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"Subjective Poverty and Macroeconomic Shocks"

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Firma dello studente

Mariasole Nizzi

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Chapter 1

Introduction

Poverty is a social phenomenon common to all historical periods and social models. Its definition, measurement, and incidence have been key aspects analyzed in the economic literature also to provide suggestions to policymakers who are interested in improving the ability of the system to redistribute equitably the large amount of wealth produced within a country.

In contemporary societies, poverty represents a potential risk for many, which becomes a real condition for a few. The increasing unpredictability of life courses generates, on the one hand, an increase in individual opportunities and freedoms, and, on the other hand, a general reduction in security (economic, social, cognitive) and a tendency for society to shift onto the individual the responsibility for the improvement or deterioration of her or his social condition.

There is a wide range of factors that, with different degrees of severity, affect individuals and families in their ability to find the resources necessary to ensure an acceptable standard of living.

Moreover, in a changing social context, where the market dominates and the society is polarised around the myth and the exasperated pursuit of the material accumulation, new poverty phenomena are increasingly emerging, and *objective indicators* are in some contexts unable to capture signs of economic hardship in households' standard of living.

Subjective poverty indexes can help complementing the description of the phenomenon. This thesis analyses how individuals answer to the so-called *minimum income question (MIQ)* reporting the *money needed to live comfortably but not in luxury*. This information has been used previously in the literature to define subjective poverty lines.

Individual perceptions allow researchers to easily account for the living context, because people evaluate the resources necessary to satisfy their needs in comparison with the general standard. However, this approach could have some limits. It has been highlighted (e.g. Guio, 2005) that psychological phenomena or measurement issues might introduce a bias in the measurement of poverty: for instance, people may not want to admit not being able to afford buying certain items. Subjective questions might be influenced by culture and require caution in international comparisons. However, ignoring completely subjective assessments might lead to a measure disconnected with the reality as lived and perceived by people. The subjective approach has the great advantage of overcoming the distortions arising from objective approaches where outside observers arbitrarily assess household standard of living. As a matter of fact, there is an inherent subjectivity and social specificity to any notion of individual basic/nutritional needs and of relative poverty (Santini, 2010).

The empirical evidence shows that there is not perfect correspondence between objective and subjective measures of living conditions. This consideration is important in terms of policies, especially in periods of economic turbulence, because social interventions cannot have the desired effect on people's subjective wellbeing even if they are successful from the point of view of objective indicators (Hayo and Seifert, 2003).

Given the relevance of subjective indicators, it is important to identify the factors affecting perceptions to distinguish between economic drivers from psychological phenomena or measurement issues for policy purposes. This thesis focuses especially on understanding the relationship between the perception of money needed and macroeconomics shocks, exploiting data from the Survey on Households Income and Wealth (SHIW) of the Bank of Italy and the macroeconomic data provided by the Italian National Institute of Statistics (ISTAT).

During negative economic shocks, some individuals are exposed to higher risk of job loss and might need greater economic protection. Some individuals, living under this economic pressure and climate of distrust, may change their perception of the money needed, regardless of changes in their disposable income. The literature has mentioned also an *adaptation behaviour*: in presence of negative events, individuals tend to adapt to the situation making sacrifices or cutting down expenditure, without showing sign of discomfort even if they have economic difficulties. I investigate those aspects using micro data covering the period 2004-20016.

The structure of this thesis is the following. Chapter two is dedicated to a review of the existing literature on subjective poverty. Chapter three presents the data used for the empirical analysis

and described the sample. Chapter four reports the empirical strategy. Chapter five comments the results of the analysis and the relative robustness checks. Finally, Chapter six concludes.

Chapter 2

Literature review

Poverty is a complex phenomenon: starting from how to define a poverty line, to the role of time, the geographical heterogeneity, equivalence scales or welfare measure (consumption, income or wealth) to be used. Poverty can be also expressed in absolute or relative terms. Different measures give different perspectives to its size and evolution.
Given the complexity of the phenomenon, the economic literature has largely focused on how to measure the different definitions of poverty.

Italy for instance is characterized by substantial differences in terms of social and economic factors at the regional level, e.g. heterogeneity in the price level and in the living costs. As stated by Mogstad et al. (2006), it would be important to introduce poverty thresholds that account for the heterogeneity in prices and minimum needs within a single country to capture this aspect. Mogstad et al. (2016) found that the geographic as well as the demographic poverty profiles depend heavily on whether the method for identifying the poor relies on region-specific (or country-specific) thresholds.

Timely and comparable indicators are needed to better understand the mechanisms underlying poverty risks and then, implement effective policies.
The poverty line approach is certainly the most widely used method to quantify poverty in both developed and developing countries (Rio Group, 2006). According to this approach a household—the unit of observation generally considered— is classified as poor if its resources are less than the value of a given poverty line. The poverty line is a normative concept as it represents the aggregate value of all the goods and services considered necessary to satisfy the unit's basic needs (Santini, 2010).

Typically, poverty is based on consumption or income data. There is an open and continuous debate about it, also because not necessarily the increase in inequalities in incomes correspond to an equal increasing in consumption inequalities (Filandri et al., 2013).

Zaidi and de Vos (2000) clearly illustrate the various issues to take into consideration in the choice between income and consumption. Income is preferable for studying if a household is excluded from a minimum level of entitlement or in order to analyze the accessibility for an individual to participate in society, but has some limitation when for example the individuals spend more (trough borrowing) or less (saving for the future) of their income. On the other hand, consumption can be more relevant when one is interested in assessing standards or levels of living and following the life-cycle model proposed by Modigliani (1954), consumption is considered a more reliable indicator of the "permanent" or "life-time" material resources then current income. However there are limitations also in choosing consumption, since it is left to the judgements of individual itself to projects their future income and their ability to borrow in the market; there exists also liquidity constraints that can hamper the intertemporal smoothing of consumption implied by the life-cycle hypothesis, especially for the poor.

The literature distinguishes also between poverty and material deprivation. Deprivation relates to how people live, it is the consequence of a lack of income and other resources, which cumulatively can be seen as living in poverty (Townsend, 1979). The two concepts of poverty and material deprivation can be used in conjunction to analyze different aspects of households' and individuals' living conditions. Both are related to the definition of poverty that the EU Council of Ministers (1985) formulated, according to which the poor are "the persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State to which they belong" (Council, 1985). This definition is relative and includes both outcome elements, as the exclusion of minimum acceptable way of life, and input elements, as the lack of resources.

The EU defined a precise measurement of income poverty in 2001 (European Commission, 2001): the at-risk-of-poverty rate as well as the median at-risk-of-poverty gap, the persistent at-risk-of-poverty rate and the at-risk-of-poverty rate anchored at a point in time. In each country the EU indicator of at-risk-of-poverty rate is calculated with a threshold set at 60% of the national household equivalised median income, it is thus a relative definition. A household is considered at risk of poverty if the equivalised income is below this threshold (Fusco et al., 2010).

In this way, the population is divided simply into “poor/at-risk-of-poverty” and “non-poor”, and it can be an oversimplification of the complexity of the issue since it is more realistic that households experience different degrees of poverty (Santarelli, 2013). Therefore the literature has proposed also indicators for the intensity of the phenomenon, introducing a poverty measure that can be additively decomposable with population-share weights (e.g. Foster-Greer-Throbecke, 1984).

