Università degli Studi di Firenze
*Dipartimento di Studi Sociali*

# *Methodologies to integrate subjective and objective information to build well-being indicators*

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# Defining the conceptual framework

(C)

Measuring social phenomena

⇩

different conceptual frameworks

⇩

*based upon a comprehensive*

⇩

Integration between

**objective** and **subjective** information

# Introdution

**Each aspect → reduction of the reality**

**Necessity to integrate the two “realities”**

**Integration requires definition of:**

- **a proper conceptual framework**
- **a proper measurement model**
- **a consistent approach to manage the complexity**


***Defining the conceptual framework***

***Defining the measurement model***

***Managing the complexity of the model***

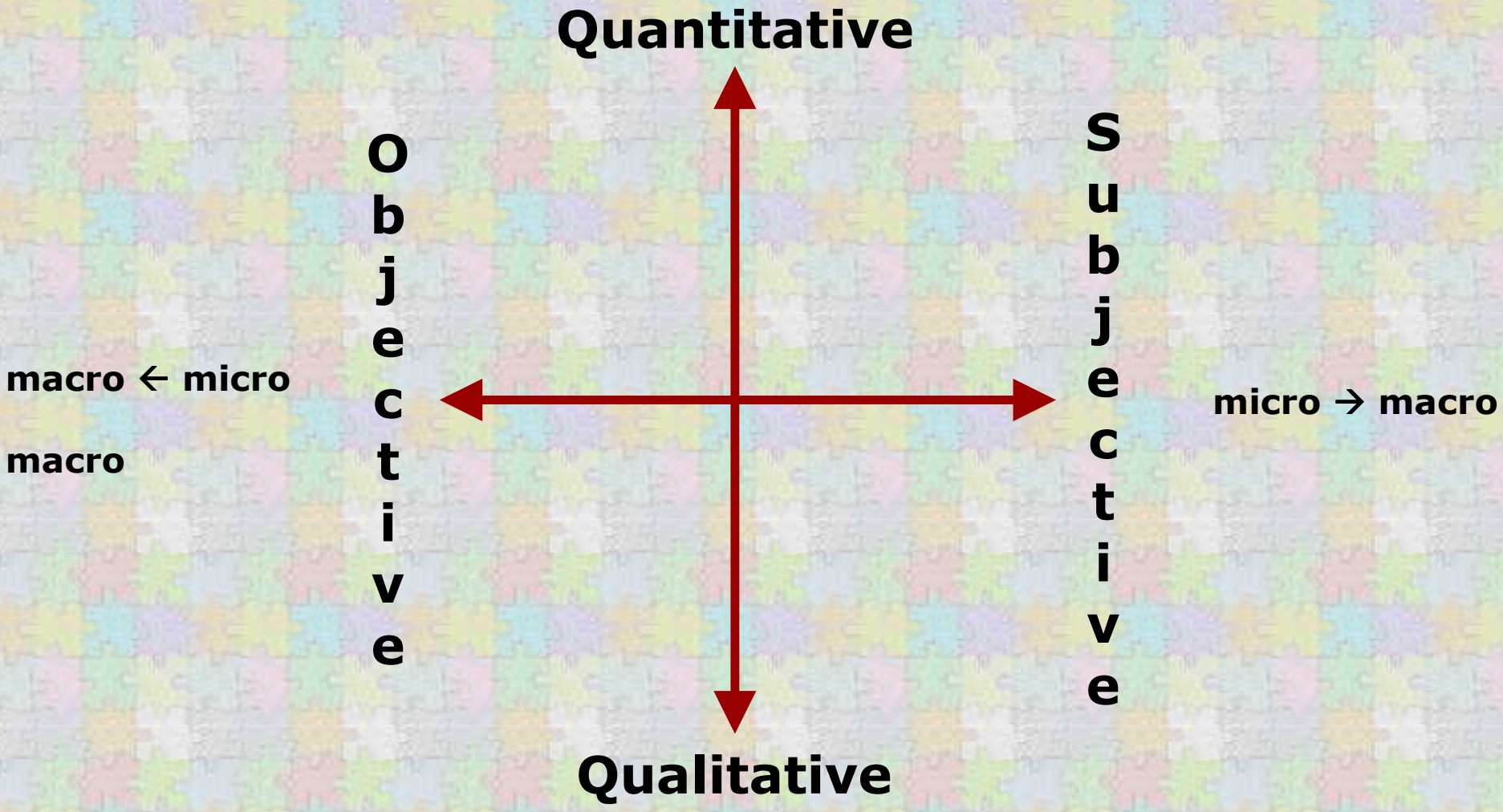

# 1.

***Defining the conceptual framework***

***Defining the measurement model***

***Managing the complexity***

# Defining the conceptual framework



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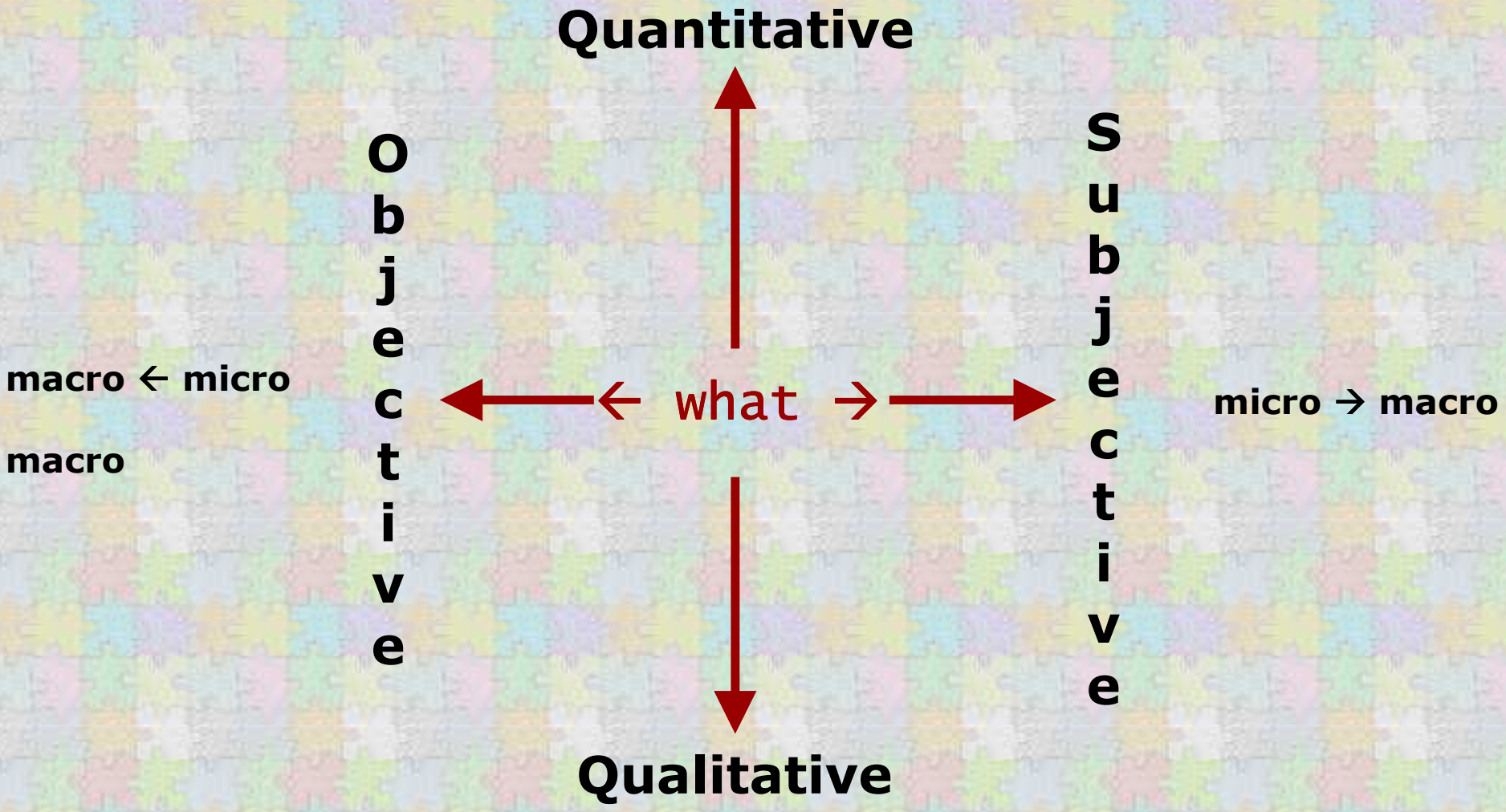
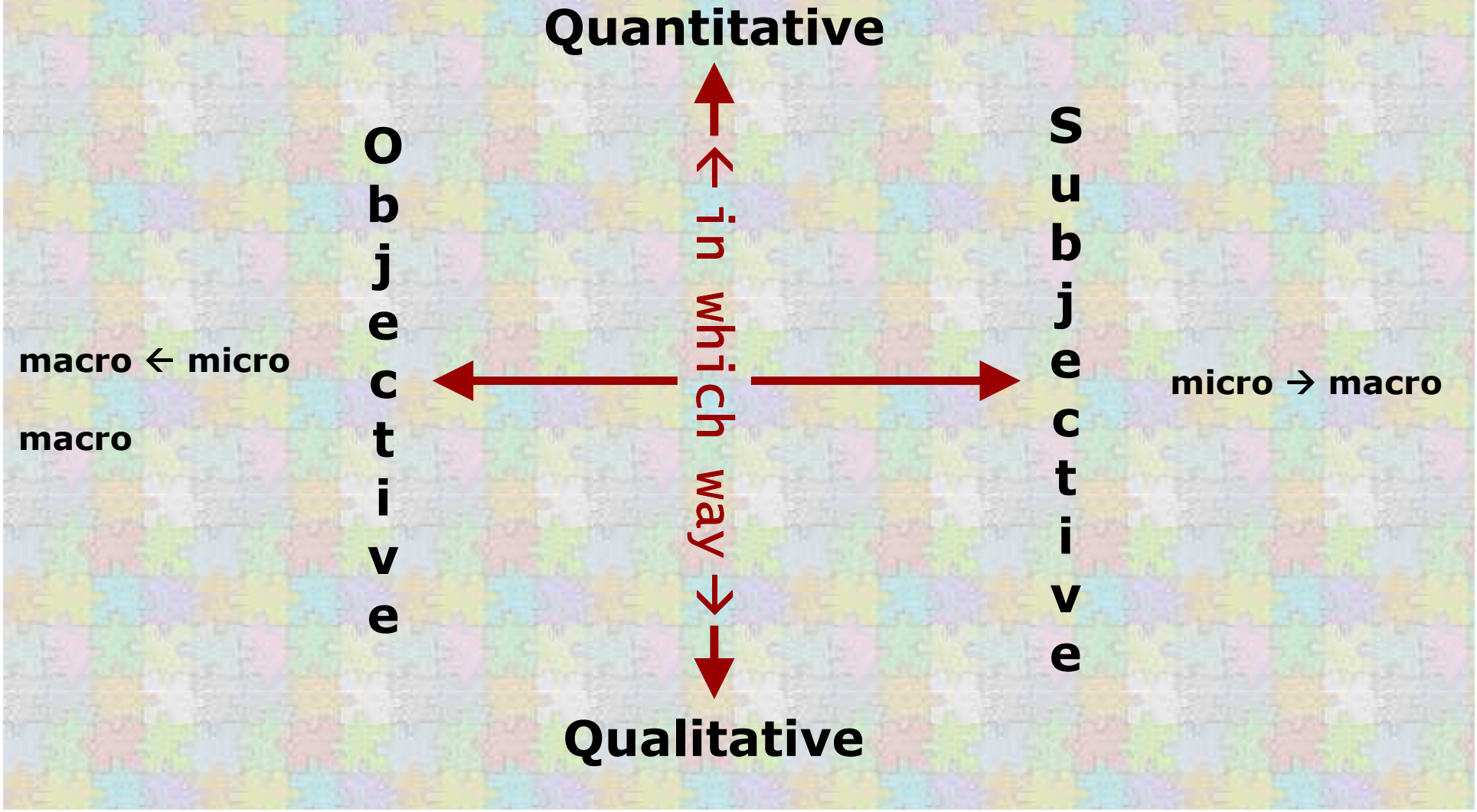


