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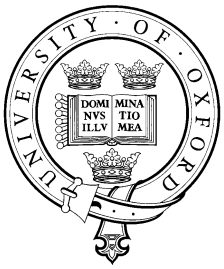

OPHI WORKING PAPER NO. 70

Measuring Conjoint Vulnerabilities in Italy: An Asset-Based Approach

Adolfo Morrone*

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Abstract

This paper uses an asset-based approach, focusing on the resources that individuals and households can draw upon to reduce economic vulnerability and strengthen their resilience. Vulnerability is a much broader concept, affecting a potentially larger share of the population than "poverty" or "social exclusion". Many types of risk have serious financial consequences. Those with the highest net worth (total assets minus liabilities), or with the ability to borrow or access credit, are best able to continue to meet their consumption needs when confronting adverse shocks. While the poor are less likely to have the assets they need or access to insurance or credit to protect themselves against shocks, the asset-poor and the income-poor are not necessarily the same groups. The paper uses the indicators identified in the OECD report on measuring vulnerability and resilience in OECD countries to build a conjoint vulnerability index (CVI) for Italian regions.

Keywords: vulnerability, resilience, asset-approach.

JEL classification: I32, D14, D19

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* Italian National Institute of Statistics, adolfo.morrone@istat.it. Ideas in this paper should be attributed to the author only and in no way reflect those of Istat.

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1. Introduction

Individuals and households are exposed to potential misfortune from many different sources. Economic recession, crime, extreme weather conditions, natural disasters, and mental or physical illness are just some examples of threats to material and subjective well-being that a person or family may face during a lifetime. As a result, human vulnerability has been studied from several perspectives, with each approach tending to use different definitions and methodologies, depending on the specific risk under consideration.

The notion of "vulnerability" is a broad one, encompassing a variety of meanings. The word describes the possibility of being physically or psychologically harmed. In its broadest sense, the notion of vulnerability hence refers to the situation of individuals, households, or communities who are exposed to potential harm from one or more risks. It also refers to the inability of these people or groups to anticipate, withstand, and recover from the damage resulting from an adverse shock.

Despite the simplicity of this assessment, defining and measuring vulnerability is a daunting task. While the concept of vulnerability has led to a range of more or less related definitions, the search for a common language and metrics (which preserves the specific perspective of each discipline) is complicated due to the differences in the types of risks considered, the distinct areas, and the scales of analysis. Also, there is no agreement on the theoretical and methodological frameworks to be followed (e.g., on the use of qualitative or quantitative approaches, see Alwang et al. 2001).

The OECD has developed an asset-based framework for measuring vulnerability (Morrone et al. 2011) that focuses on the resources that individuals and households can draw upon to reduce vulnerability and strengthen their resilience to a range of different risks. Assets are grouped into four categories – economic capital, human capital, social capital, and collective/public assets – and a selection of indicators, based on the most appropriate available data, has been identified for each category.

This paper adopts the framework designed by the OECD and applies it to the Italian scenario using data from the EU-SILC survey[1] with the aim of demonstrating the viability of monitoring conjoint vulnerability in an OECD country, comparing it to standard measures of poor outcomes, and helping to identify a measurement strategy. The aim is to develop a conjoint vulnerability index (CVI) for Italian

[1] EU-SILC is a cross-sectional and longitudinal multidimensional annual survey that provides cross-sectional data pertaining to a given time or a certain time period with variables on income, poverty, social exclusion, and other living conditions, and longitudinal data pertaining to individual-level changes over time, observed over a four-year period. See also: http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/eu_silc.

regions[2] using a dual cut-off approach and the methodology developed by Alkire and Foster (2007) for the Multidimensional Poverty Index (MPI).

2. Role of Assets in Reducing Vulnerability: The OECD Framework

A large share of the work on conceptualising vulnerability has stemmed from disciplines such as food security, livelihoods sustainability, and disaster management, focusing on rural populations in developing countries (Canagarajah et al. 2002). People living in such areas tend to depend on agriculture for their livelihoods and the meeting of their basic needs. When crops and properties are destroyed by extreme weather conditions or when the value of commodities drops unexpectedly, the rural poor are highly vulnerable to acute poverty, malnutrition, illness, and death. Further, there are rarely sufficient physical or institutional infrastructures in place to protect from risk or provide help for the most vulnerable in times of need.

In OECD countries, most people will never experience the grave hardships regularly confronted by the world's poorest populations. Overall living standards are much higher and, while poverty and deprivation undoubtedly exist, there are social safety nets in place to help ensure that basic needs are met. There are people who slip through the net and suffer outcomes such as malnutrition or homelessness, yet they represent a relatively small fraction of the population. Even natural disasters tend to have a much less devastating impact in developed nations, where networks and resources are in place to mitigate the effect.

While the degree of risk may be relatively less severe for the majority of people living in OECD countries, the concept of vulnerability is nonetheless relevant. During a lifetime, an individual can face any number of challenging circumstances that may seriously threaten their well-being (Castel 2004). Losing a job, suffering from illness, going through a divorce, falling victim to crime – any one of these events can bring instability and distress into the lives of those directly concerned and their families. If people are unable to cope, their levels of well-being may be drastically reduced, resulting in loss of income, material deprivation, deteriorating mental or physical health, and social exclusion. From a policy point of view, it is important to be able to identify not just those people who are in need today, but also those who risk being in need in the future.

2 Italy is divided into 21 administrative divisions, which, for statistical purposes, correspond to level two of the Nomenclature of Territorial Units for Statistics (NUTS).

Vulnerability is strongly linked to the concepts of poverty and social exclusion. However, while the poor and excluded are generally the most vulnerable, not all vulnerable people are currently poor or excluded; vulnerability is about insecurity and exposure to risk rather than current conditions.