We can define poverty within a static and a dynamic framework. Research in both developed and developing countries has found a substantial movement of individuals and households into and out of poverty. For instance, families may move into or out of poverty for demographic reasons, as their ratio of economically active members to dependent members changes over time (Tsakloglou and Papadopoulos, 2002). Furthermore, poverty is transmitted from one generation to the next in a family, through education or other opportunities for children (Jenkins and Siedler, 2007). A longitudinal perspective allows taking into account these dynamics over time (McNicoll, 1997). So, some poverty indicators can be computed on a cross-sectional basis, others on a longitudinal basis. Then the share of poor people in a given time can be computed with cross-sectional data, while the persistence in poverty can be evaluated over time in a dynamic perspective. In this respect, results of past empirical studies show that the risk of poverty over a time period affects a larger proportion of the population than the cross-sectional measure would suggest (Fusco et al., 2010). This calls for a large availability of longitudinal cross-country data that allows evaluating the risk of entering or exiting from the state of poor and the persistence of poverty both at the individual and household level. The collection of data for robust cross-country comparisons, possibly in a longitudinal perspective, is a major challenge for the European Statistical System (Santarelli, 2013).

We are especially interested in the distinction between objective and subjective poverty. The objective approach evaluates poverty using quantitative objective measures, such as income or expenditure. The subjective approach focuses on people’s perception of their standard of living instead. Considering individual perceptions allows accounting for the living context because people evaluate the resources necessary to satisfy their needs in comparison with the general standard. However, the subjective approach could have some limits. It may be that psychological phenomena or measurement issues introduce bias in the measure of poverty: for instance, people may not want to admit not being able to afford to buy certain items (Guio, 2005). It can also be that subjective questions are culturally influenced and require caution in international comparisons. However, ignoring completely subjective assessments might lead to a measure disconnected from reality as lived and perceived by people. For instance, methods

based on current income are affected by transitory and rapid changes that potentially affect a large number of individuals. This is not the case of subjective evaluations that take into account both income and material components of the economic status. The subjective approach has the great advantage of overcoming the distortions arising from objective approaches where outside observers arbitrarily assess the household standard of living. As a matter of fact, there is an inherent subjectivity and social specificity to any notion of individual basic/ nutritional needs and of relative poverty (Santini, 2010). However, measures based on subjective evaluations only may fail to identify poor and not poor, because they are not able to distinguish between financial strain on the one hand and personal choices and lifestyle on the other (Santarelli, 2013).

In fact, empirical evidence shows that there is no perfect correspondence between objective and subjective measures of living conditions. This consideration is important in terms of policies, especially in periods of economic turbulence, because social interventions cannot have the desired effect on people's subjective well-being even if they are successful from the point of view of objective indicators (Hayo and Seifert, 2003).

Different definitions usually give different measures of poverty. It is usually found that the share of poor households increases if one moves from estimates based on absolute measures to those based on relative ones and, finally, to those based on individual perception (Santini, 2011). It has also been shown that people can be "affected" by different types of poverty and in such a situation they experience a harsher degree of poverty than those poor of only one measure. For instance, individuals who have recently retired can be income poor, but not materially deprived, because they still have the assets acquired in better times (Bradshaw and Finch, 2003).

Different approaches are used in different contexts. For instance, in developed countries, relative poverty is more interesting than absolute poverty. Relative poverty (introduced by Townsend, 1979) defines households as poor when they do not have the resources to live in the conditions which are encouraged and approved by the societies where they are located, strictly linked to the geographic, historical, and cultural context of reference. Poverty in developing countries is totally different from poverty in industrialized countries, both on the formation process and on the individual self-perception of it. It makes little sense to use a poor country's poverty line in a rich country; indeed, it is unlikely that anyone in the US or Western Europe lives below the poverty lines found in the poorest countries, at around $1 a day. And, for example, if it is used the US poverty line in India it would be found that all but 5% of the

population is poor; it is extremely unlikely that most Indians would agree, and nor does a poverty rate of 95% help much in thinking about how to fight poverty in India (Ravallion, 2012).

There exists a poverty of "return", typical of the economically developed countries, and a poverty linked to discriminated socio-economic groups that are going to have an increasing burden in the European society, and it is important to grasp not only the perception of those who are experiencing it but also of those who come into direct contact with it (Drovandi and Schifini, 1999).

While each of the described approaches has advantages and shortfalls, they complement each other. Since poverty is a multidimensional concept, the use of different approaches allows taking into account its various aspects. Many empirical studies stress the importance of the integration of different social indicators when measuring poverty, in fact, individual well-being depends not only on income but also on other variables such as education, healthcare, living, and housing conditions (Bohnke and Delhey, 1999).

In this thesis, the focus is on subjective poverty, the definition based on the idea that the opinions of people concerning their own situation should be a decisive factor in defining poverty.

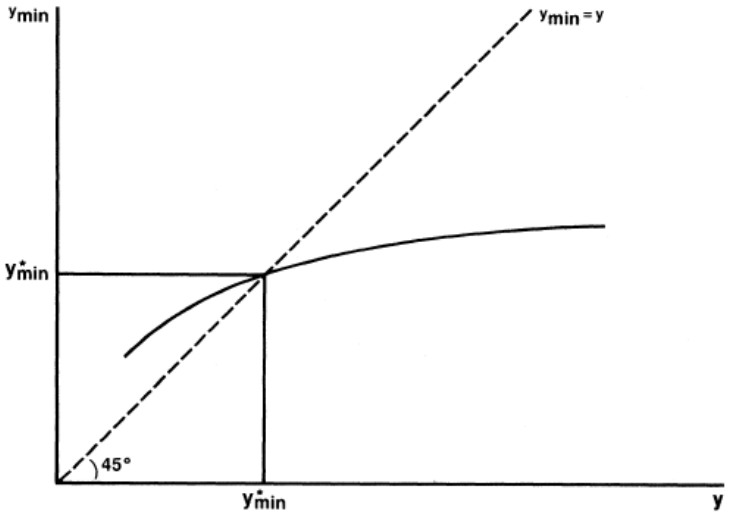
Scientific research on subjective poverty and well-being emerged in the 1960s in psychology (where the emphasis was on measuring and explaining happiness as a state of mind) and economics (where the emphasis was on calibrating welfare functions, including setting equivalence scales)[1]. The core data have long been respondents' self-assessments in sample surveys. Each respondent is asked to rate his/her economic welfare, or a broader concept such as satisfaction with life or happiness, on an ordinal scale. Or the respondent provides money metrics of points on qualitative welfare scales, such as the minimum income needed to make ends meet (Hagenaars and Van Praag, 1985; Kapteyn et al., 1988) or for multiple points on a ladder (Van Praag, 1968).

One of the first papers to propose a poverty line based on subjective evaluations is Goedhart et al. in 1997. This line can be used to define poverty in a specific context, and it can be defined as the income below which people tend to think they are poor in the specific setting and above which they tend to think they are not poor (Ravallion, 2012).

[1] See Ravallion (2012).

There are two main methods in order to measure subjective poverty, that is the subjective poverty line (SPL) and the Leyden poverty line (LPL). Both approaches are subjective since they are based on responses to survey questions that try to elicit either a respondent's evaluation of income levels or his judgment about minimum needs. Both approaches are also model-based, in the sense that the responses themselves do not generate poverty lines immediately. One needs to estimate a model that explains variation among households in the responses to the ad hoc survey questions. These two approaches identify two crucial methodological issues in the implementation of the SPL and LPL: the responses should measure what they are supposed to measure, and the model should be correctly specified and estimated (Kaptain et al. 1988).

Subjective poverty lines are based on answers to the "minimum income question" (MIQ): "Which after-tax monthly income do you, in your circumstances, consider to be absolutely minimal? That is to say that with less you could not make ends meet." A respondent's answer to this minimum income question (MIQ) will be referred to as his minimum income y*min*.