# Defining the conceptual framework



# Defining the conceptual framework

## Objective characteristics

| | | | |
|---|---|---|---|
| **Micro level** | **Demographic and socio-economic characteristics** | - **sex**<br>- **age**<br>- **civil/marital status**<br>- **household**<br>- **educational qualification** | - **occupation**<br>- **geographical mobility (birthplace / residence / domicile)**<br>- **social mobility (original family status)** |
| | **Observable acquired knowledge** | - **skills**<br>- **cognition** | - **know-how**<br>- **competences** |
| | **Individual living conditions (resources)** | - **standards of living**<br>- **financial resources (income)**<br>- **housing** | - **working and professional conditions and status**<br>- **state of health** |
| | **Social capital** | - **social relationships**<br>- **freedom to choose one's lifestyle** | |
| | **Observable behaviours and life style** | - **activities (work, hobby, vacation, volunteering, sport, shopping, etc.)** | |
| | | - **engagements (familiar, working, social, etc.)** | |
| | | - **habits (schedule, using of public transport and of means of communication, diet, etc.)** | |
| | | - **public life (participation, voting, etc)** | |

# Defining the conceptual framework

## Objective characteristics

| | | | | |
|---|---|---|---|---|
| **Macro level** | **Structure of societies** | **Social conditions** | **Social exclusion** | **Disparities, equalities/inequalities, opportunities** |
| | | | **Social inclusion** | **Informal networks, associations and organisations and role of societal institutions** |
| | | **Political setting** | **Human rights, democracy, freedom of information, etc.** | |
| | | **Institutional setting** | **Educational system** | |
| | | | **Health system** | |
| | | | **Energy system** | |
| | | **Economical setting** | **Income distribution, etc.** | |
| | **Environmental conditions** | | | |
| | **Decisional and institutional processes** | | | |

# Defining the conceptual framework

## Subjective characteristics

| | | | | |
|---|---|---|---|---|
| **Micro level** | **Abilities / capacities** | **intellectual** | - verbal comprehension and fluency<br>- numerical facility<br>- reasoning (deductive and inductive)<br>- ability to seeing relationships | - memory (rote, visual, meaningful, etc.)<br>- special orientation<br>- perceptual speed |
| | | **special** | - mechanical skills<br>- artistic pursuits | - physical adroitness |
| | **Personality traits** | - social traits<br>- motives | - personal conceptions<br>- adjustment | - personality dynamics |
| | **Sentiments** | **Interests and preference** | | |
| | | **Values** | | |
| | | **Attitudes** | **cognitive → evaluations (beliefs, evaluations opinions)** | |
| | | | **affective → perceptions (satisfaction and emotional states – i.e., happiness)** | |
| | | | **behavioural intentions** | |

# Defining the conceptual framework

## Relationships between subjective and objective components

Objective characteristics → descriptive / background components

Subjective characteristics → evaluative

# Defining the conceptual framework

## Relationships between subjective and objective components

Objective living conditions

↓

Subjective well-being

Social and economic development

↓

Quality-of-life improvement

# Defining the conceptual framework

## Relationships between subjective and objective components

Comparison of objective conditions

↓

Subjective well-being

| | | Ambits of comparison | | | | |
|---|---|---|---|---|---|---|
| | | Housing | Work | Family | Friends | ..... |
| Standards of comparison | previous experiences | | | | | |
| | with other people | | | | | |
| | with aspirations | | | | | |

# Defining the conceptual framework

## Relationships between subjective and objective components

Comparison of objective conditions

↓

Subjective well-being

- smaller the perceived gap
- higher the subjective well-being

- **through** different comparators
- **with reference** to different ambits (housing, work, family, friends, etc.).