The OECD approach to vulnerability relies on the idea that both personally owned assets, as well as collective assets, are central to reducing people's sensitivity to different risks. The definition of vulnerability adopted by OECD is as follows: a person (or household) is vulnerable to future loss of well-being below some socially accepted norms if he or she lacks (or is strongly disadvantaged in the distribution of) assets which are crucial for resilience to risks.

This very general definition needs to be operationalized with the definition of the assets and the indicators which should be taken into account to measure vulnerability. People's ability to withstand a crisis without significant or long-term losses in well-being is, to a large extent, dependent on the assets they can draw upon for support and protection. Assets play a role in reducing vulnerability and strengthening resilience in various ways:

- Risk reduction. This refers to the way assets increase well-being generally and reduce exposure to risk. For example, better-educated people (with higher stocks of human capital) are generally healthier as they tend to make healthier lifestyle choices.
- Risk mitigation. This refers to the way assets can reduce the impact of an adverse shock or help to speed up the transition out of a disadvantaged situation. Buying insurance or accumulating savings beforehand is one of the ways in which assets can cushion the shock.
- Coping. This refers to actions taken following an adverse event to moderate or offset welfare losses, such as selling off physical assets in order to smooth consumption.

The OECD proposes a common conceptual framework for examining different types of vulnerability that focuses on the measurement of people's access to different types of assets that play a role in strengthening their resilience across a range of dimensions. Assets are considered here in a broad sense, referring to the tangible and intangible stocks of wealth used by households and individuals to generate well-being. As described above, in OECD countries, the assets that are most relevant for strengthening resilience fall into the following categories: economic capital, human capital, social capital, and collective/public assets.

Economic capital describes the sum of financial assets and physical property that make up household wealth. Money in savings accounts, life insurance, pensions, housing, consumer durables, business investments – these all represent different types of wealth of different levels of accessibility in times of

need. Access to credit is also an element in the measurement of economic assets, and the size of the debt burden will have an impact on the level of household vulnerability. This is probably the first group of resources that spring to mind when people think of vulnerability. Many types of risk have serious financial consequences, either through a loss of income (such as job loss) or large, unexpected expenses (such as property damage). Some risks, such as long-term illness, entail both. Those with the highest net worth (total assets minus liabilities) or with the ability to borrow/access credit are best able to continue to meet their consumption needs when confronting adverse shocks. Of course, the longer a household has to draw upon its stock of wealth just to get by, the greater the increase in vulnerability as assets diminish. While the poor are less likely to have the assets they need or the access to insurance or credit to protect against shocks, the asset-poor and the income-poor are not necessarily the same groups.

Human capital is most commonly understood in terms of individuals' education and skills that are relevant for the labour market. However, it can also be understood in terms of the sum of competencies and knowledge embodied in an individual, including their health status as well as non-cognitive skills and personality traits such as self-confidence, perseverance, adaptability, or dependability. In terms of an individual's psychological resilience in the face of shocks, it can be argued that such non-cognitive skills are just as important for maintaining personal well-being as the cognitive skills acquired through formal education. Individuals with a stronger sense of self-efficacy, for example, are more likely to find innovative solutions to problems and are less likely to succumb to mental health problems such as depression (Berkman, L. and Glass, T. 2000). However, while there has been some interesting work done on this subject, it remains difficult to find measures of non-cognitive skills, or even health, which can be related to vulnerability at the household level. Measuring human capital through the proxy of educational attainment remains the most common approach, and it is relatively straightforward to demonstrate that those individuals with lower levels of education are more likely to be unemployed and to enter into low-income jobs.

Social capital is the third category of assets contributing to resilience. At a society-wide level, social capital is often measured by generalized trust in others and is an important driver of other outcomes including democratic participation, crime, health, and the strength of the economy. At a household or individual level, it can be described as the value of people's social networks and personal relations. Asset-poor households that can rely on friends and family for financial support are not nearly as vulnerable as those without anyone to count on. Social connections are essential for well-being. Without access to social networks, people can miss out on important information (for example, about jobs) and are unable to fully participate in society.

Collective/public assets refer to the welfare support and services that are publically provided in OECD countries. These can include social safety nets such as unemployment or family benefits, as well as access to public health, education, and housing services. The quality and availability of such public services can make a huge difference in the vulnerability status of households between countries. For example, without universal access to healthcare, a person who cannot afford private health insurance is inherently more vulnerable to economic shock caused by health expenses than someone who has access to publically provided healthcare services. This is the most difficult asset to measure.

Vulnerability is a function of both exposure to risk (external) and resilience (internal) where resilience refers to the ability of individuals and households to "bounce back" from adversity. It is an essential component in the analysis of vulnerability and is strongly linked to the concept of assets (Moser 1998). Asset ownership can be seen as the internal side of vulnerability while the external side refers to the external risks to which an individual or household is exposed (Chambers 1989). This two-sided understanding of vulnerability applies regardless of whether the case under examination refers to an individual's vulnerability to joblessness, a community's vulnerability to natural disasters, or an economic system's vulnerability to financial crises.

The four categories of assets are highly inter-related as high levels of one type of asset are likely to reinforce other types. For example, wealthier families are likely to have higher levels of educational attainment and health status. While there are differences between the properties of different types of assets, what is important is the substitutability of different types of assets. For example, if a household is not wealthy but is able to count on financial and other types of support from family and friends, then it is relatively less vulnerable than a household with similar amounts of wealth but without a strong social support network. Low levels of one type of asset do not necessarily mean that an individual or a household is inherently vulnerable; it is the composition of the overall "asset portfolio" that matters. For example, a person who is asset-poor but who has high levels of human capital, a supportive family, and access to welfare benefits and public services is likely to be able to withstand a reasonable period of time without income in the case of job loss or illness. Further, such a person will be more likely to find a new job quickly or receive appropriate care (from health services or their personal network), thereby reducing the time spent in need and recovering levels of well-being comparable to before the shock. It is when individuals and households lack sufficient assets in more than one area that vulnerability is heightened.