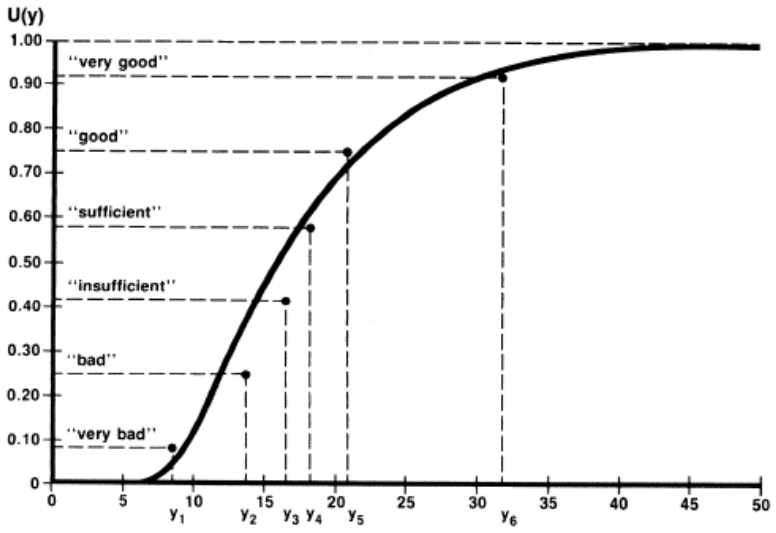


Graph 1
Subjective poverty Line
Source: A. Kapteyn, P. Kooreman and R. Willemse (1988), "Some methodological issues in the implementation of subjective poverty definitions",*Journal of Human Resources*, vol. 23, No. 2, 1988.

It turns out that y*min* depends on the respondent's actual after-tax income and a number of other factors. In formula: y*min* = f(y;x), where y is the respondent's actual income' and x is a vector of other factors. The function is monotonically increasing in y and there exists an income level ymin* defined by ymin = f(y*min*;x); such that for all incomes y less than y * in we have that y < ymin and for all incomes y greater than y**min*, y > y*min*. The income level y*min is the SPL, as it is the point where families can just make ends meet; with less income, they cannot make ends meet, and with more income than y*min* they can. Since the position of the function f(y;x)

depends on x, also the SPL depends on x. That is, if families have different characteristics, they will require different amounts of money to make ends meet.

The Leyden poverty line (LPL) is based on the so-called "income evaluation question" (IEQ): "Which after tax monthly income would you, in your circumstances, consider to be very bad? And bad? Insufficient? Sufficient? Good? Very good?" A respondent's answers to the IEQ are used to estimate his welfare function of income. The measurement method is illustrated in the figure.



Graph 2
Layden poverty Line
Source: A. Kapteyn, P. Kooreman and R. Willemse (1988), "Some methodological issues in the implementation of subjective poverty definitions",*Journal of Human Resources*, vol. 23, No. 2, 1988.

Pradhan and Ravallion (2000) point out some limitations of the MIQ approach and propose an alternative method based on a consumption adequacy question (CAQ). Among the drawbacks of MIQ, the authors state that households have different concepts of income, which may not agree with each other or with the concept of income expected by the question. Some households may consider only their monetary income, while others may include other sources of income.

Other approaches to collect data on subjective poverty are the economic ladder question (ELQ) and the satisfaction with life question (SWL) that use qualitative categories in the welfare space. The ELQ is formulated as: "Imagine six steps, where on the bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich (show a picture of the steps). On which step are you today?"; while the SWL ask: "Overall, how satisfied (content, happy) are you with your life? Are you (1) very unsatisfied; (2) unsatisfied; (3) neither unsatisfied nor satisfied; (4) satisfied; (5) very satisfied?".

The ELQ can be better suited to poverty measurement as it is tied to a concept of economic welfare, while ideas such as SWL or measurement of happiness are broader and more nebulous in scope (Ravallion, 2012).

However, a frequently cited advantage of the subjective approach to poverty measurement is that it is free from arbitrariness, since the definition of the poverty line is derived from the population itself and not by the researcher, despite the methodology used, but taking into account its limits (Rio Group, 2006).

There are several empirical studies on subjective poverty which have shown how and to what extent the self-perception of well-being is influenced by household size and composition, available household resources, and socio-economic characteristics.

For example, Van Praag and Van Der Sar (1988) used empirical evidence for eight European countries and the U.S. to study the link between subjective poverty and available household resources, obtaining significant results using an improved version of the Leyden methodology. Ravaillon and Lokshin (2002) instead used the level of income of a reference group and household socio-economic characteristics such as sex, age, employment status education level, and so on, using the Russian Longitudinal Monitoring Survey (RLMS) based on three years, from 1994 to 1996, finding a highly significant positive correlation between self-rated economic welfare and income relative to a poverty line, but also many discrepancies. Similar work was done also by Stanovnik and Verbic (2004), using three comparable cross-section household datasets, relating to 1988, 1993, and 1997-1999, focusing on Slovenia. In fact, by including individual socio-demographic factors, the determinants of subjective poverty can be examined across countries.

Buttler (2013) in her work analyses what determines subjective poverty: as subjective poverty is operationalized by the evaluation of income; she assumes that all individual factors which increase the risk of income poverty may also increase the risk of subjective poverty. Buttler investigates these factors. It has been shown for example that females have a lower work intensity and earn less money than their male counterparts. Also, lower levels of education are associated with a higher risk to experience income poverty. A further aspect that contributes to low-wage risks is a migrant background (Grimshaw, 2011). Furthermore, it is commonly agreed that young people and unskilled workers have an especially high risk of facing income poverty (Tufo, 2019). In addition to gender, age, educational degree, and occupational class, one needs to consider the household composition as well. It has been shown that single parents have a

higher risk of experiencing income poverty than two-adult households without children, which have a considerably lower risk of income poverty (Cantillon, 2011).
Buttler (2013) through her analysis found that individual characteristics have the correspondent expected sign for subjective poverty.

Considering different definitions of poverty, Van den Bosh et al. (1993) presented a comparison of poverty in seven European countries and regions (Belgium, The Netherlands, Luxembourg, Lorraine, Ireland, Catalonia, and Greece) using subjective and relative measures, taking data from comparable socio-economic surveys in each country. The results indicate that extent of poverty is much greater in the "peripheral" European countries than in the "central" ones. They found that similar factors are associated with poverty in all countries: in general, for example, households with no, or a weak attachment to the labor market are at a higher-than-average risk of poverty. They show also important differences in the characteristics of the poor across countries, like the impact of social security transfers on poverty that appears to be much smaller in the southern countries and the fact that very young householders are at high risk of poverty in the northern countries, but not in the southern.

Another key variable to link subjective poverty is fixed expenditure, first studied by Garner and de Vos (1991), comparing results from the Netherlands in 1983 and the US in 1982. Results show that the income elasticity appears to be smaller in the US than in the Netherlands, while the effects of other socioeconomic factors are greater. In particular, for both countries, the coefficient of the fixed expenditure is positive and very significant. In a following work, they also add expenditure for various categories of goods and services, finding that in both countries expenditure on housing and utilities and in part in food, was taken into account in answering the MIQ, but it results in an opposite effect as regard leisure in the two states.

Some attention has been devoted also to the analysis of the relationships between the subjective poverty line and the quality of the context in which households live, such as the social capital endowment of the household area of residence. In the work of Santini (2010), applying an ordered probit model using the 2006 Survey on Household Income and Wealth of the Bank of Italy, results show a relevant effect of social capital, especially social networks and relationships of trust, on self-perception of well-being.

