamento	.777
Cooperação	.772
Motivação	.854
Normas	.808
Auto-estima	.840

Extraction Method: Principal Component Analysis.
1 components extracted.

4.4.2 MODELO DE EQUAÇÕES ESTRUTURAIS (SEM) – E MODELO DE MÚLTIPLOS INDICADORES E MÚLTIPLAS CAUSAS - MIMIC MODELS

De acordo com HOX AND BECHGER (2000) and HAIR JR, at all (1998) os modelos de equações estruturais são uma técnica geral, que engloba uma família completa de modelos. Dentre estes, estão os modelos de covariância estrutural, modelos-LISREL, análise de variáveis latentes e análise fatorial confirmatória. No entanto, todos os nomes alternativos que os modelos de equações estruturais recebem são úteis para refletir casos especiais de aplicação da técnica geral. Nenhum destes nomes alternativos é capaz de refletir adequadamente as equações estruturais como um todo. O modelo de covariância estrutural, por exemplo, implica uma estrutura para a covariância entre as variáveis observadas porém, os modelos podem ser mais amplos e abrangentes do que isso, incluindo as médias das variáveis observadas ou fatores. Outro exemplo são os modelos LISREL, que têm origem no primeiro modelo linear desenvolvido por Joreskog, atualmente, porém, os modelos estruturais podem apresentar formas não lineares.

Visando reduzir a incerteza e confusão no vasto uso de Modelos de equações estruturais, HAIR JR. at al (1998) destacam que os SEM são constituídos por modelos que apresentam as seguintes características:

1) estimação de relações de dependência múltiplas e inter-relacionadas;

2) capacidade de representar conceitos não observados e suas relações e considerar erros de especificação no processo de estimação.

Os modelos de equações estruturais são frequentemente visualizados por diagramas de trajetória (caminho) e são considerados uma ferramenta conveniente para realização de análise estatística. Neste processo, são incluídos vários procedimentos tradicionais, tais como análise fatorial, análise de regressão, análise de discriminante e correlação econônica. Como exemplos de aplicação de modelos de equações estruturais, pode-se destacar a análise fatorial confirmatória e os modelos gerais de equações estruturais com variáveis latentes.

Um dos principais resultados almejados com os modelos de equações estruturais é a avaliação das séries de relações entre as variáveis. Estas relações podem ser obtidas através de vários meios, como por exemplo, estratégias confirmatórias, estratégias de modelos competitivos.

4.4.2.1 ANÁLISE FATORIAL CONFIRMATÓRIA (CFA)

Ao contrário da análise fatorial exploratória onde não se tem qualquer hipótese sobre o número de variáveis latentes nem sobre o tipo de relação entre os fatores latentes e as variáveis observadas, a Análise Fatorial Confirmatória exige hipótese clara sobre a estrutura do fator e imposição da mesma sobre os dados.

Na aplicação em Análise Fatorial Confirmatória, os modelos de equações estruturais possuem dois objetivos. O primeiro é obter estimativas dos parâmetros do modelo (pesos dos fatores, variâncias e covariâncias do fator, e a variância residual dos erros das variáveis observadas), e o segundo, avaliar a adequação do modelo.

Após ter apresentado os resultados da análise fatorial exploratória, o diagrama a seguir mostra os resultados da tentativa de se reduzir os cinco indicadores provenientes das respostas dos alunos em um único indicador (ou capacitação). Apenas para manter-se consistente com a denominação definida pelo programa, chamar-se-á o fator (variável latente/capacitação) de protagonismo juvenil.

No diagrama, tem-se representado nos quadrados as dimensões avaliadas pelo programa. Do lado esquerdo de cada quadrado aparece o valor proveniente da matriz de covariância dos erros de mensuração da variável latente. Nas setas que provem da variável latente para cada dimensão considerada, estão os coeficientes, ou pesos de cada variável. Os mesmos coeficientes que aparecem nas setas, respectivos erros padrão e estatística t, estão na tabela 11.

Pode-se verificar que todos os coeficientes ou pesos são estatisticamente significantes, porém, para algumas variáveis o poder explicativo é muito baixo. No caso da variável conhecimento, o fator latente identificado explica uma parcela muito pequena das variações nesta variável. Além disso, o coeficiente da variável sociabilidade aparece com sinal contrário ao esperado, o que de certa forma apenas confirma o que já havia sido identificado na análise descritiva dos dados. Ou seja, que o programa implementado, contribuiu negativamente na dimensão sociabilidade.

Tabela 4.11. Coeficientes estimados, erros padrão e estatística t.