3. Developing a Conjoint Vulnerability Index

3.1. Defining the vulnerability indicators

The most interesting aspect when studying multidimensional vulnerability is the identification of individuals who suffer from the lack of multiple assets. However this requires that the indicators for each asset category must be available from the same data source. This is a crucial point because, as underlined in the *Report by the Commission on the Measurement of Economic Performance and Social Progress*, "the consequences for quality of life of having multiple disadvantages far exceed the sum of their individual effects" (Stiglitz, Sen, and Fitoussi 2009; 15).

The points of departure for measuring multidimensional vulnerability are the 11 indicators proposed in the OECD framework (Morrone et al. 2011; 95); data from EU-SILC 2009 will be used to estimate multidimensional vulnerability in Italy. Using EU-SILC 2009, it is possible to measure only 7 of the 11 OECD indicators, with the social capital dimension being particularly weak. EU-SILC is ill-suited for measuring social capital, and this study had to use a proxy to evaluate the level of people's social isolation. EU-SILC collected more detailed information on social capital in an ad-hoc module in 2006. At present, Eurostat's "Expert Group on Quality of Life Indicators" is discussing the introduction of some new questions on life satisfaction, interpersonal trust, and informal aid in the core module of EU-SILC. The list that follows contains the seven OECD indicators that will be used in this analysis.[3]

Economic capital

- Proportion of the population who do not own the home they live in (IND1)
- Proportion of the population who report not having enough liquid assets to cope with possible unforeseen expenses[4] (IND2)

Human capital

- Proportion of the population with less than ISCED 3 attainment in education (IND3)
- Proportion of the population who face limitations in daily activities due to health issues (IND4)

Social capital

- Proportion of the population who do not have contact with friends or family[5] (IND5)

3 The OECD frameworks consider four more indicators that are not available at the microdata level in EU-SILC: students failing to attain PISA level 2 competencies in reading and mathematics, people lacking basic literacy and numeracy skills, people reporting they have no one to count on in times of need, and people living in areas with low social trust.

4 Considered a reliable proxy of the indicator on the availability of liquid assets, which is difficult to calculate and not available in EU-SILC (see the OECD report for more details).

Collective assets

- Proportion of the population who report unmet medical care need (IND6)
- Proportion of the population who are excluded from two or more essential services[6] (IND7)

Table 1 reports the distribution of the vulnerability indicators by sex, age, marital status, employment status, and geographical region.

Table 1: Distribution of the vulnerability indicators by structural variables - percentage of people aged 25–64 years

	IND1	IND2	IND3	IND4	IND5	IND6	IND7
			Sex				
Male	28,8	31,1	45,7	14,7	21,1	6,1	20,1
Female	28,2	32,4	43,9	17,9	26,0	8,3	20,2
All	**28,5**	**31,7**	**44,8**	**16,3**	**23,5**	**7,2**	**20,1**
			Age				
25-29	34,4	38,4	26,9	6,7	13,3	5,3	20,5
30-44	33,3	33,9	38,5	10,5	20,1	6,6	19,8
45-64	23,0	28,4	54,1	23,3	28,7	8,2	20,3
All	**28,5**	**31,7**	**44,8**	**16,3**	**23,5**	**7,2**	**20,1**
			Marital status				
Never married	29,9	32,5	32,2	13,3	16,8	5,1	18,8
Married	26,9	30,5	49,7	16,8	25,6	7,5	21,1
Separated/Divorced	41,5	39,5	42,0	20,6	25,4	11,6	15,5
Widowed	25,0	39,0	64,7	28,2	41,1	12,7	20,7
All	**28,5**	**31,7**	**44,8**	**16,3**	**23,5**	**7,2**	**20,1**
			Employment status				
Employee	28,8	27,7	35,4	11,4	17,8	6,0	18,9
Self-employed	26,0	22,5	40,7	12,4	17,9	5,6	20,9
Unemployed	42,6	62,1	49,7	17,0	34,1	11,7	19,8
Student, unpaid work	23,1	32,1	8,3	7,1	10,2	5,2	18,1
In retirement	12,4	20,4	65,4	33,2	30,4	5,8	17,7
Other inactive person	30,8	43,4	63,2	40,0	40,8	11,6	24,0
Fulfilling domestic tasks	32,2	42,9	65,9	20,0	35,7	10,3	24,2
All	**28,5**	**31,7**	**44,8**	**16,3**	**23,5**	**7,2**	**20,1**
			Geographical region				
North-west	26,0	23,9	42,0	14,0	22,2	5,0	13,8
North-east	25,5	23,1	41,7	17,2	20,6	5,1	16,3
Center	26,7	32,5	41,4	16,3	20,5	7,4	19,3
South	33,7	43,2	51,6	17,6	28,7	10,3	28,5
All	**28,5**	**31,7**	**44,8**	**16,3**	**23,5**	**7,2**	**20,1**

Source: EU-SILC 2009

All variables are dichotomous, and the matrix of deprivation is simply a [1,0] matrix where for each indicator people have score of one if they are deprived of that particular asset or zero if they are not

5 A proxy is used: people who never go out with friends.

6 People who have access to neither a bank nor a post office.

deprived of it. Since for each type of capital, except for social capital, two indicators are available, an equal weight approach is adopted.