# Defining the conceptual framework

## Relationships between subjective and objective components

### Multiple discrepancies approach

Subjective well-being ← *perceived gap between*

*what one has wants*

*what*

others have

one has had in the past

one expected to have

one expected to deserve

expected with reference to needs

**happiness** → not dependent on living conditions

# Defining the conceptual framework

## Relationships between subjective and objective components

**Disposition approach**

Stable individual characteristics

(personality traits)

↓

Subjective well-being

# Defining the conceptual framework

## Relationships between subjective and objective components

### Causal approach (I)

Subjective well-being = “reactive state” to the environment

↓

***bottom-up***

The sum of the reactive measures for the defined ambits allows subjective well-being to be quantified

# Defining the conceptual framework

## Relationships between subjective and objective components

### Causal approach (II)

Individual stable traits → Subjective well-being

↓

*top-down*

# Defining the conceptual framework

## Relationships between subjective and objective components

**Causal approach**

Subjective well-being

↓

Two components :

- a long-period component (top-down effect),
- a short-period component (bottom-up effect)

↓

***up-down***

# 2.

***Defining the conceptual framework***

***Defining the measurement model: developing indicators***

***Managing the complexity of the model***

# Developing the indicators

***HIERARCHICAL DESIGN***

**CONCEPTUAL MODEL**

↓

**AREAS TO BE INVESTIGATED**

↓

**LATENT VARIABLES**

↓

**ELEMENTARY INDICATORS**

# Developing the indicators

| COMPONENT | THE QUESTION TO BE ANSWERED | DEFINITION OF THE COMPONENT |
|---|---|---|
| **CONCEPTUAL MODEL** | Phenomena to be studied | defines the **phenomenon** to be studied, the domains and the general aspects characterizing the phenomenon ↓ **Process of abstraction** |

↓

**AREAS/PILLARS TO BE INVESTIGATED**

↓

**LATENT VARIABLES**

↓

**ELEMENTARY INDICATORS (E.I.)**

# Developing the indicators

| COMPONENT | THE QUESTION TO BE ANSWERED | DEFINITION OF THE COMPONENT |
|---|---|---|
| **CONCEPTUAL MODEL** | | |
| ⇩ | | |
| **AREAS/PILLARS TO BE INVESTIGATED** | Aspects defining the phenomenon | Each area represents each **aspect** allowing the phenomenon to be specified consistently with the conceptual model |
| ⇩ | | |
| **LATENT VARIABLES** | | |
| ⇩ | | |
| **ELEMENTARY INDICATORS (E.I.)** | | |

# Developing the indicators

| COMPONENT | THE QUESTION TO BE ANSWERED | DEFINITION OF THE COMPONENT |
|---|---|---|
| CONCEPTUAL MODEL | | |
| ↓ | | |
| AREAS/PILLARS TO BE INVESTIGATED | | |
| ↓ | | |
| LATENT VARIABLES | ⇨ Elements to be observed | ⇨ Each variable represents each **element** that has to be observed in order to define the corresponding area. The variable is named **latent** since is not observable directly |
| ↓ | | |
| ELEMENTARY INDICATORS (E.I.) | | |

Their definition requires:

- theoretical assumptions (dimensionality)
- empirical statements

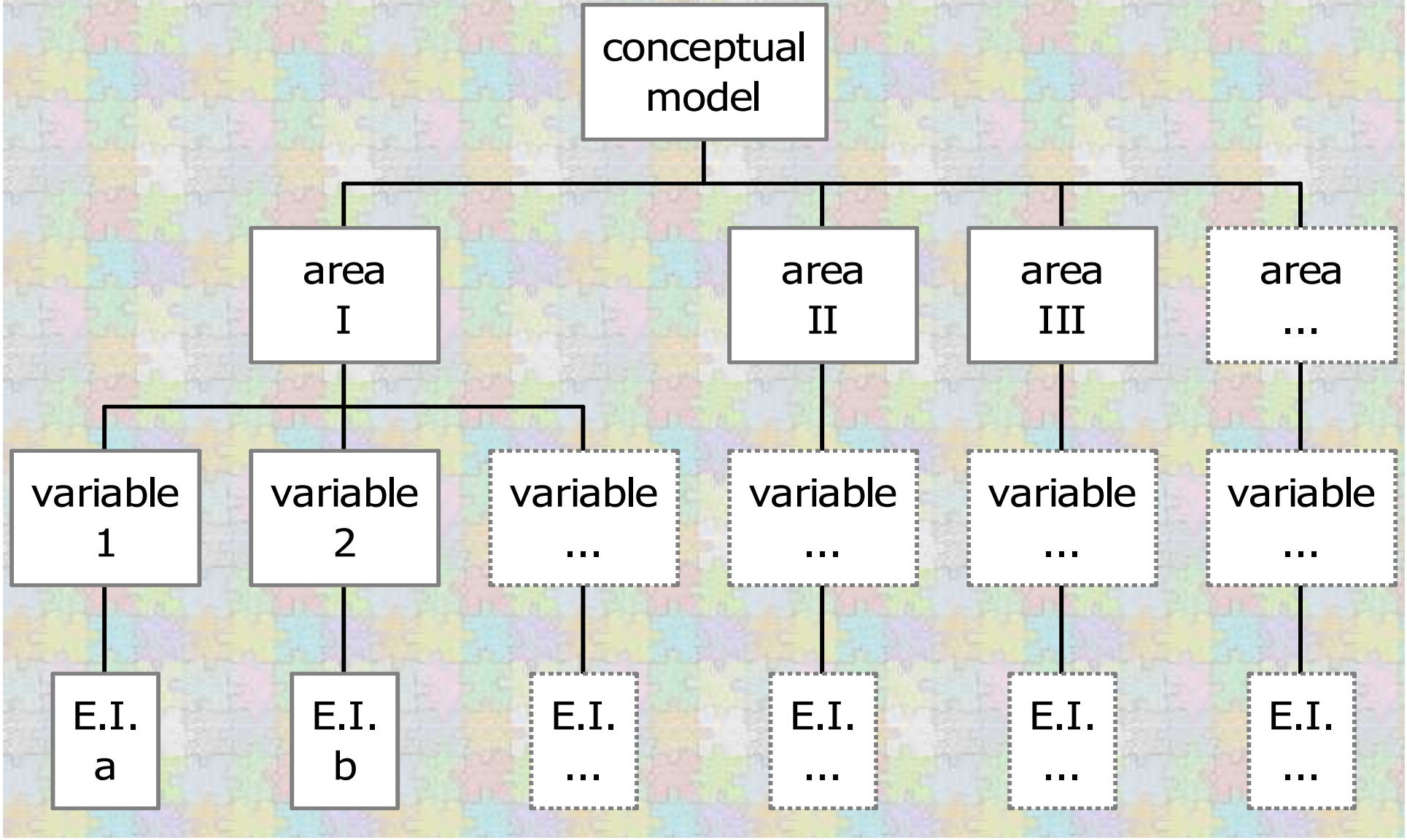
# Developing the indicators

| COMPONENT | THE QUESTION TO BE ANSWERED | DEFINITION OF THE COMPONENT |
|---|---|---|
| CONCEPTUAL MODEL | | |
| ↓ | | |
| AREAS/PILLARS TO BE INVESTIGATED | | |
| ↓ | | |
| LATENT VARIABLES | | |
| ↓ | | |
| ELEMENTARY INDICATORS (E.I.) ⇨ | In which way each element has to be measured ⇨ | Each indicator (item, in subjective measurement) represents **what is actually measured** in order to investigate each variable. |

They are defined by:

- appropriate techniques
- a system allowing observed values to be interpreted and evaluated

# Developing the indicators



# Developing the indicators

The hierarchical design is completed by the **definition of relationships between**

- latent variables and corresponding indicators (**model of measurement**)
- latent variables (managing the complexity)


# Developing the indicators

**Two different conceptual approaches:**

- models with **reflective** indicators
- models with **formative** indicators

# Developing the indicators

**Models with reflective indicators**

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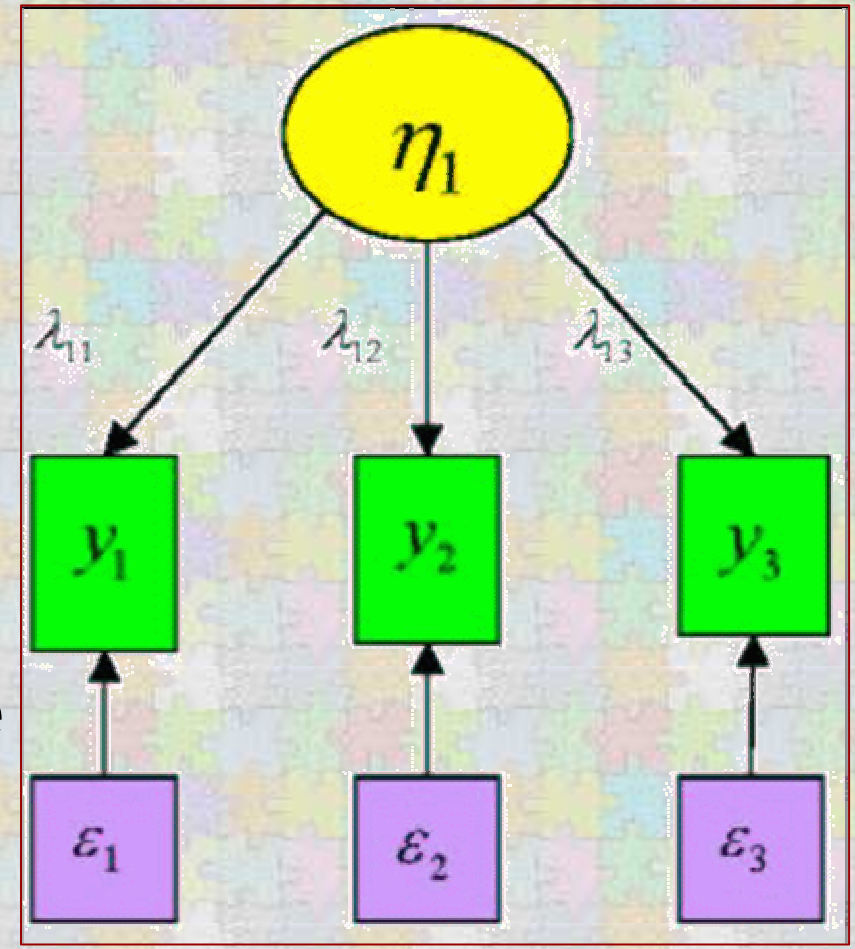
*indicators* → ***functions of the latent variable***