Variável	Conhecimento	Desenvolvimento	Confiança	Motivação	Sociabilidade
Coeficiente	0,069	1.810	1.565	0.650	-1.006
Erro padrão	(0,021)	(0,078)	(0.064)	(0.132)	(0.073)
Estatística t	3.366	23.146	24.395	4.935	-13.753

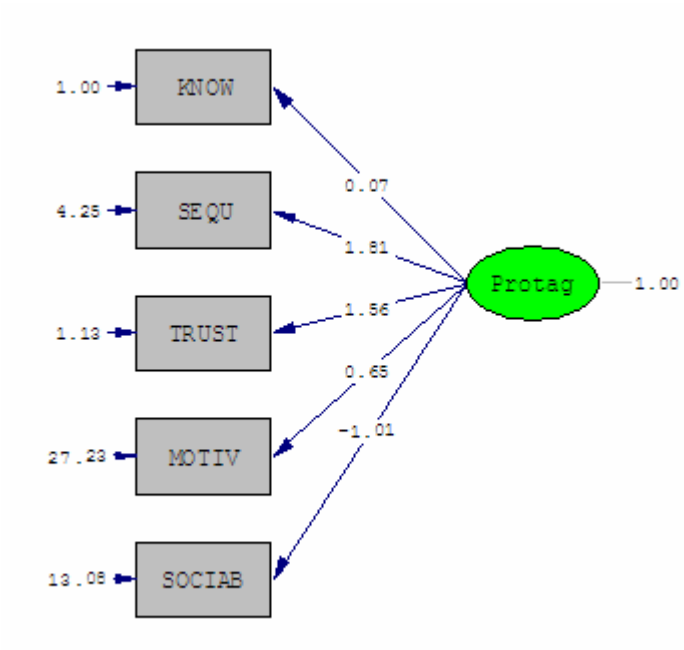

Figura. 4.3- Análise fatorial confirmatória – dados dos alunos participantes

Na figura a seguir, tem-se o diagrama que mostra a análise fatorial confirmatória usando os dados dos questionários dos professores. Conforme já indicado na análise fatorial exploratória, os resultados mostram que é possível reduzir as dez variáveis avaliadas em apenas uma capacitação ou variável latente. Assim, para as dimensões analisadas pelos professores, a análise fatorial confirmatória apenas ilustra a hipótese de que as dimensões em consideração são apropriadas para definir (refletir) uma única variável latente/capacitação (nesse caso, protagonismo juvenil). Pelos resultados da tabela percebe-se que todos os coeficientes são estatisticamente significativos.

Tabela 4.12 – Coeficientes ou pesos estimados pela análise fatorial confirmatória, erros-padrão e estatística t.

Variável	Ex.verbal	Ex. Escrita	Desenv.	Indep	Resp.	Comp	Coop	Motiv	Normas	Auto estim.
Coeficient	0.945	1.027	0.972	1.246	1.221	1.004	1.183	1.085	1.105	0.950
Erro Padrão	(0.019)	(0.019)	(0.017)	(0.029)	(0.015)	(0.021)	(0.024)	(0.013)	(0.017)	(0.012)
Estatistica t	50.968	56.124	58.769	42.942	83.811	47.523	49.055	85.411	65.774	77.203

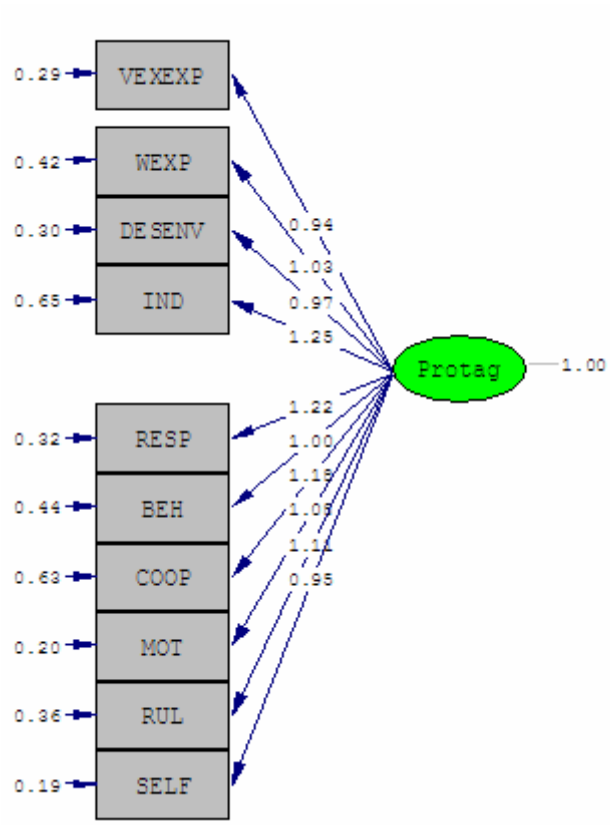

Figura 4.4. Análise fatorial confirmatória – dimensões avaliadas pelos professores

4.4.2.2 MODELOS COM MÚLTIPLOS INDICADORES E MÚLTIPLAS CAUSAS - MIMIC MODELS

Na opinião de KRISHNAKUMAR (2004) a análise fatorial, apesar de ser uma técnica útil para identificar variáveis latentes (ou capacitações), não é uma técnica capaz de explicar as razões pelas quais as capacitações são alteradas. Para fins práticos e/ou para propósitos de decisões políticas, é importante saber como o desenvolmimento humano acontece. Em decorrência disso, é necessário ir além da análise fatorial e encontrar técnicas que sejam capazes de descobrir como as capacitações são alteradas (promovidas). De acordo com a referida autora, os modelos MIMIC são um exemplo dessas técnicas alternativas a serem usadas para auxiliar a operacionalização da abordagem das capacitações de forma mais completa.