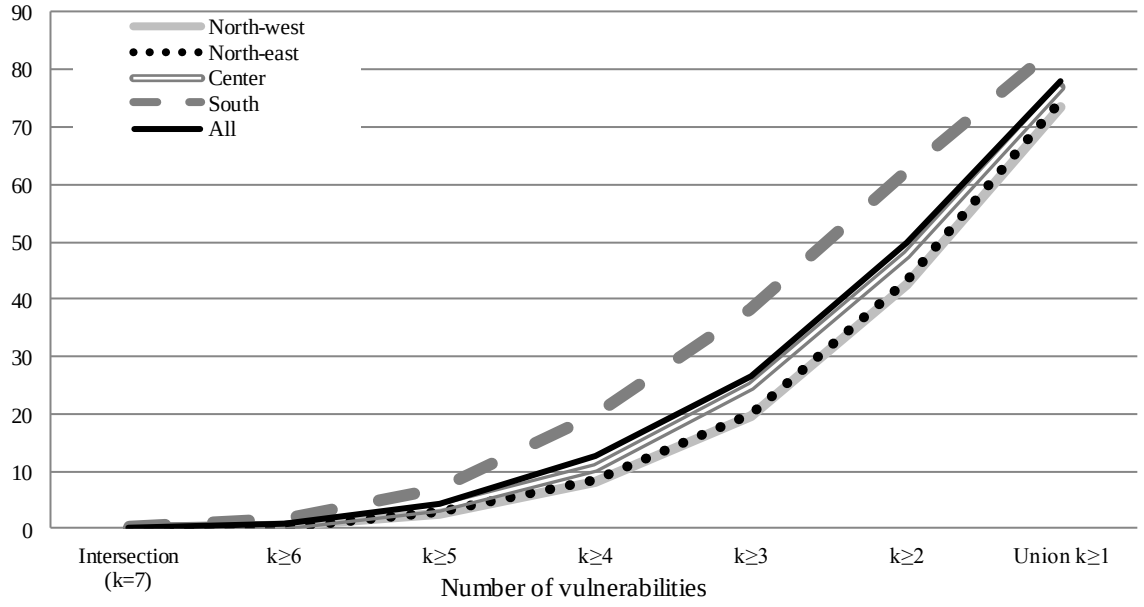
Considering the available indicators, the study will be limited to the population of 25–64 year olds. An analysis of the vulnerabilities of children or of elderly people would require a different optic in the selection of some indicators.

3.2. Defining the cut-off

The first important step in the measurement of multidimensional poverty – or vulnerabilities as in this case – is the definition of who is vulnerable. As shown by Alkire and Foster (2007), neither the union approach, where all people who lack one asset or more (k≥1) are identified as vulnerable, nor the intersection approach, where only people who lack all assets (k=7) are identified as vulnerable, is applicable.

As shown in Figure 1, the percentage of vulnerable 25–64 year olds in Italy would be 78% if we use the union approach (k≥1). This percentage decreases rapidly with increasing values of the cut-off and falls to only 0.1% of 25–64 year olds with the intersection approach (k=7). As a consequence, neither the union nor the intersection approach is useful for studying conjoint vulnerabilities in Italy, but it is instead necessary, when studying the distribution of vulnerability, to identify an intermediate cut-off that could be significant for the analysis.

Figure 1: Distribution of the number of vulnerabilities in Italian geographical areas (regions) - percentage of people aged 25–64 years

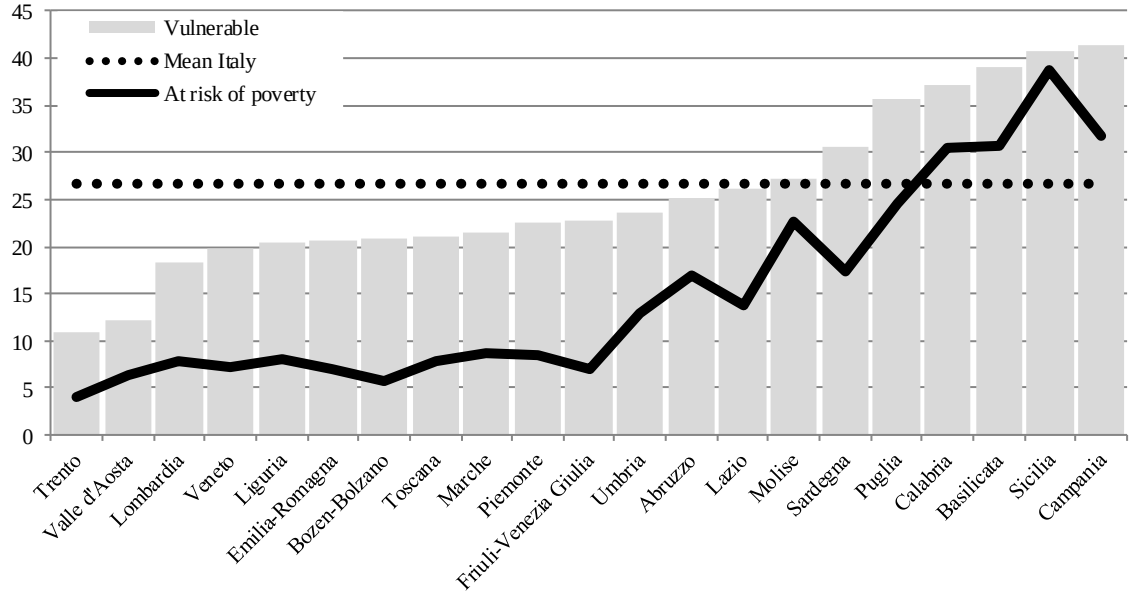


Source: EU-SILC 2009

For individuals aged 25–64 years, the average number of vulnerabilities suffered by this population is 1.7. A possible cut-off could be to consider as vulnerable all individuals with two or more vulnerabilities (k≥2). However, since the aim of this study is to identify situations of strong distress, the cut-off is set to k≥3, thus considering as vulnerable all individuals aged 25–64 years who lack three or more assets among those identified.