An alternative measure of inequalities distribution is deprivation. Deprivation is an index that reflects poverty and the household's situation within his community. Measures of deprivation are different from measures of income. As stated by Bellani (2013) the identification of a relevant reference group is a crucial task in this contest: she suggests multidimensional indices

in order to compare people themselves with other people belonging to the same reference group which shares the preferences for a similar set of non-monetary deprivation items, so their feeling of relative deprivation is higher the more importance they attach to a failure belonging to this shared set of deprivation items in their own reference group.
In the analysis of Delhausse et al. (1993) is made a comparison between measures of poverty and relative deprivation on a sample composed of 6380 Belgian households, concluding that deprivation is a relevant indicator in order to detect households in need within a population.

Previous studies have shown the importance of country-specific factors in determining subjective poverty. The affluence of a country, such as GDP o similar variables, has a dominant influence on the quality of life (Buttler, 2013). Furthermore, it has been shown that high government redistributive efforts reduce the share of people living under the poverty line: for example, the analysis of Gough et al. (1997) found this result with social expenditure, defined as the range of benefits and services available to guarantee a minimum (however defined) level of subsistence to people in need. Additionally, the labour market is a central locus of the income distribution. In fact, another respondent characteristic widely identified as important is unemployment. Several papers have found that the unemployed have lower self-rated welfare with and without controls for income (Clark and Oswald, 1994). The adverse effect of unemployment at a given income appears to contradict the prediction of the standard economic model for work-leisure choice that unemployment (and hence greater leisure) is desirable at a given income (Ravallion and Lokshin, 2001). Hence, a high employment rate (especially of women) can lift people out of poverty (Cantillon, 2013).

In fact, the subjective evaluation of poverty is highly dependent on contextual economic circumstances. For instance, according to Santarelli et al. (2013) in Italy the minimum income level to live a decent life is declared constantly decreasing since 2008, the starting year of the economic crisis because people redefine their needs in case of negative economic circumstances. In fact, people consider their economic conditions in comparison with those of the others. People compare how fast or slow living conditions are changing relative to others, not only their immediate neighbours, but also other regions and countries (Hayo and Seifert, 2003). A crucial key is also inequality. If inequality does not change much over time or tends to increase with economic growth, then one can readily explain why economic growth does not translate into rising average happiness, without concluding that individual incomes are irrelevant to individual welfare (Lokshin and Ravallion, 2001).

Indeed, an interesting aspect of subjective poverty could be what relationship it bears to changes in the real economy. If correct, then the data on these subjective perceptions should have some foundation in more robust data, if not they may indicate a paradox.

There are previous works in the literature that have studied the effects of the business cycle on different variables of interest. In order to remove the trend movements in the business cycle, it is often used the Hodrick-Prescott filter. For example, Angelini and Mieurau analyzed the relationship between the presence of economic recession at birth and childhood health, finding a positive value. In their work, they applied the HP filter to the logarithm of GDP in order to define the crisis period. Instead Belloni et al., in their work studying the impact of retirement on late-life mental health, focusing on the role of economic conditions in shaping the effect of retirement, used the HP filter on the regional unemployment rate. Although the use of the HP filter has been subject to heavy criticism it is likely that it will remain one of the standard methods for detrending (Ravn and Uhlig, 2002).

Taking these observations and past works into account, the aim of this work is to analyze the relationship between macroeconomics shocks and subjective poverty, using the definition of Goedhart et al. (1997) and referring to the MIQ.

Chapter 3

Data and Descriptive Statistics

3.1 Subjective poverty data and socio-demographic characteristics

This analysis uses data collected by the Bank of Italy through the survey on Household Income and Wealth. The survey gathers information on income, expenditures, and wealth of Italian households that (officially) reside in Italy.

The SHIW (Survey on Household Income and Wealth) started in the 1960s, but data are available since 1989. In this analysis I am especially interested in the following question: "In your opinion, how much a family like yours needs to live without luxury but with all the necessary to make ends meet?", which was introduced in the questionnaire in 2004. I therefore considered data covering the period 2004-2016, the last round available to researchers.

The target population does not include individuals living in institutions (convents, hospitals, prisons) or illegally present on the national territory. The sampling design of the survey follows a two-stage selection procedure: first municipalities are sampled, then, at second stage, households are selected. Before proceeding to the extraction of the first-stage units, they are subdivided according to region and population size class (stratification of first-stage units). Within each stratum, the municipalities in which the interviews are carried out are selected by including all those with a population of over 40,000 inhabitants (self-representative municipalities) and extracting the remaining municipalities with a selection method that gives larger municipalities a higher probability of being included in the sample (probability proportional to size, PPS).

In the second phase, the households are randomly drawn from the population lists of the previously selected municipalities, after defining an appropriate stratification aimed at increasing the efficiency of the design (stratification of second-stage units).

Over the years the target sample reached 8,000 households, sampled from about 300 Italian municipalities.

The survey is conducted every two years and has a longitudinal component. In this thesis I do not exploit the longitudinal dimension of the dataset, therefore data are treated as repeated cross-sections.

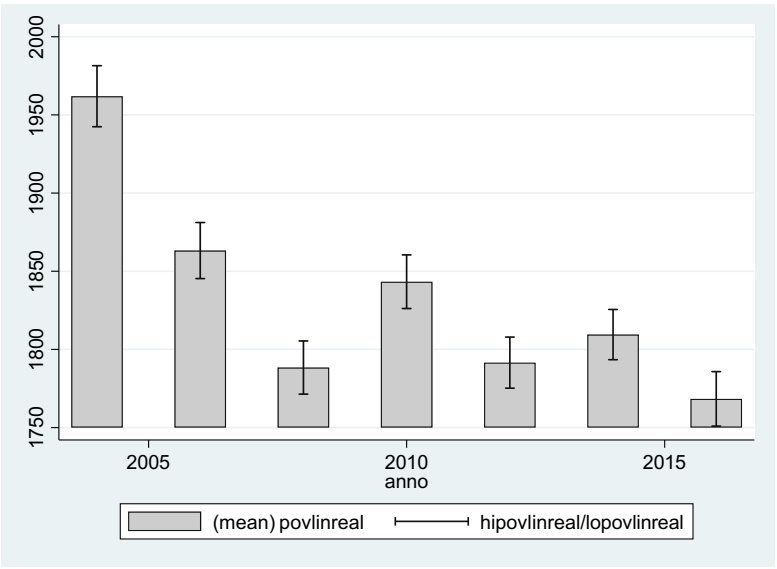
The questionnaires have a modular structure: there is a first part, in which all households are involved, and several annexes, that concerns only specific subsets of households (build on specific answers to the previous questions).
Since 1998, data collection has been carried out mainly (more than 90 per cent in the latest surveys) with the aid of computers (CAPI, Computer-Assisted Personal Interviewing). With this methodology, the data are collected through an electronic questionnaire (with the auxiliary of an interviewer), which not only stores the information but also triggers a series of checks, allowing any inconsistencies to be discussed during the interview in the presence of the household.[2]

There are two different versions of the dataset, annual and historical. This analysis exploits mostly the annual dataset, but uses selected variables, e.g. education, from the historical database in order to preserve the comparability over time.