Os modelos de múltiplos indicadores e múltiplas causas – MIMIC models – pertencem a uma classe de modelos de estrutura de covariância que combinam modelos de mensuração e modelos estruturais. Estes modelos relacionam fatores latentes e suas causas de forma linear. Mesmo apresentando semelhanças com procedimentos de obtenção de fatores latentes em análise fatorial confirmatória e posterior aplicação de análise de regressão sobre uma lista de (*covariates*), a estimação de modelos MIMIC apresenta várias vantagens em relação a estes métodos. De acordo com KUKLYS (2003) as principais vantagens são: 1) os modelos MIMIC integram a estimação de modelos de mensuração e modelos estruturais num único passo, e 2) a estimação estatística é feita com ferramentas que permitem a adequação e hipóteses do modelo. Além disso, os modelos MIMIC apresentam vantagens em relação aos modelos de regressão tradicionais.

Os modelos MIMIC são usados principalmente em pscicologia e sociologia. Em economia, os exemplos são os trabalhos de RAISER, DI TOMMASO AND WEEKS (2000) que se destinaram a medir as mudanças institucionais em economias em transição. KUKLYS (2003) aplicou modelos MIMIC para medir realizações de bem-estar na Inglaterra. DI TOMASO (2003) e ADDABBO et al (2004) aplicaram modelos MIMIC para avaliar bem estar infantil na India e na Itália, respectivamente.

Especificação do modelo MIMIC a ser utilizado.

Dentre os objetivos que a avalição do programa em análise se propôs, destaca-se a tentativa de identificar se o programa foi capaz de expandir as capacitações dos alunos envolvidos no programa e, se sim, como esse processo ocorreu. Os modelos MIMIC são sugeridos na literatura como uma técnica capaz de auxiliar nesta tarefa. Busca-se, nesta seção, aplicar essa técnica estatística para identificar a relação das dimensões trabalhadas pelo programa na promoção das capacitações e ao mesmo tempo identificar se outras variáveis exógenas como condições da escola, gênero, idade etc são capazes de influenciar no desempenho dos alunos.

Em outras palavras, busca-se identificar as relações entre as capacitações realizadas, que serão chamadas de b, as quais são lincadas por meio de uma função de conversão f ao

indicadores qualitativos (entitulamentos) propostos pelo programa, que chamar-se-á de q, as capacitações também dependerão das características pessoais e sócio-econômicas, denominadas de z. q e z têm características específicas para os dados dos questionários dos professores e dos alunos, os quais serão melhor especificadas posteriormente na apresentação das equações estruturais e de mensuração para cada grupo. A função promoção de capacitações a ser estimada é:

$$b = f(c(q_i), z_i) \qquad i = 1,...n$$

Para manter a nomenclatura consistente com os objetivos do programa e com a notação usada ao longo deste estudo, a variável latente identificada (capacitação) será chamada de protagonismo. Espera-se que as dimensões expressas por qi exerçam impacto positivo sobre as capacitações dos estudantes. As variáveis representadas por z_i irão fornecer informações sobre como as características pessoas e condições sócio-econômicas influenciam as capacitações. Para estas variáveis não foi formulada uma hipótese prévia sobre a forma como afetarão as capacitações dos alunos.

A estimação dos modelos MIMIC pode ser pensado como um procedimento em dois estágios, apesar de todo o procedimento ser realizado ao mesmo tempo pelo software. Neste estudo as estimativas estão sendo realizadas com o auxílio do LISREL 8.6 students edition. A equação de mensuração especifica como as variáveis endógenas observadas são influenciadas pelas variáveis latentes – capacitações realizadas. Todas as correlações entre os elementos de y resultam de associação mútua com y^*. A equação estrutural especifica a relação causal entre as variáveis exógenas observadas e as capacitações realizadas.

Em termos formais, a equação de mensuração a ser estimada é:

$$y_j = \Lambda^y y^* + \varepsilon_j$$

onde $\Lambda^y = \left\{\Lambda^y_1,...., \Lambda^y_m \right\}$ denota m x 1 vetor de parâmetros representando as mudanças esperadas nos respectivos indicadores, dada uma mudança unitária na variável latente.

A equação estrutural ou equação de estado é:

$$y^* = \gamma_1 x_1 + \gamma_2 x_2 + ... + \gamma_n x_n + \eta$$

a qual assume que as capacitações também são linearmente determindads por um vetor de variáveis exógenas observadas $x = (x_1,...., x_n)$, e um erro estocástico.

Os modelos estimados para os alunos e suas relações podem ser melhor visualisados por meio de diagramas, conforme os apresentados nas figuras 4 e 5. A figura 4 ilustra a relação entre as variáveis exógenas sexo, idade e anos de estudo. Estas variáveis são representadas pelos quadros à esquerda do diagrama. Acredita-se que estas variáveis afetam as capacitações individuais dos estudantes. No lado direito do diagrama, estão representadas as variáveis endógenas, que foram as dimensões trabalhadas pelo programa. São elas: Conhecimento (KNOW), Desenvolvimento (SEQU), Confiança (TRUST), Motivação (MOT) e Sociabilidade (SOCIAB). A variável lantent é definida como Protag.