On average in Italy, 26.6% of the population can be considered vulnerable according to the k≥3 criterion, but there are big differences in the geographical distribution of vulnerable people – who are concentrated mainly in the regions of the south of Italy. In particular in Basilicata, Sicilia, and Campania the percentage of vulnerable people is around 40% of the population aged 25–64 years (Figure 2).

Figure 2: Percentage of vulnerable people and people at risk of poverty in Italian geographical areas (regions) - percentage of people aged 25–64 years



Source: EU-SILC 2009

Figure 2 also shows the strong correlation between the percentage of vulnerable people and the percentage of people at risk of poverty.[7] The percentage of vulnerable people is always higher than the percentage of those at risk of poverty, and, even if the trend is comparable in some regions, the differences are important. For example, Campania has the highest proportion of vulnerable people, but the percentage of people at risk of poverty is much lower in this region than in Sicily.

The two populations tell different stories. Not all vulnerable people are at risk of poverty, and not all people at risk of poverty are vulnerable according to the k≥3 cut-off criteria. A comparison of the two

[7] The at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income after social transfers.

population groups shows that only 8.4% of people 25–64 years old are both vulnerable and at risk of poverty, while 18.2% are vulnerable but not at risk of poverty and 7.4% are at risk of poverty but not vulnerable.

3.3. The conjoint vulnerability index (CVI)

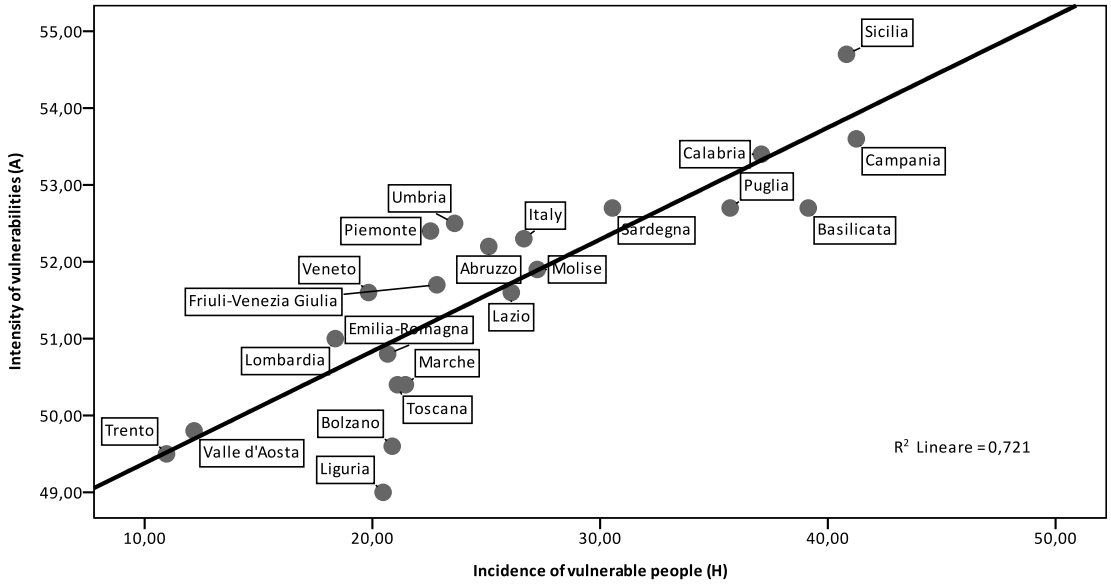
Evaluating vulnerability using the incidence of vulnerable people entails serious limitations. Incidence classifies people as vulnerable or not vulnerable according to a chosen cut-off (in this case $k \geq 3$). However if the number of deprivations suffered by vulnerable people rises – for example increasing from an average of four to an average of five deprivations – there will be no change in the incidence of vulnerable people.

According to the approach of Alkire and Foster (2007), the index of conjoint vulnerabilities should take into account both the incidence (H) and the intensity (A) of vulnerabilities where the intensity is calculated as the average asset deprivation share among vulnerable people.

The intensity of vulnerability – which is strongly correlated with the incidence of vulnerabilities (Figure 3) – adds useful information to the analysis of the phenomenon. For example, Liguria has a lower intensity of vulnerability in comparison with its incidence of vulnerable people, indicating that in this region people are, on average, deprived in a limited number of assets.

On the contrary, regions such as Piemonte and Umbria have an intensity of vulnerability that is greater than the incidence of vulnerable people, indicating that, on average, people are affected by a higher number of vulnerabilities in these regions.

Figure 3: Correlation between incidence (H) and intensity (A) of vulnerability in Italian geographical areas (regions) - population aged 25–64 years