⇩

changes in the latent variable are reflected in changes in the observable indicators




***top-down*** explanatory approach

# Developing the indicators

**Models with formative indicators**

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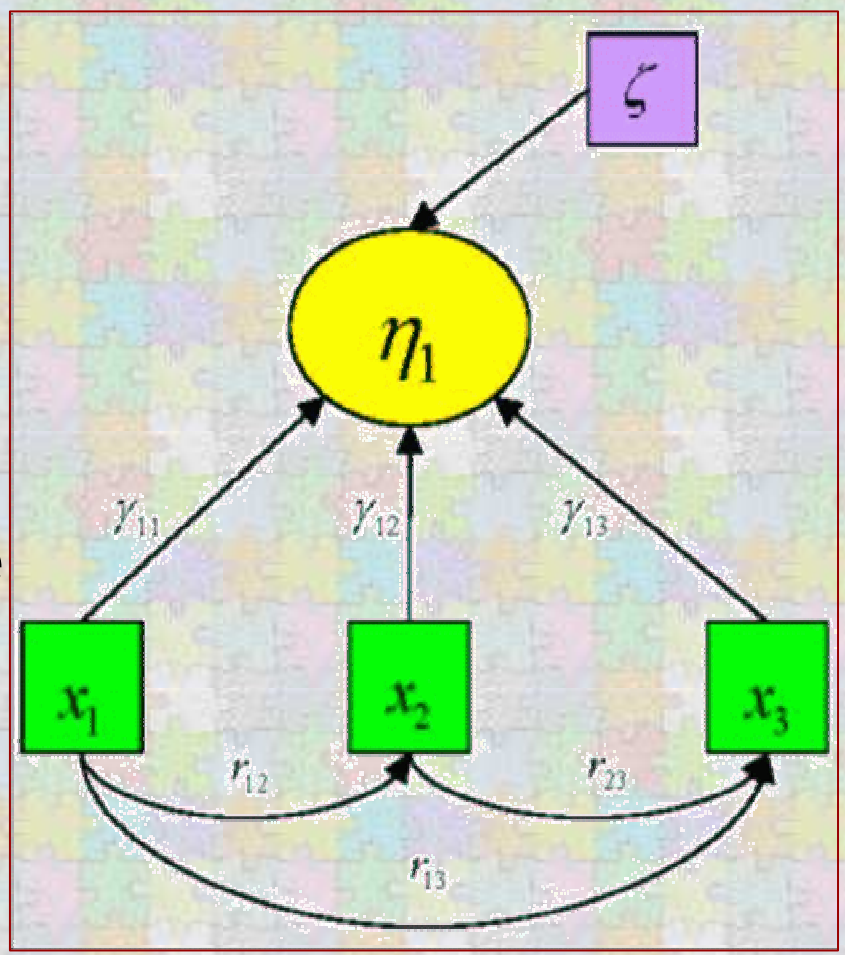
*indicators* → ***causal in nature***

⇩

changes in the indicators determine changes in the definition / value of the latent variable

***bottom-up*** explanatory approach




# 3.

***Defining the conceptual framework***

***Defining the measurement model***

***Managing the complexity of the model***


# Managing the complexity

Consistent application of the hierarchical design produces a **complex** data structure.

The complexity refers to

**three data dimensions**

to be managed

# Managing the complexity

- ***Elementary Indicators***

  (several indicators for each variables)

- ***Cases/Units***

  (several cases observed for each indicator)

- ***Variables***

  (several variables defined consistenly with the conceptual model)


# Managing the complexity

each data dimension may require a particular treatment

⇩

**strategy to manage the complexity**

⇩

***multi-stage multi-technique*** **approach**

# Managing the complexity

## GOALS

## A. Reducing data structure by

*i.* ***construction of synthetic indicators*** **(aggregating elementary indicators)**

*ii.* ***definition of macro-units*** **(aggregating micro-units)**

## B. Integrating components by

*iii.* ***relating indicators*** **(proper analytical approaches)**

*iv.* ***creating composite indicators***

# Managing the complexity

| Goals | Level of analysis | Stages | Aims | by | Analytical issues |
|---|---|---|---|---|---|
| **Reducing data structure:** | micro | (i) | **construction of synthetic indicators** | aggregating elementary indicators | From elementary indicators to synthetic indicators<br>- Reflective approach<br>- Formative approach |
| | | (ii) | **definition of macro-units** | aggregating observed units | From micro units to macro units, by following<br>- homogeneity criterion<br>- functionality criterion |
| **Integrating components:** | Micro and/ or macro | (iii) | **relating indicators** | proper analytical approaches | Different solutions (consistently with conceptual framework) |
| | | (iv) | **creating composite indicators** | integrating / merging information | Difficulties in merging information very different from each other (e.g. objective and subjective) |

# Managing the complexity

| Goals | Level of analysis | Stages | Aims |
|---|---|---|---|
| Reducing data structure: | micro | (i) | construction of synthetic indicators |
| | | (ii) | definition of macro-units |
| Integrating components: | micro and/ or macro | (iii) | relating indicators |
| | | (iv) | creating composite indicators |