A figura 5 mostra o modelo MIMIC estimado com a base de dados dos professores. Como variáveis exógenas foram usadas as seguintes variáveis: condição de trabalho dos professores (WORKCOND), tempo em que os alunos estão participando do programa (YPROGR), local de moradia dos professores (LIVCOND) e condições de infra-estrutura da escola (INFRA). E como variáveis endógenas seguem sendo usadas as mesmas dez dimensões: expressão verbal (VEXPR), expressão escrita (WEXPR), Desenvolvimento (DEVELOP), Independência (IND), Responsabilidade (RESP), Comportamento dos estudantes (BEH), Cooperação com os colega (COOP), Motivação (MOT), Cumprimento de normas (RUL), Auto-confiança (SELF).

Os coeficientes, que aparecem nas setas que ligam a variável latente às variáveis exógenas, mostram que todas as variáveis (sexo, idade e anos de estudo) afetam negativamente a promoção de capacitaçoes. Porém, todos os coeficientes sao baixos, ou seja contribuem de forma muito marginal para explicar o fator identificado, apesar de serem estatisticamente significantes. Isso pode estar sugerindo que as variáveis (dimensões) exógenas que dispomos não são as mais adequadas para explicar as variações nas capacitações. Os coeficientes das variáveis endógenas são os mesmos obtidos na análise fatorial confirmatória.

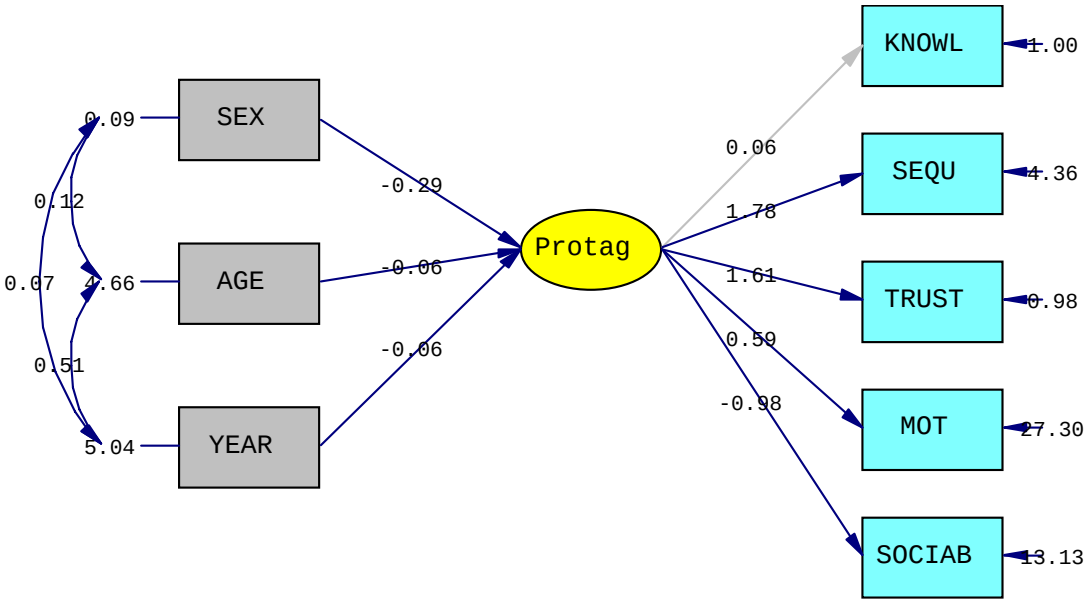

Figure 4.5 – Relação entre as variáveis: latentes, endógenas e exógenas

Modelo MIMIC para os dados dos estudantes.

Tabela 4.13 - Parâmetros estimados a partir do modelo MIMIC: Equação de Mensuração

	Protag			
Variable	Λ^{protag} (parameter)	Standard error	t-values	R^2
Knowl	0.060			
Sequ	1.780	(0.596)	2.985	
Trust	1.612	(0.541)	2.980	
Motiv	0.593	(0.231)	2.569	
Sociab	-0.982	(0.339)	-2.897	

Tabela 4.14 - Parâmetros estimados a partir do Modelo MIMIC: Equação estrutural

	Protag			
Variable	Λ^{protag} (parameter)	Standard error	t-values	R^2
Sex	-0,295	(0,121)	-2.433	
Age	-0,065	(0,022)	-2.880	
Year	-0,065	(0,023)	-2.813	

O modelo MIMIC estimado para a base de dados dos professores resultou em coeficientes positivos para as três variáveis exógenas utilizadas, o que significa dizer que as condições de trabalho dos professores, tempo de permanência no programa, local de moradia do professor e condições de infra estrutura da escola relacionam-se de forma direta com a variável latente obtida. No entanto, além dos coeficiêntes estimados serem baixos, a significância estatística compromete a validade destas variáveis como possíveis dimensões explicativas.

Resultados estimados a partir da base de dados dos professores.