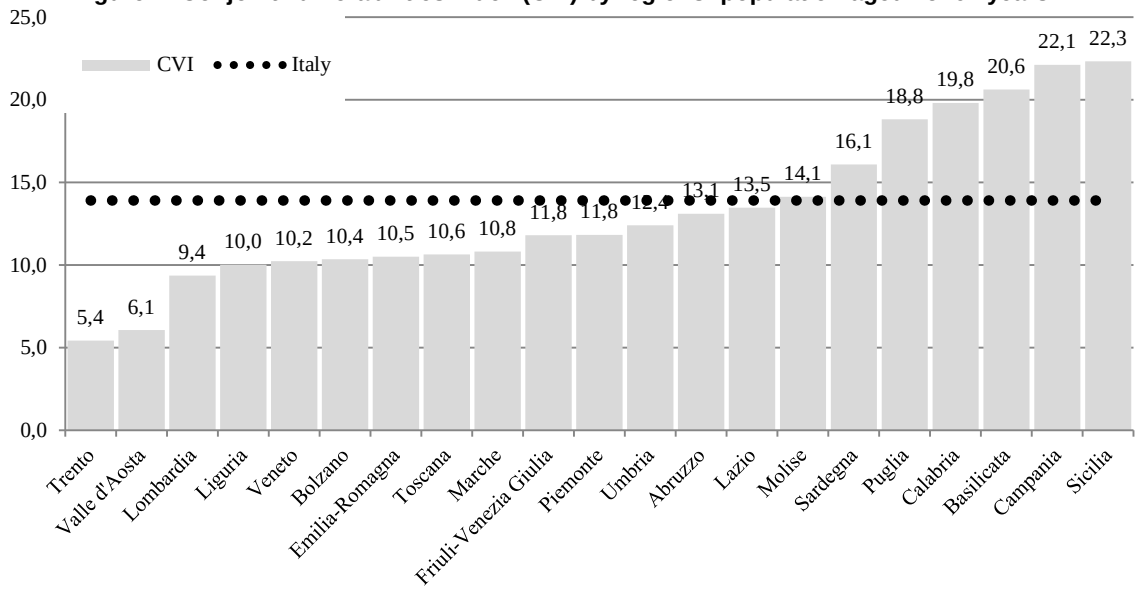
Source: EU-SILC 2009

The index of conjoint vulnerabilities (CVI) is calculated by multiplying the incidence of vulnerable people by the intensity of vulnerabilities: CVI = H * AACVI = H*A.

Figure 4 shows the level of CVI in Italian regions. The average level of CVI in Italy is 13.9, but the level of the index varies greatly among regions. Essentially all regions of north and central Italy have a below-average index level while Sardinia, Puglia, Calabria, Basilicata, Campania, and Sicily have the highest index levels.

Campania and Sicily have a level of CVI that is almost four times that of Trento and ten points higher than the national average. In these regions both the incidence and the intensity of vulnerabilities are much higher than the national average – thus signalling a situation of particular strain.

Figure 4: Conjoint vulnerabilities index (CVI) by regions: population aged 25–64 years



Source: EU-SILC 2009

3.4. The distribution of vulnerabilities

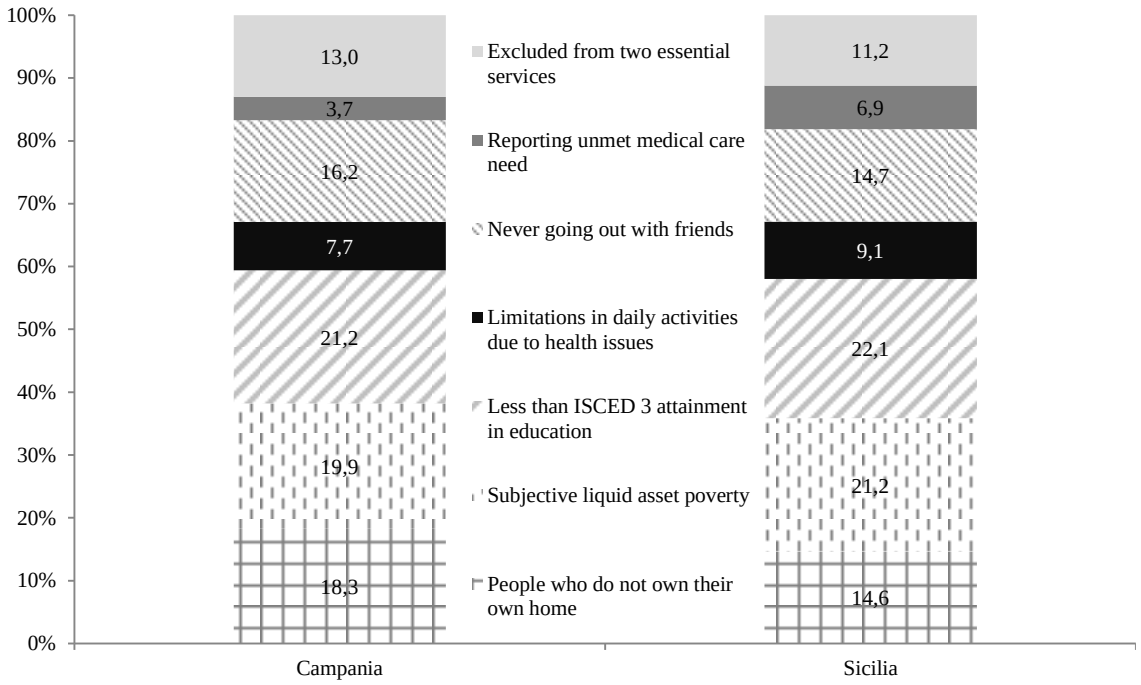
The CVI is based on a multidimensional approach to identifying people who lack essential assets to cope with future risks. The CVI does not identify people who are economically poor – as shown in the previous paragraph only a small proportion of vulnerable people are also at risk of poverty – but it identifies people who can be thrown into poverty by a future shock and, more generally, people with diminished capabilities due to a lack of three or more essential assets.

Given that there seven essential assets that are part of the CVI, people can be vulnerable because they lack different combinations of assets. Two regions with the same or similar levels of CVI can differ in the types of problems they face.

One of the most important properties of CVI is that it allows the study of the distribution of vulnerabilities in a specific population (for example, a specific region) in order to identify critical aspects. From this point of view, the CVI can be seen as an important tool for policies because it allows specific areas of intervention to be identified.

Figure 5 shows an example of the information that can be obtained by studying the composition of vulnerabilities in two regions with similar a CVI. Campania has a CVI of 22.1, an incidence of vulnerable people (H) of 41.2, and an intensity (A) of 53.6. Sicily has a very similar CVI (22.3) with a lower incidence (H=40.8) and a higher intensity (A=54.7). The composition of vulnerabilities shows that in both regions the main problems are linked to the low level of education and subjective liquid asset poverty. Nevertheless, there are important differences between the two regions. In Campania there is a higher share, compared to Sicily, of people who do not own their home and of people excluded from essential services. In Sicily, the share of people reporting unmet medical care need is almost double that of Campania and also the percentage of people declaring limitations in daily activities due to health problems is higher.