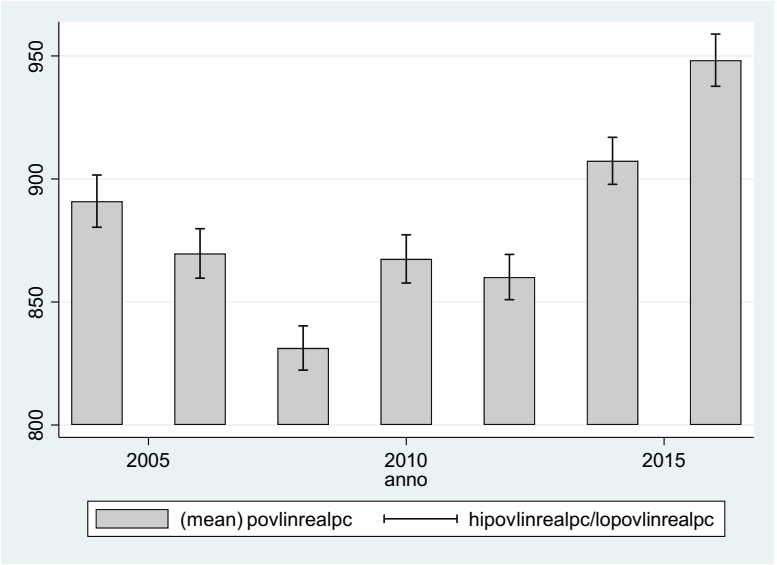
In this analysis, I am interested in understanding how the perception of the *money needed to live comfortably but not in luxury* changes in presence of macroeconomic shocks.
The main variable of interest for the analysis is the self-reported perception of the minimum amount of money labelled *povlin*. The *povlin* variable is the answer to the following question: "In your opinion, how much a family like yours needs to live without luxury but with all the necessary to make ends meet?", that is called in the literature minimum income question (MIQ), or minimum expenditure question (MEQ). It has been analyzed in the economics literature to define individual subjective poverty perceptions.

I convert nominal amounts into real values using the consumer price index (CPI), provided by the Italian National Institute of Statistics (ISTAT). The baseline year for the CPI is 2003.
The following figures show some features of the *povlin* variable. Figure 3.1a shows the yearly average value of *povlin* in real terms for the period 2004-2016. Figure 3.1b reports yearly averages in real and per capita terms. Figure 3.1c shows a breakdown by geographical area.

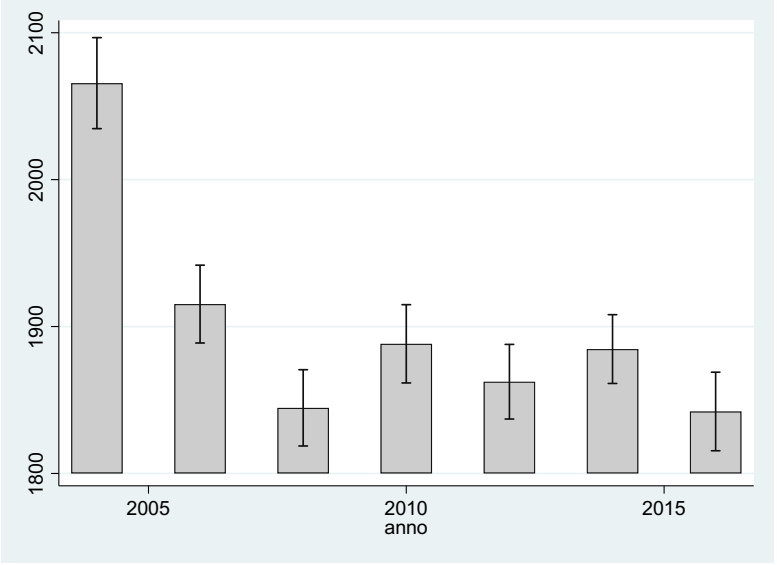
[2] Banca D'Italia, Statistiche, Methods and sources: methodological notes (2020).



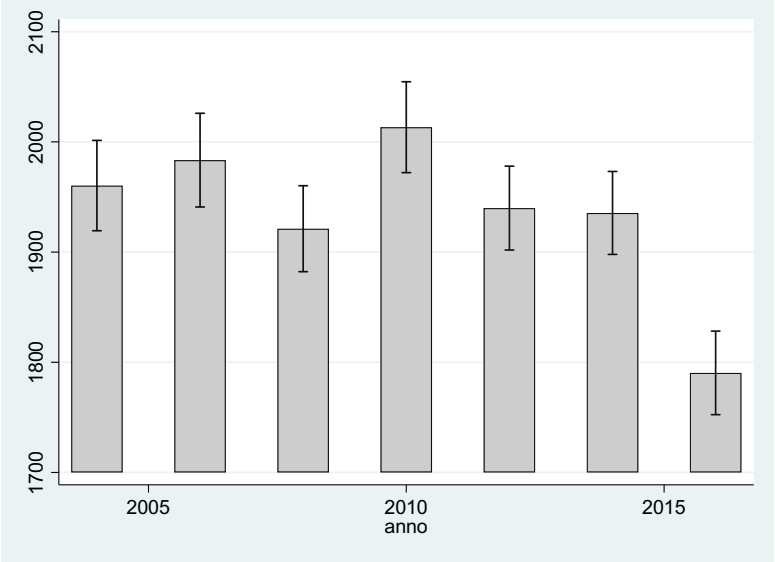
3.1a. Povlin in real term (divided for the consumption price index)



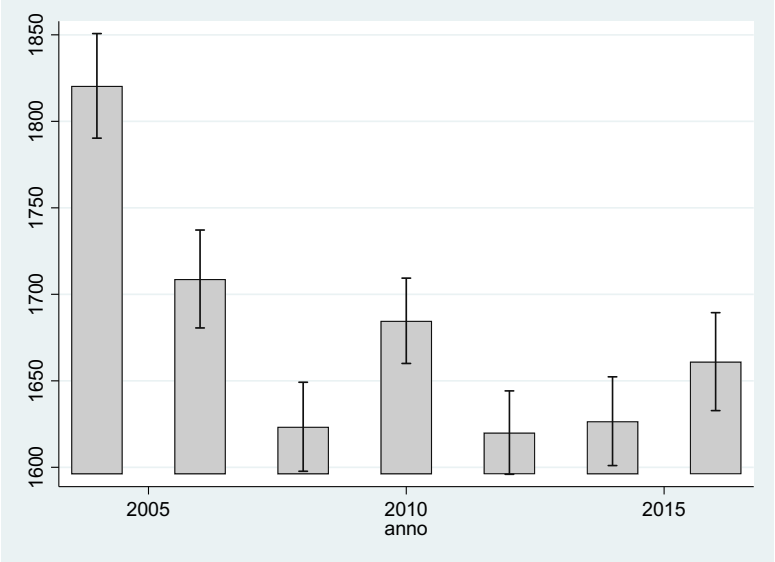
3.1b. Povlin in real e per capita term (divided for the consumption price index and for the number of components of the family).



Area 1 – North Italy



Area 2 – Center Italy



Area 3 - South Italy and Islands
3.1c. Povlin in real term divided by area.

Figure 3.1 Povlin variable, descriptive statistics.

There is a decreasing path in figure 3.1a, with drops especially in 2008, 2012, and 2016. The trajectory changes in per capita terms (figure 3.1b), where the graph follows a v-path: there is a huge drop in 2008 for then increase, with a small decrease in 2012. The latter pattern can be the results of several competing factors such as changes in socio-demographic characteristics over time, such as smaller family units and low birth-rate. Regarding geographical heterogeneity, the three graphs of figure 3.1c reflect a similar pattern of figure 3.1a in different scales, with lower levels of *povlin* for the south and a lower variability over years for the center.