# Managing the complexity

## two different criteria

## reflective ⟷ formative

statistical assessment ⇨ analytical approaches

**common factor analysis ⟷ principal component analysis**

# Managing the complexity

| Goals | Level of analysis | Stages | Aims |
|---|---|---|---|
| Reducing data structure: | micro | (i) | construction of synthetic indicators |
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| | | (iv) | creating composite indicators |

# Managing the complexity

## Aggregation of cases/units is required in order to lead information to be analysed at the same level

| | | level of observation | |
|---|---|---|---|
| | | micro | macro |
| information | objective | **compositional information** (individual living conditions) ⇩ ***aggregation*** (e.g. proportion of people living in poverty) | **contextual information** ⇩ ***no aggregation problem*** |
| | subjective | **subjective information** (subjective well-being) ⇩ ***aggregation*** (?) | not observable |

# Managing the complexity

## Aggregation of objective information

a. **Compositional criterion**

e.g. proportion of people living in poverty

b. **Contextual criterion**

no particular aggregation problem

# Managing the complexity

## Aggregation of subjective information

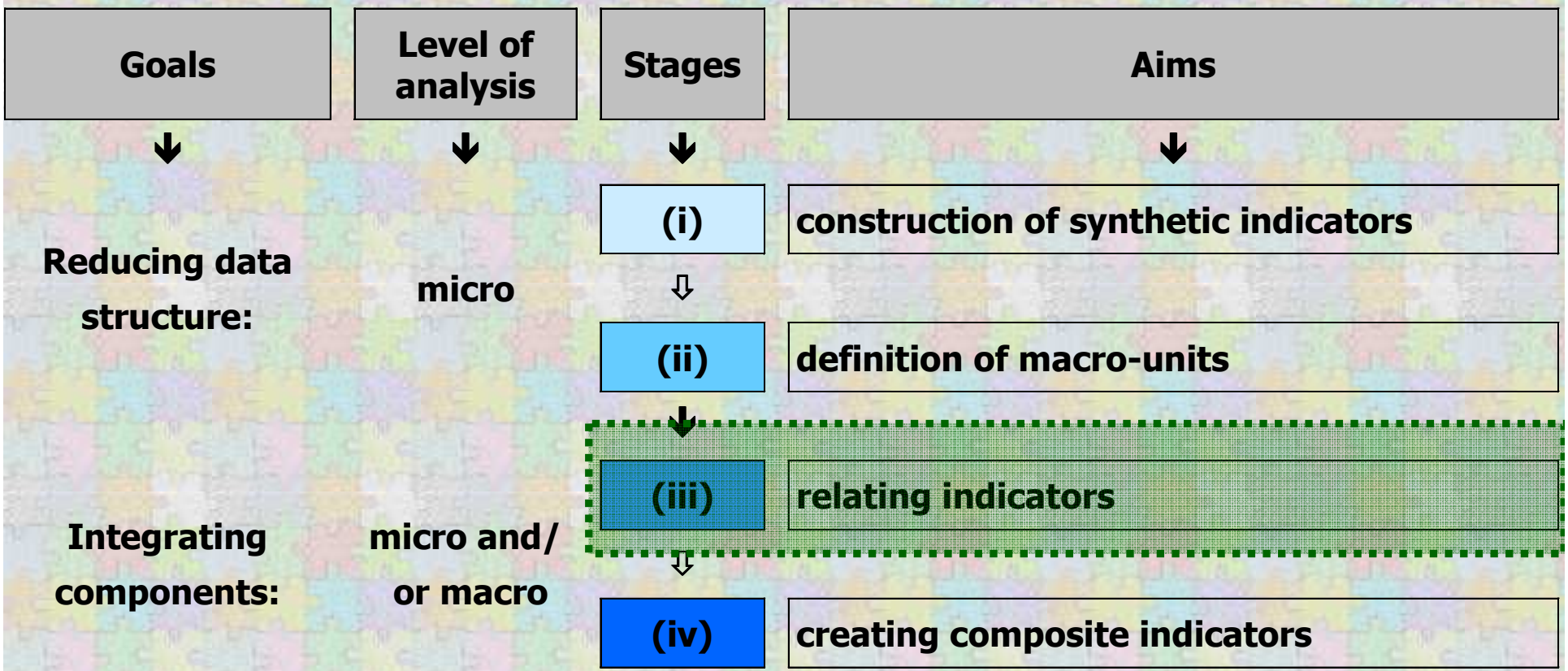
**a. Homogeneity criterion** $\Rightarrow$ typologies

analytical approaches: cluster analysis

**b. Functionality criterion** $\Rightarrow$ areas, regions, …

analytical approaches: means?