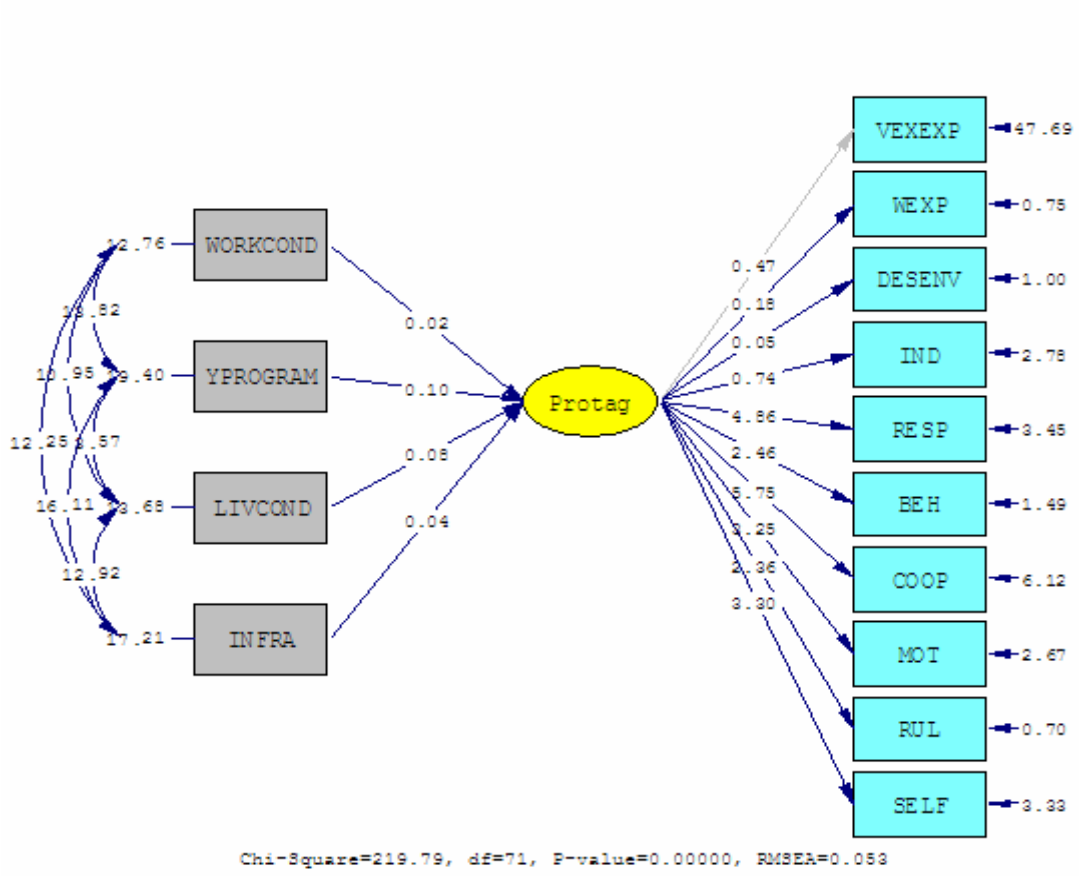

Figura 4.6 Diagrama representando modelo MIMIC – dados dos professores

Tabela 4.15 - Parâmetros estimados: Equação de Mensuração

Variable	Λ^{protag}	Standard error	t-value
VEXEXP	0.469		
WEXP	0.178	(0.107)	1.667
DESENV	0.048	(0.051)	0.928
IND	0.738	(0.436)	1.695

RESP	4.855	(2.850)	1.704
BEH	2.465	(1.450)	1.700
COOP	5.750	(3.379)	1.702
MOT	3.245	(1.903)	1.705
RUL	2.359	(1.385)	1.703
SELF	3.301	(1.939)	1.702

Tabela 4.16 - Parâmetros estimados – Modelo MIMIC - Equação estrutural.

Variable	Λ^{protag}	Standard error	t-value
WORKCOND	0.020	(0.027)	0.723
YPROGRAM	0.102	(0.067)	1.513
LIVCOND	0.081	(0.051)	1.584
INFRA	0.044	(0.033)	1.316

4.5 ANÁLISE A PARTIR DA TEORIA DOS CONJUNTOS FUZZY

Esta parte do estudo objetiva aplicar a técnica fuzzy para construir indicadores multimensionais, utilizando as variáveis provenientes dos questionários de avaliação do Programa Você Apita (dados dos alunos e dos professores) e compará-los com os resultados já apresentados nas seções anteriores a partir da técnicas já apresentadas.

ZADEH (1965) introduziu a teoria dos conjuntos *fuzzy* nos anos 60. Esta técnica era utilizada inicialmente em pesquisas das áreas de engenharia, física e matemática. Nos estudos de bem-estar e avaliações de privação, a técnica foi utilizada apenas no final da década de 90. Rapidamente, a técnica passou a ser utilizada pelos pesquisadores ligados a abordagem das capacitações, conforme já ilustrado na fig. 1. Para detalhes mais completos e exemplos de aplicação da teoria dos conjuntos fuzzy, o leitor pode consultar os trabalhos de CHIAPPERO MARTINETTI (2000) e LELLI (2001). Estes trabalhos são contribuições importantes para o entendimento da metodologia e também para o uso da mesma em abordagem das capacitações.

A idéia que sustenta a teoria dos conjutos fuzzy é a de uma variável ou indivíduo podem pertencer apenas parcialmente a um conjunto de indicadores. De acordo com CHIAPPERO MARTINETTI (2000), conceitos tais como bem estar, pobreza, privação são conceitos fuzzy (não exatos), os quais são intrínsecamente complexos e vagos. Isso significa dizer que esses conceitos não têm definição exata, em outras palavras, pode-se dizer que não cumprem definições de tudo ou nada (ou de pertence ou não pertence). Se o pesquisador

assumir como verdade que os referidos conceitos não são exatos, deve então, dar a devida atenção às características dos dados quando estiver avaliando bem-estar, pobreza e/ou promoção de capacitações.