The survey collects other subjective welfare indicators such as the variable *condgen*. Households are asked whether their disposable income allows them to make ends meet with difficulties or easily. More precisely the answering scale goes from 1 meaning “very difficultly”

to 6 “very easily”. It is interesting to look at the association between the two subjective indicators to understand the relation between the two assessments. Figure 3.2 shows the association between *povlin* and *condgen* variable. On the horizontal axis, I report the level 1 of the variable *condgen*, when households claim to make ends meet “very difficultly”, by years. Looking the Figure 3.2 it is possible to observe a negative correlation between the two variables as shown by the fitted line. The negative association means that the more households state to have difficulties, the lower is the amount of minimum income declared.

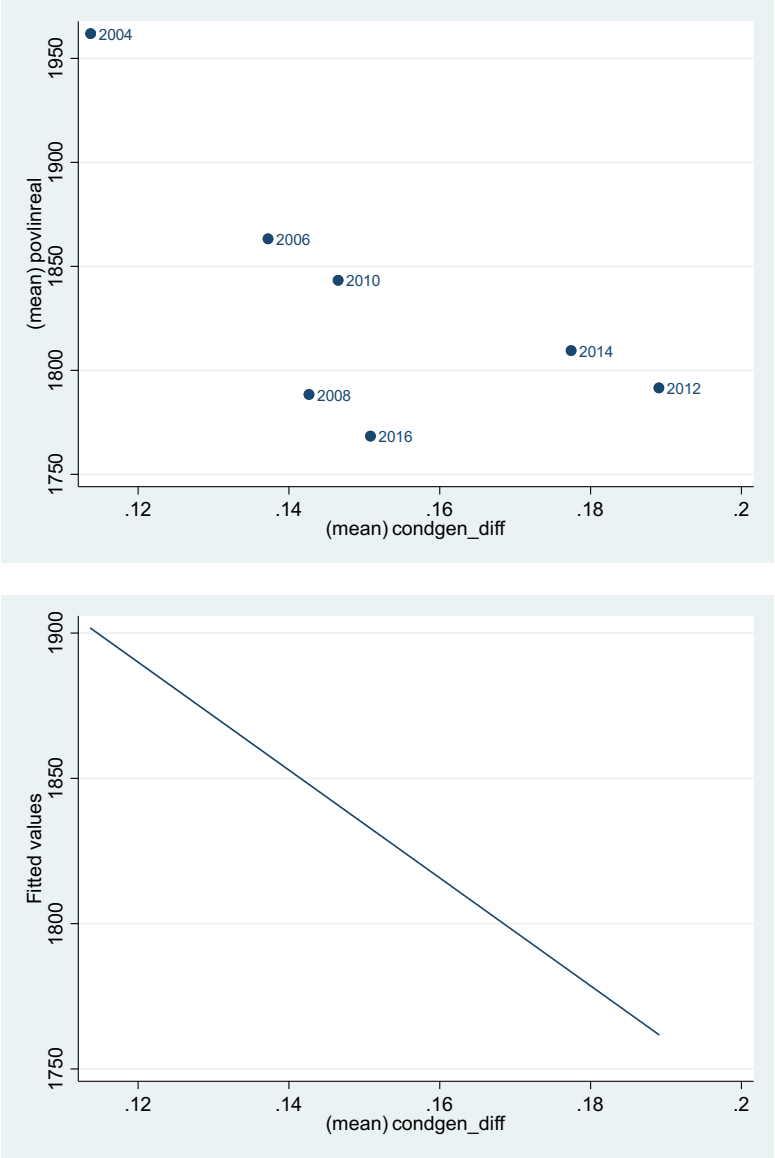
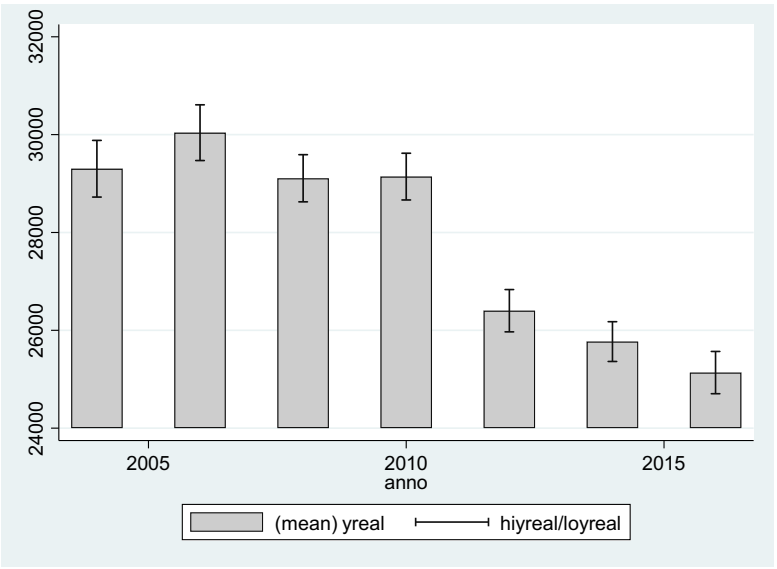


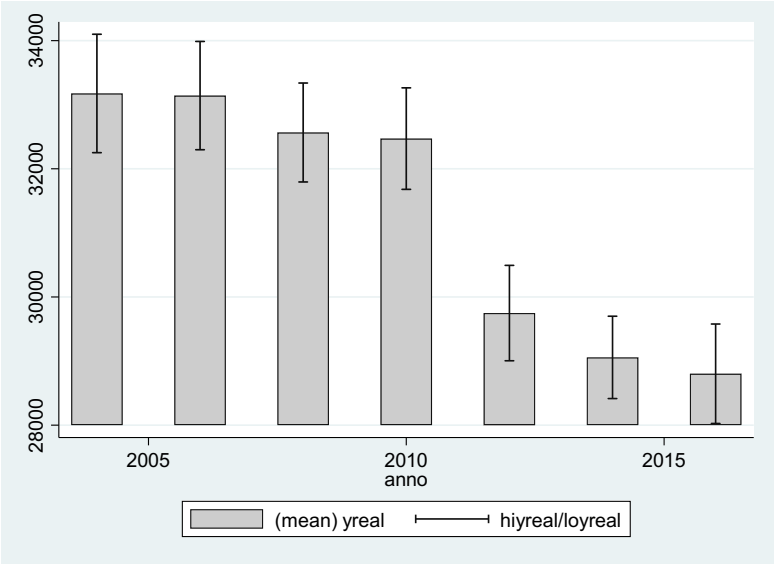
Figure 3.2 Scatter graph and fitted line of povlin - condgen (=1, “very difficultly”)

I further compare the outcome of interest with household income. The household disposable income is captured by the variable Y, drawn from the historical dataset.

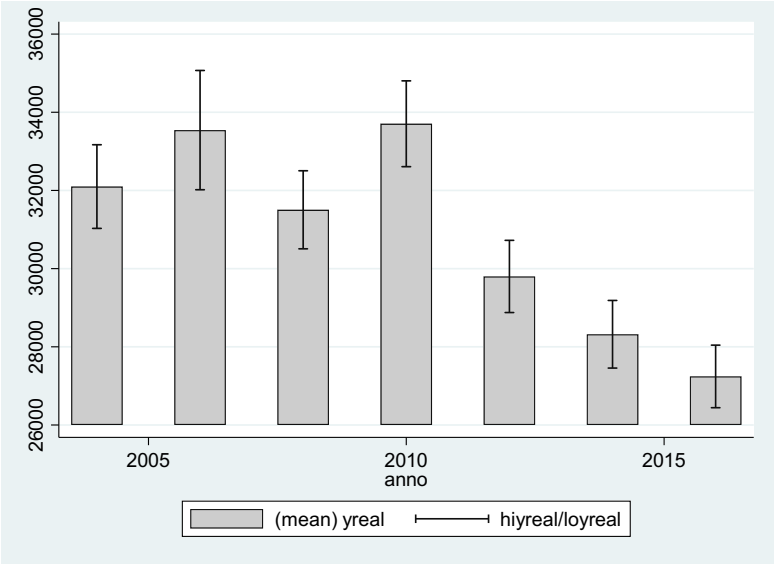
Figure 3.3a reports the yearly average value of *Y* in real terms for the period 2004-2016. Figure 3.3b shows a breakdown by geographical area.