Figure 5: Composition of vulnerabilities[8] in two regions with a similar CVI



Source: EU-SILC 2009

8 It is calculated as the percentage composition of each asset on the total vulnerabilities of vulnerable people in a given region.

This kind of information can help regional policy makers to identify key areas of intervention and to design specific policies that can have an impact on both incidence and intensity of vulnerability at the local level.

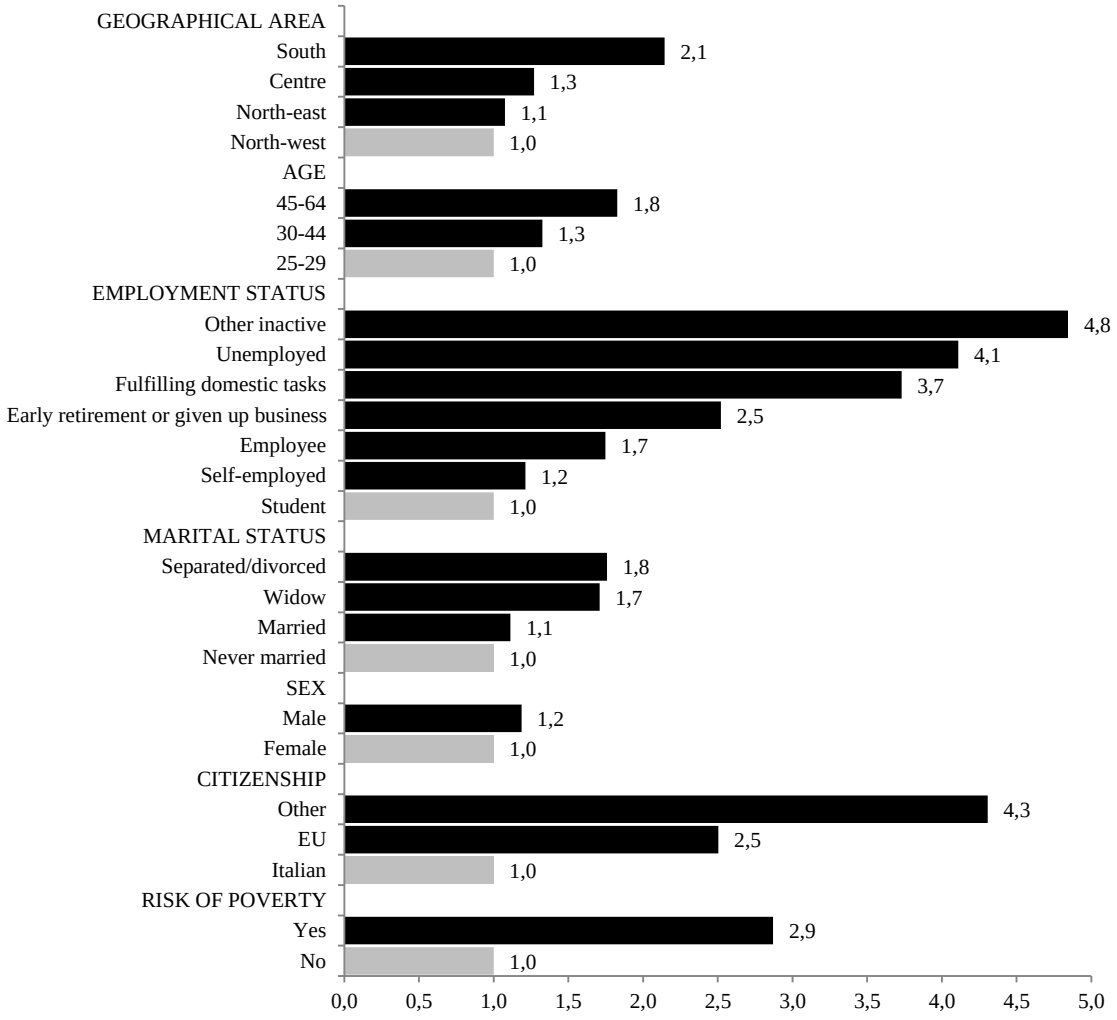
3.5. Factors influencing the probability of being vulnerable

The microdata allow us to further explore the factors that influence the probability of becoming vulnerable. For this purpose a logistic model predicting the probability of being vulnerable has been created taking into account several socio-demographic characteristics of people. For each variable this model evaluates the probability of each item in comparison with a reference modality equal to one – taking into account at the same time the effects of all other variables.

Figure 6 shows clearly that employment status and citizenship are the strongest determinants of the likelihood of being vulnerable: individuals aged 25–64 years who are inactive or unemployed are four times more likely to being vulnerable than the rest of the population of the same age. Citizens of a non-EU country are 4.3 times more vulnerable than their Italian counterparts; EU citizens also suffer a higher (2.5) probability of being vulnerable than Italian citizens.

The model also confirms that being at risk of poverty is an important factor influencing vulnerability. People at risk of poverty have a 2.8 higher probability of being vulnerable, but vulnerability cannot be reduced to the economic dimension, which is neither the only nor the most important factor influencing the probability of being vulnerable.

Figure 6: Probability of being vulnerable (k≥3) by selected characteristics: people aged 25–64 years (odds ratios)



Note: Logistic model. Odds ratios refer to the probability of being vulnerable (k≥3). For each variable of the model, the odds ratios represent the ratio between the odds of each item and the odds of a reference modality equal to one. The grey bars represent the reference items of each variable.

Source: EU-SILC 2009

Regarding the geographical area of residence there is a wide gap between the south and the other areas of the country. The historical weaknesses of the south of Italy (in terms of access to services and their quality, the labour market, poverty, and even social capital) have an important impact on the likelihood of being vulnerable, which is 2.1 times higher than in the northwest of the country – even when taking into account all the other socio-demographic characteristics.