Dado que é praticamente impossível estabelecer limites (mínimo ou máximos) que não sejam passíveis de críticas e/ou contenham certo grau de arbitrariedade, existe então, a motivação na busca por metodologias que sejam capazes de respeitar as propriedades dos conceitos e também a estrutura dos dados. Na visão de LELLI (2001), a teoria dos conjuntos fuzzy é uma generalização da teoria clássica dos conjuntos. A teoria fuzzy representa, porém, classes dentro das quais a transição de um membro para não membro ocorre gradualmente. Desta forma, cada conjunto é caracterízado por uma função, chamada função membro. A função membro é usada para atribuir a cada elemento um número real no intervalo [0, 1]. Visando tornar isso mais claro,

> … let X be the universal set whose elements are denoted by x, then a fuzzy set A will be defined as a mapping μ_A: X $\rightarrow$[0, 1]. Following such definition $\mu_A(x) = 0$ implies non-membership $\mu_A(x) = 1$ stands for full membership, and intermediate values between 0 and 1 denote partial membership (LELLI (2001:8).

A teoria fuzzy, neste estudo, será usada como um instrumento para construir indicadores capazes de refletir a promoção de capacitações nos estudantes participantes do Programa Você Apita. Serão construídos indicadores para a base de dados dos alunos (participantes e não participantes do programa) e também para a base de dados do professores. As variáveis utilizadas serão as mesmas das seções anteriores.

A função membro a ser utilizada é apresentada a seguir. Tal função foi selecionada, de acordo com MARTINETTI (2000), segundo a qual a função membro linear é a mais indicada para os casos onde as variáveis são equidistribuídas e apresentam escala ordinal, o que é o nosso caso.

$$\mu_{\mathrm{A}}(x) = \begin{cases} 0 & if \quad x = x_{\min} \\ \dfrac{(x - x_{\min}}{(x_{\max} - x_{\min}} & if \quad x_{\min} < x < x_{\max} \\ 1 & if \quad x = x_{\max} \end{cases}$$

Os limites máximos e mínimos para cada indicador são definidos conforme segue. Para a base de dados dos alunos, as variáveis conhecimento e desenvolvimento assumem $x_{\min} = 0$ e $x_{\max} = 3$; Para as dimensões motivação e sociabilidade os valores assumidos são $x_{\min} = 1$ and $x_{\max} = 5$. A variável confiança não necessita de função membro, pois as respostas obtidas dos alunos já estão no formato 0 e 1. Os resultados apresentados na tabela 17 mostram que os estudantes que participaram do programa apresentam indicadores mais altos do que os obtidos pelos estudantes não participantes em todas as dimensões. Estes resultados obtidos a partir da função *fuzzy*, são consistentes com os resultados obtidos na seção 3, onde procedeu-se a análise descritiva dos dados. Porém, o uso da função *fuzzy* auxilia na melhor visualização das diferenças, tornando a análise mais clara e permitindo perceber melhor os efeitos positivos do programa. Em outras palavras, o indicador mostra o sucesso que cada grupo obteve no desempenho das tarefas solicitadas. Fica evidente que os alunos participantes do programa obtiveram resultados melhores. Porém, a técnica *fuzzy*, de certa forma confirma os resultados descritivos obtidos na seção 3, mostrando-se superior na construção de indicadores agregados, contribuindo para o esclarecimento dos efeitos do programa. Por exemplo, quando se olha apenas para a média, seção 3, sociabilidade apresenta média levemente superior para o agregado dos alunos, quando se analisa os resultados por cidade percebe-se que apenas quatro cidades apresentam média superior. A análise *fuzzy*, que traz um indicador entre 0 e 1, para os resultados agregados, mostra que não houve diferença entre alunos participantes e não participantes, sendo esta uma dimensão que no agregado não foi afetada. Além disso, a técnica *fuzzy* contribui para melhor visualiar a quão positivo ou não foi o efeito de participar do programa.

Tabela 4.17 – Indicadores *fuzzy* para os estudantes participantes e não participantes do programa.

Dimension	Students participating	Students not participating
Knowledge	0.90	0.82
Development	0.42	0.24
Trust	0.61	0.51
Motivation	0.62	0.58
Sociability	0.62	0.62
Overall Index	**0.63**	**0.554**

Visando construir indicadores de promoção de capacitações a partir do uso da técnica fuzzy, foram realizados dois exercícios. Utilizando-se a mesma função, foram obtidos dois conjuntos de indicadores, onde foi alterado o limite mínimo. O limite máximo permaneceu o mesmo nos dois exercícios. Inicialmente, foram construídos indicadores utilizando o limites mínimos e máximos conforme segue: $x_{\min} = 2$ e $x_{\max} = 5$, no segundo exercício elevou-se o limite mínimo para $x_{\min} = 3$, mantendo-se $x_{\max} = 5$. Este exercício justifica-se, pois a pergunta apresentada aos professores no questionário solicitava que os mesmos classificassem o impacto do programa entre piorou muito (1) até melhorou consideravelmente (5). No primeiro exercício, quando o limite é 2, a resposta do professor terá peso zero, ou seja, não fará parte do índice se o impacto do programa tiver sido negativo. Caso a resposta tenha sido 3, o que quer dizer que os alunos não pioraram nem melhoraram, ainda assim a reposta será considerada positiva, ou seja, fará parte do índice.