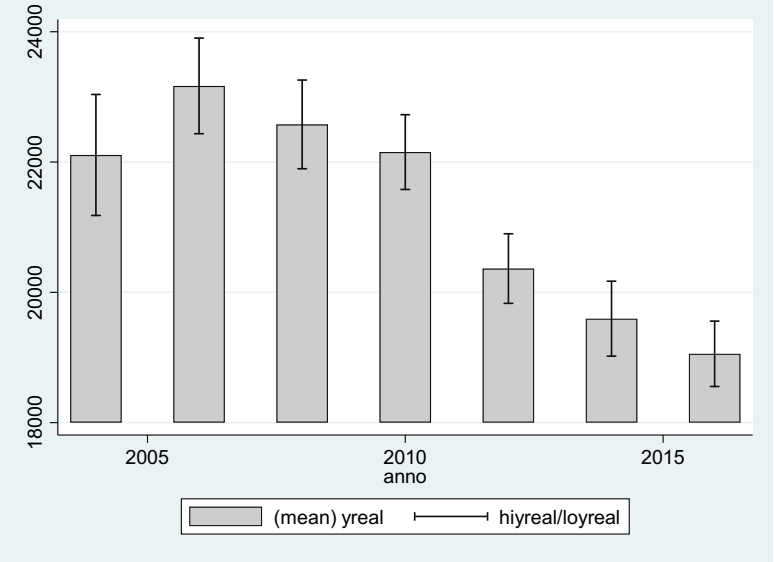
3.3a Y in real term



Area 1-North Italy



Area 2-Center Italy

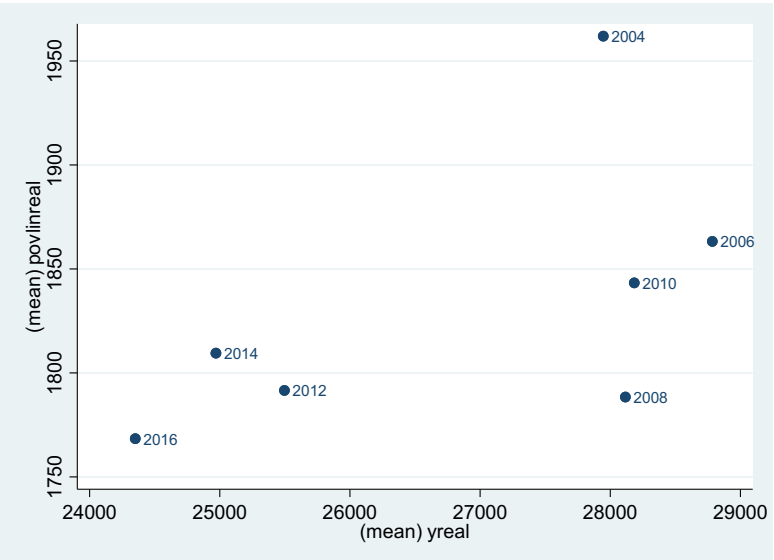


Area 3
3.3b y in real term divide by area (divided for the cpi)

Figure 3.3 Disposable income, descriptive statistics.

Observing the graph in figure 3.3a it is possible to see a decreasing trend particularly after 2010, reflected also in the graphs of figure 3.3b. In general households in the South report lower values with respect to the rest of Italy. Focusing on the year 2008, household disposable income drops only for households living in the center of Italy. Drops in income are observable in all areas in 2012.

Figure 3.4 depicts the association between the subjective poverty variable and income. As expected from the literature, there is a positive association between the two variables When the disposable income increases, the level of the minimum income needed increases.



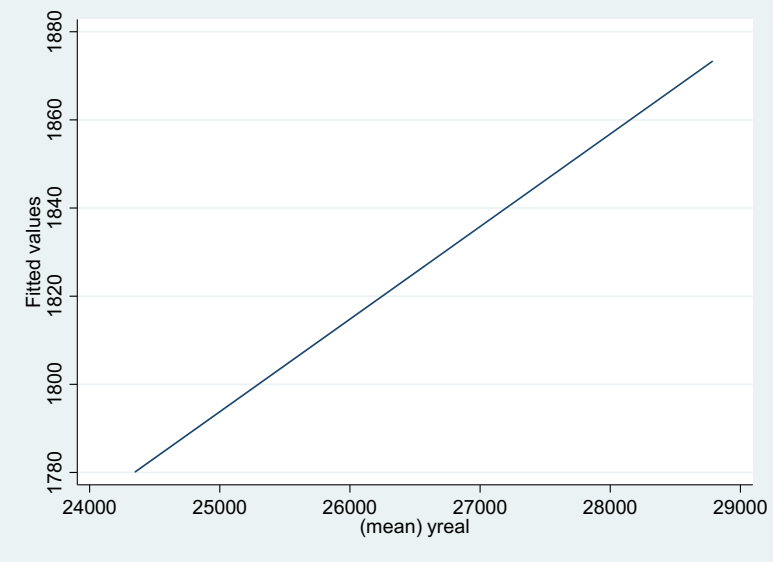


Figure 3.4 Scatter graph and fitted line of povlin – income.

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Following the literature (Garner and Vos, 1991 et 1995), in my empirical analysis, I will control also for individual socio-demographic characteristics of the household's head. The household's head is the family member with the highest income, represented by a binary variable in the dataset (*cfred*)[3]. The socio-demographic characteristics I will include among controls are household composition, family size, number of children, (logarithm of) disposable income, geographical area, employment status, education, and marital status of the household's head.

Table 3.1 reports the summary statistics of the variables used in this analysis. The mean age (referring to the household heads) is 52. Only the 33% of household heads are females.

[3] A household is defined as a group of people, living together, whose expenditures are made from common pooled resources (Garner and de Vos, 1995).

	(1)	(2)	(3)	(4)
	Mean/%	Standard Deviation	Minimum Value	Maximum Value
Outcome of interest:				
Povlin in real terms (MIQ) – euro per month	1839.903	793.026	462.949	5041.406
Female (HH head)	0.330	0.470	0	1
Age of HH head	52.722	14.877	18	80
Married	0.577	0.494	0	1
Number of HH members	2.496	1.292	1	12
Number of children	0.256	0.651	0	7
Difficulties in making ends meet	0.153	0.360	0	1
Education of HH head:				
Primary school	0.204	0.403	0	1
Middle school	0.368	0.482	0	1
High school	0.265	0.441	0	1
University	0.109	0.311	0	1
Higher education	0.009	0.093	0	1
Geographical location:				
North Italy	0.480	0.500	0	1
Center Italy	0.201	0.401	0	1
South Italy	0.319	0.466	0	1
Household equivalent income in real terms	12,758.27	10,822.55	0.464	761,245.9
Number of earners within HH	1.608	0.722	1	7
Employment status of HH head:				
Employee	0.465	0.499	0	1
Self-employed	0.118	0.322	0	1
Unemployed	0.020	0.141	0	1
Retired	0.377	0.485	0	1
Other condition	0.001	0.026	0	1
Home owner	0.681	0.466	0	1
N	55435			

Table 3.1. Summary statistics

3.2 Macroeconomic data

To define macroeconomic shocks, I follow the literature (Angelini et Mierau, 2014, Belloni et al., 2016). I use the regional gross domestic product in real and per capita terms (GDP) and the unemployment rate.