Finally, both age and marital status play a role. The likelihood of being vulnerable increases with age – most likely because health problems increase with age while personal relationships tend to decrease – and it is higher among widowed, separated, or divorced people.

4. Conclusions

This paper applies the methodology implemented for the Multidimensional Poverty Index to the evaluation of multidimensional vulnerability in Italy using the asset-based approach proposed by the OECD for measuring vulnerability and resilience. The CVI index proposed is appropriate for reporting multidimensional vulnerability and its distribution in the Italian regions.

The possibility of decomposing the index to study what is driving vulnerability in different regions is a powerful tool for identifying the policy priorities necessary to reduce the incidence and intensity of vulnerability in each region and mitigate future risks.

It is also very useful to segment the population according to vulnerability and income poverty. The worst off are those who are both vulnerable and at risk of poverty (in Italy 8.4% of the population aged 25–64 years). Reducing the number of people falling into that segment of population should be at the top of policy priorities. Different kinds of intervention should be foreseen for the segment of population that is vulnerable but not at risk of poverty (18.2%) and for those who are at risk of poverty but not vulnerable (7.4%). For the first group, the intervention should be designed with the aim to enhance their human and social capital and to provide a better access to collective asset, whereas for the second group, more traditional kinds of interventions aimed at reducing income inequality could be more effective.

This paper shows that the method proposed by Alkire and Foster is generalizable and can be applied to contexts beyond the study of multidimensional poverty in developing countries. In particular, this method could be applied to some official indicators published by Eurostat, which are based on multidimensional items such as:

- the severe housing deprivation rate, which is based on the union approach[9] and provides very high values for all European countries;
- the material deprivation rate, which is defined as the percentage of the population with an enforced lack of at least three out of nine material deprivation items in the "economic strain and durables" dimension.

The index produced could reveal situations of multidimensional strain in the different European countries.

9 The severe housing deprivation rate corresponds to the share of the population living in a dwelling which is considered as overcrowded, while also exhibiting at least one of the housing deprivation measures. Housing deprivation is a measure of poor amenities and is calculated by reference to households with a leaking roof, neither a bath, nor a shower, nor an indoor flushing toilet, or a dwelling considered too dark.

References

Alkire, S. and Foster, J. (2007). Counting and multidimensional poverty measurement. *OPHI Working Paper* 7.

Alwang J., Siegel, P.B., and Jorgensen, S. L. (2001). *Vulnerability: A view from different disciplines*. Washington, DC: The World Bank.

Berkman, L. and Glass, T. (2000). 'Social integration, social networks, social support, and health'. In Berkman, L. and Kawachi, I. (eds.), *Social Epidemiology*. Oxford University Press: Oxford.

Canagarajah, P. S., Siegel, P. B., and Heitzmann, K. (2002). Guidelines for assessing the sources of risk and vulnerability. *Social Protection Discussion Paper* 0218. Washington, DC: The World Bank.

Castel, R. (2004). *L'insécurité sociale, Qu'est-ce qu'être protégé?* Paris: Le Seuil/La République des idées.

Chambers, R. (1989). Editorial introduction: Vulnerability, coping, and policy. *IDS Bulletin,* 20(2): 1–7.

Morrone, A., Scrivens, K., Smith, C., and Balestra, C. (2011). 'Measuring vulnerability and resilience in OECD countries'. IARIW-OECD Conference on Economic Insecurity, OECD Conference Centre in Paris, France, November 22–23, 2011.

Moser, C. (1998). The asset vulnerability framework: Reassessing urban poverty reduction strategies. *World Development*, 26(1): 1–19.

Stiglitz, J.E., Sen, A. and Fitoussi, J. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress*. Paris.

Annex: Descriptive Statistics of the Independent Variables of the Logit Model and Results of the Regression

Table A1. Distribution of the six independent variables of the logit model by geographical areas for people aged 25–64 years

	North-west	North-east	Center	South	All
Sex					
Male	50,4	50,4	49,3	49,3	49,8
Female	49,6	49,6	50,7	50,7	50,2
All	100,0	100,0	100,0	100,0	100,0
Age					
25-29	9,2	9,4	9,8	12,0	10,2
30-44	41,1	41,2	40,7	40,2	40,7
45-64	47,8	47,6	48,0	46,0	47,3
65-w	1,9	1,8	1,6	1,8	1,8
All	100,0	100,0	100,0	100,0	100,0
Marital status					
Never married	28,0	27,9	29,4	25,5	27,5
Married	62,4	64,1	61,3	68,7	64,5
Separated/Divorced	6,7	6,0	6,5	3,1	5,4
Widowed	2,9	1,9	2,8	2,8	2,6
All	100,0	100,0	100,0	100,0	100,0
Employment status					
Employee	54,3	55,6	50,0	38,4	48,6
Self-employed	15,0	15,3	14,7	12,2	14,1
Unemployed	4,6	4,6	7,0	9,3	6,6
Student, unpaid work	0,9	1,3	1,9	3,6	2,0
In retirement	10,7	11,1	8,7	6,7	9,1
Other inactive person	4,7	3,7	6,0	6,4	5,3
Fulfilling domestic tasks	9,7	8,5	11,8	23,4	14,2
All	100,0	100,0	100,0	100,0	100,0
Risk of poverty					
Not at risk of poverty	91,9	93,1	87,9	69,4	84,2
At risk of poverty	8,1	6,9	12,1	30,6	15,8
All	100,0	100,0	100,0	100,0	100,0
Citizenship					
ITA	90,2	90,1	91,7	96,8	92,6
EU	2,2	2,4	3,3	1,0	2,1
OTH	7,6	7,5	5,1	2,1	5,3
All	100,0	100,0	100,0	100,0	100,0