O segundo exercício, busca identificar de forma mais clara os efeitos positivos do programa. Assim, só são considerados na composição do indicador os valores 4 e 5 que representam progresso dos alunos em decorrência do programa.

Table 4.18 – Fuzzy Indicators – Aggregation of all Teachers and all Cities

Dimensions	Limite minimo = 2	Limite minimo=3
Verbal Expression	0.45	0.34
Written Expression	0.46	0.26
Development	0.52	0.32
Independence	0.56	0.38
Responsibility	0.56	0.40
Behaviour	0.51	0.32
Co-operation	0.57	0.40
Motivation	0.59	0.44
Rules	0.52	0.34
Self Confidence	0.59	0.45
Overall Index	**0.53**	**0.37**

As tabelas a seguir apresentam os resultados dos indicadores fuzzy por cidade para estudantes e professores. Estes resultados são úteis para identificar quais as dimensões foram mais afetadas em cada cidade e quais as cidades apresentaram melhores resultados em termos de promoção de capacitações. É fácil perceber que, olhando-se os resultados de cada cidade,

os alunos que participaram do programa obtiveram melhores resultados em todas as cidades, no índice agregado das quatro dimensões. Porém, quando se olha o agregado de todas as cidade para cada dimensão, percebe-se que a dimensão sociabilidade apresenta índice inferior no grupo dos alunos participantes, se comparado ao índice dos alunos que não participaram do progama. Salienta-se que, o desempenho dos alunos das cidade de Brasilia, Canaã, Florianópolis, Porto Alegre e São Paulo, foram os que provocaram este resultado inferior.

Os indicadores obtidos das respostas dos professores evidenciam apenas os efeitos positivos alcançados pelo programa. Sendo que, estes podem ser interpretados como um grau de eficácia do programa, uma vez que, a partir da utilização da função fuzzy com mínimo igual a 3, o indice zero representaria que o programa não teve efeito nenhum sobre os alunos e o índice 1 representaria pleno atingimento dos objetivos, ou seja, que os alunos melhoraram consideravelmente em decorrência do fato de terem participado do programa.

Tabela 4.19 – Fuzzy index by city - students participating in the program

Dimesnion	BH	Betim	Brasilia	Canaa	Caxias	Curitiba	Florianópolis	Parauapebas	Porto Alegre	Rio de Janeiro	Salvador	Sao Paulo	Sorocaba	Media
Knowl	0.879	0.937	0.898	0.858	0.846	0.848	0.884	0.571	0.861	0.890	0.944	0.934	0.971	0.871
Sequence	0.508	0.461	0.433	0.352	0.634	0.597	0.353	0.292	0.424	0.289	0.093	0.492	0.552	0.422
Trust	0.447	0.583	0.500	0.562	0.527	0.704	0.663	0.663	0.571	0.554	0.806	0.570	0.676	0.602
Motivation	0.727	0.734	0.596	0.730	0.661	0.748	0.680	0.754	0.741	0.749	0.768	0.720	0.727	0.718
Sociab	0.613	0.651	0.590	0.551	0.616	0.712	0.557	0.625	0.641	0.630	0.675	0.597	0.596	0.619
	0.635	0.673	0.603	0.610	0.657	0.722	0.628	0.581	0.648	0.622	0.657	0.663	0.704	0.646

Tabela 4.20 - Fuzzy index by City - students not participating in the program

Dimension	Belo Horizonte	Betim	Brasilia	Canaa	Caxias	Curitiba	Florianopolis	Parauapebas	Porto Alegre	Rio de Janeiro	Salvador	Sao Paulo	Sorocaba	Media
Knowl	0.954	0.920	0.853	0.815	0.820	0.801	0.883	0.827	0.864	0.864	0.122	0.860	0.948	0.810
Develop	0.335	0.423	0.345	0.169	0.049	0.327	0.205	0.156	0.141	0.191	0.352	0.317	0.295	0.254
Trust	0.333	0.567	0.448	0.494	0.513	0.700	0.610	0.390	0.448	0.389	0.352	0.496	0.669	0.493
Motiv	0.664	0.757	0.578	0.790	0.663	0.763	0.683	0.697	0.736	0.707	0.653	0.672	0.676	0.695
Sociab	0.575	0.640	0.594	0.593	0.580	0.631	0.564	0.642	0.649	0.635	0.670	0.612	0.596	0.614
	0.572	0.662	0.564	0.572	0.525	0.644	0.589	0.542	0.568	0.557	0.430	0.591	0.637	0.573

Table 4.21 – Teachers Fuzzy indicators by City – (using Xmin = 2)