# Managing the complexity



# Managing the complexity

- Structural models approach
- Multi-level approach
- Life-course perspective
- Bayesian networks approach
- …
- …

# Managing the complexity

| Goals | Level of analysis | Stages | Aims |
|---|---|---|---|
| Reducing data structure: | micro | (i) | construction of synthetic indicators |
| | | (ii) | definition of macro-units |
| | | (iii) | relating indicators |
| Integrating components: | micro and/ or macro | (iv) | creating composite indicators |

# Managing the complexity

**OBJECTIVE** → aggregation of different indicators in a unique value referring to each unit of interest

**PROS** → manageability of the obtained results

**CONS** → conceptual, interpretative and analytical problems of the obtained aggregation

# Managing the complexity

The construction requires techniques aimed at

1. verifying the **dimensionality** of elementary indicators (***dimensional analysis***)
2. defining the **importance** of elementary indicators (***weighting criteria***)
3. identifying the **aggregating technique** (***aggregating-over-indicators techniques***)

# Managing the complexity

The construction requires techniques aimed at

4. assessing the **robustness** of the synthetic indicator → correct and stable measures (***uncertainty analysis, sensitivity analysis***)
5. assessing the **discriminant capacity** of the synthetic indicator (*ascertainment of selectivity* and *identification of* ***cut-point*** *or* ***cut-off*** *values*)

# Conclusion

Integrating objective and subjective information is an **important** issue from

- ✓ the conceptual perspective
- ✓ the methodological perspective
- ✓ the policy perspective

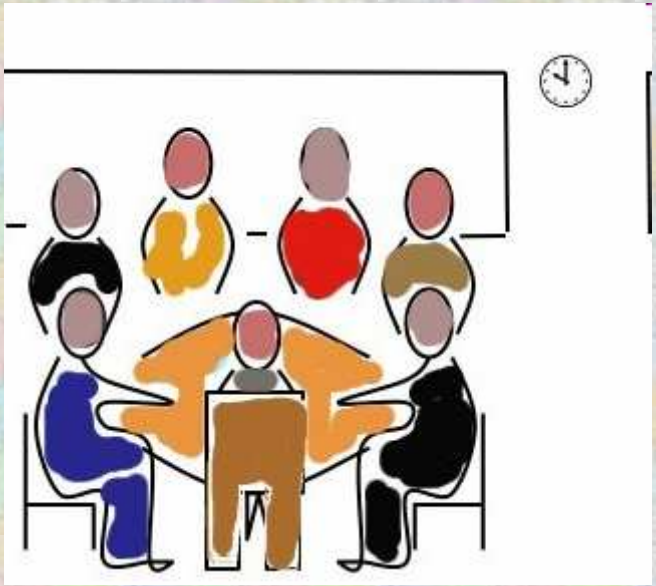
# Conclusion

Integrating objective and subjective information is an **difficult** issue

- ✓ from the conceptual point of view
- ✓ from the methodological point of view
- ✓ because of data availability at different levels

# Conclusion

Need of more work ….



# Conclusion

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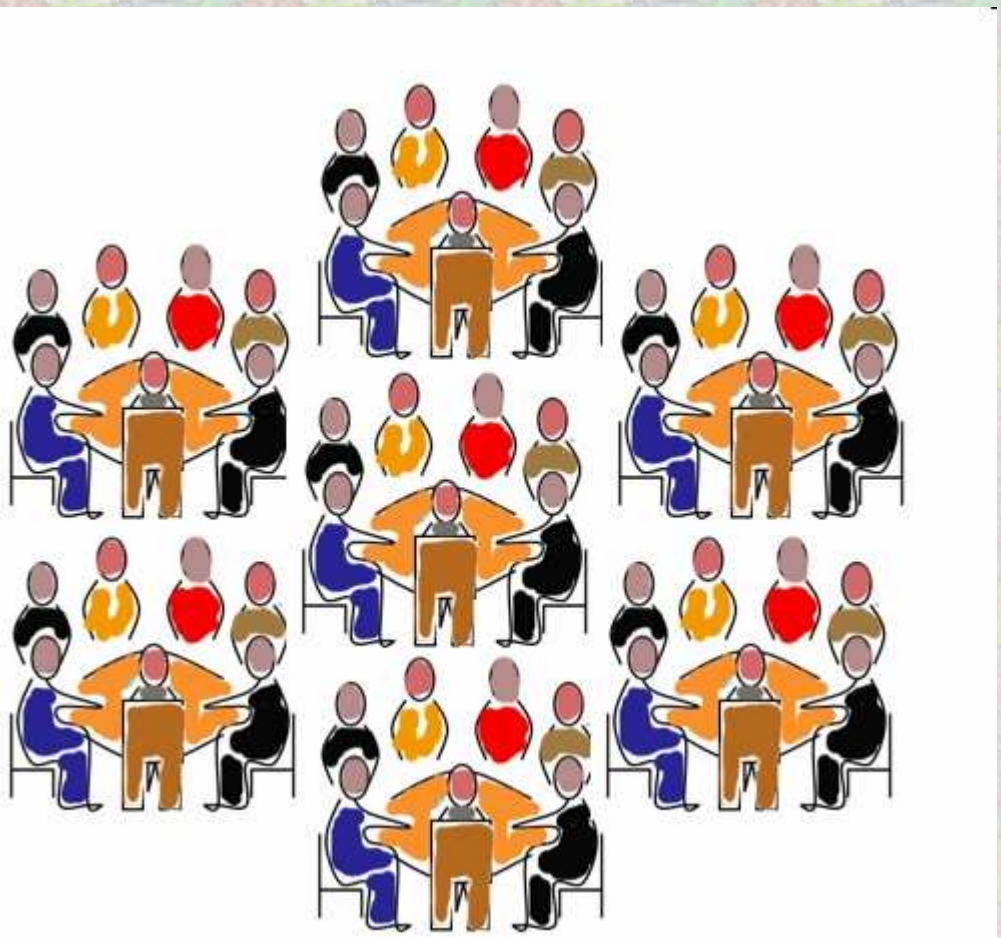

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# Thank you for your attention