Indicator	Belo Horizonte	Betim	Brasilia	Canaa	Caxias	Curitiba	Florianopolis	Parauapebas	Porto Alegre	Rio de Janeiro	Salvador	Sao Paulo	Sorocaba
Ver expr	0.29	0.63	0.49	0.25	0.60	0.69	0.65	0.29	0.70	0.34	0.76	0.58	0.73
Writ Expr	0.10	0.58	0.45	0.22	0.56	0.68	0.65	0.21	0.88	0.21	0.72	0.50	0.58
Develop	0.17	0.61	0.52	0.22	0.69	0.69	0.69	0.31	0.60	0.32	0.71	0.87	0.50
Indep	0.37	0.62	0.51	0.22	0.69	0.64	0.67	0.29	0.75	0.42	0.90	0.63	0.68
Respon	0.17	0.63	0.56	0.27	0.69	0.65	0.64	0.26	0.81	0.19	0.88	0.68	0.71
Beh	0.27	0.53	0.49	0.30	0.58	0.68	0.56	0.33	0.59	0.27	0.77	0.59	0.58
Co-op	0.26	0.61	0.57	0.40	0.73	0.71	0.60	0.36	0.65	0.31	0.75	0.66	0.61
Motiv	0.22	0.65	0.58	0.37	0.80	0.79	0.75	0.30	0.73	0.25	0.83	0.74	0.73
Rules	0.23	0.54	0.52	0.35	0.67	0.67	0.65	0.30	0.67	0.24	0.82	0.59	0.58
Self-conf	0.09	0.65	0.60	0.42	0.73	0.75	0.76	0.28	0.76	0.15	0.87	0.73	0.69

Table 4.22 – Teachers Fuzzy indicators by City (using Xmin = 3)

Indicator	Belo Horizonte	Betim	Brasilia	Canaa	Caxias	Curitiba	Florianopolis	Parauapebas	Porto Alegre	Rio de Janeio	Salvador	Sao Paulo	Sorocaba
Ver expr	0.12	0.63	0.27	0.07	0.43	0.54	0.48	0.05	0.45	0.13	0.64	0.37	0.59
Writ Expr	0.04	0.37	0.20	0.05	0.33	0.54	0.48	0.01	0.57	0.04	0.58	0.25	0.41
Develop	0.02	0.41	0.30	0.04	0.53	0.54	0.54	0.07	0.40	0.08	0.57	0.80	0.38
Indep	0.19	0.44	0.29	0.05	0.53	0.46	0.50	0.06	0.62	0.24	0.84	0.45	0.53
Respon	0.06	0.44	0.36	0.12	0.53	0.50	0.46	0.07	0.70	0.05	0.83	0.51	0.56
Beh	0.06	0.31	0.29	0.11	0.37	0.54	0.36	0.10	0.38	0.05	0.66	0.39	0.40
Co-op	0.10	0.43	0.39	0.24	0.60	0.57	0.46	0.13	0.50	0.14	0.63	0.50	0.41
Motiv	0.10	0.47	0.40	0.16	0.70	0.68	0.62	0.07	0.60	0.10	0.74	0.61	0.60
Rules	0.02	0.31	0.32	0.18	0.50	0.52	0.50	0.08	0.50	0.04	0.73	0.39	0.39
Self-conf	0.04	0.48	0.44	0.23	0.63	0.64	0.64	0.07	0.64	0.03	0.80	0.59	0.55

4.6 CONSIDERAÇÕES FINAIS

Este capítulo buscou analisar os resultados do *survey* de avaliação do programa Você Apita a luz da abordagem das capacitações e através da utilização de técnicas estatísticas alternativas. Os resultados obtidos a partir das diferentes técnicas utilizadas sugerem que os impactos do programa foram positivos e que os estudantes que participaram do programa tiveram um desempenho melhor quando solicitados a desenvolver as tarefas propostas.

A aplicação de técnicas alternativas constituiu-se num exercício de operacionalização da abordagem das capacitações. Deste exercício, pode-se concluir que a utilização da técnica de análise fatorial é útil como uma técnica capaz de sumarizar um conjunto amplo de dados em um número menor de dimensões ou fatores e também como mecanismo capaz de confirmar ou não hipóteses sobre a agregação de diferentes dimensões. Por exemplo, a técnica de análise fatorial exploratória, foi capaz de agrupar com eficiência, em um único fator, as dez dimensões avaliadas pelos professores. Porém, as dimensões analisadas pelos alunos não foram passíveis de agrupamento e os resultados estatísticos obtidos não foram robustos. Isso mostra que uma mesma técnica não pode ser usada indiscriminadamente.

A análise fatorial confirmatória foi útil em ambas as bases de dados, pois mostrou a impossibilidade de reduzir as cinco dimensões avaliadas pelo questionário aplicado aos alunos. Mostrou também que protagonismo pode representar com bastante eficácia as dimensões avaliadas pelos professores, o que era a hipótese do programa.

A utilização dos modelos de multiplos indicadores e múltiplas causas, apesar de serem uma opção mais completa, não parecem ser a melhor alternativa para os dados disponíveis.

A técnica fuzzy mostrou-se útil como uma estratégia de agregação dos resultados e também como uma forma de tornar mais evidente os reais impactos do programa. Outro resultado interessante é que as diferentes técnicas apresentaram resultados consistentes entre si, ou seja, não houveram contradições entre os resultados obtidos, o que, além de reforçar as evidências de que o programa teve efeitos positivos, também pode ser uma exigência de que

todas as técnicas são úteis e relevantes para operacionalização da abordagem, desde que aplicadas a dados apropriados.

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