Data are drawn from ISTAT databanks. The GDP variable is expressed in terms of chained price referred to the year 2015. I then take the logarithm. The unemployment rate is at regional level.

As done in Angelini and Mierau (2014) and Belloni et al. (2016), I use the Hodrick-Prescott filter on the selected aggregate economic variables to define the macro-economic shocks at the regional level in the period 1995-2020. In the next chapter I will provide a complete explanation about the application of the HP filter.

In figures 3.5-3.6 I focus on the period of interest for our analysis, from 2004 to 2016, and I present the cyclical components obtained through the application of the Hodrick-Prescott filter using the GDP (concatenated prices) and the unemployment rate. I use a smoothing parameter of 6.25 for the GDP, as suggested by Angelini and Mierau (2014), and a smoothing parameter of 100 for the unemployment rate, as suggested by Belloni et al. (2016).

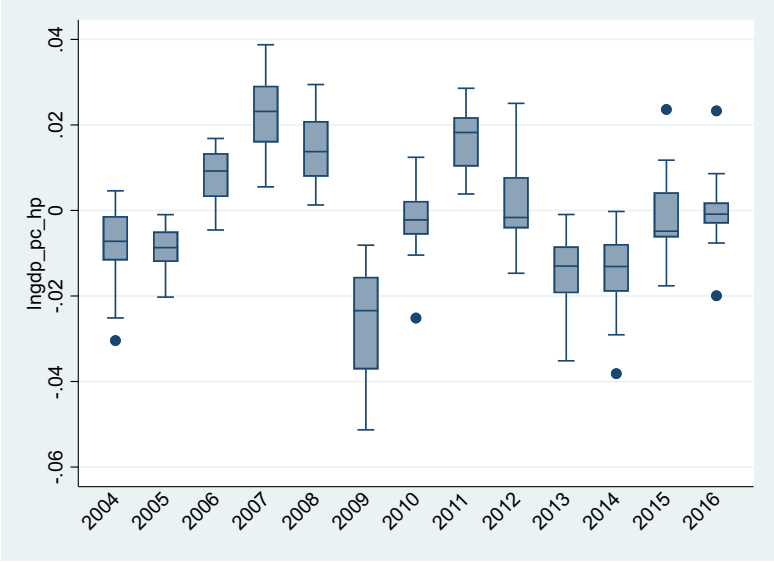


Figure 3.4 GDP logarithm cyclical component of the Hodrick-Prescott filter

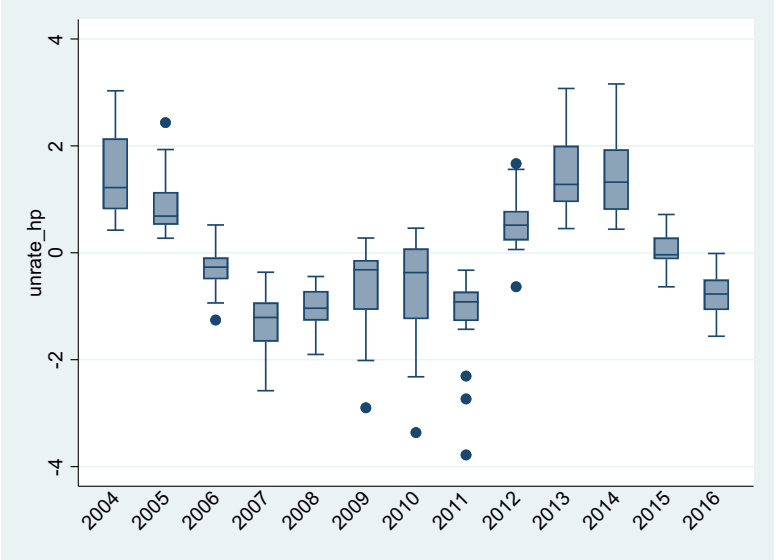


Figure 3.5 Unemployment rate cyclical component of the Hodrick-Prescott filter

As suggested by the literature, I define a binary indicator, based on the cyclical component of GDP and unemployment rate, that measures the state of a business cycle. The binary indicator based on GDP takes value one in case of a negative regional temporary shock, and zero otherwise. The binary indicator based on the unemployment rate takes value one if the cycle component is positive, and zero otherwise.

Chapter 4

Empirical Approach

The aim of this work is to investigate how macroeconomic shocks affect subjective perceptions of the money needed to live comfortably but not in luxury, a subjective information used in the literature to define poverty lines.

I exploit answers to the MIQ questions in SHIW and the cyclical movements of GDP, during the years 2004-2016. This time interval allows capturing two important negative shocks, the Financial crisis (2008-2009) and the Sovereign Debt crisis (2012).

I estimate the following specification:

$$log(povlinreal_i) = \alpha + \beta hit\_by\_the\_crisis_i + X_i'\delta + \varepsilon_i \qquad (1)$$

where $log(povlinreal)_i$ is the dependent variable, the logarithm of *povlin,* expressed in real terms. *Povlin* is the answer to the question: "In your opinion, how much a family like yours needs to live without luxury but with all the necessary to make ends meet?".

The variable $hit\_by\_the\_crisis_i$ is the regressor of interest. It is a binary indicator based on the cyclical component of GDP from the application of the Hodrick-Prescott filter, previously anticipated. The Hodrick-Prescott (HP) filter[4] is a trend-cycle decomposition based on the assumption that a seasonally adjusted series can be divided into a trend (g_t) plus a cyclical component (c_t).

$y_t = g_t + c_t$ for t= 1, . . . ,T. (2)

[4] Hodrick and Prescott, 1997.

Applying the HP filter involves minimizing the variance of c_t subject to a constraint that penalizes variation in the second difference of g_t:

$$\mathrm{Min}\{g_t\}_{t=-1}^{T} = \{\sum_{t=1}^{T} c_t^2 + \lambda \sum_{t=1}^{T}[(g_t - g_{t-1}) - (g_{t-1} - g_{t-2})]^2\} \quad (3)$$

The parameter λ is a positive number that penalizes variability in the growth component series. The larger the value of λ, the smoother the growth component. As λ approaches infinite, the growth component corresponds to a linear time trend.

The HP filter is one of the most popular filters between the mechanical filters that are used to identify permanent and cyclical components of a time series (according to EUIFIS, 2020), due to its computational simplicity and transparency.

The method is frequently criticized in the academic literature, as for example the arbitrary choice of the smoothing parameter (Murray, 2014).

The main reasons that justify the use of the HP filter, as reported by St-Amant and Van Norden (1997), are that it roots out the relevant business-cycle frequencies of output and it nearly estimated the cyclical component implied by reasonable time-series models of output.

I use for the GDP the smoothing parameter (λ) of 6.25, following the work of Angelini and Mierau (2014). To the unemployment rate, I apply the smoothing parameter of 100, according to Belloni et al. (2016)[5].

Following the literature about subjective poverty (such as De Vos and Garner, 1991, Clark et al., 2016) explanatory variables X_i are added to the binary variable of the business cycle in the model which concern person characteristics that refer to the main breadwinner, characteristics that refer to the household and SES indicators (disposable income and unemployment). I consider the logarithm of family size and number of earners, since this may also affect the perceived minimally necessary income. For example, households whose members have paid jobs are expected to have expenses above what they would have if they were not working; on the other hand, they may be able to profit from benefits associated with a job that lower their expenses (such as discounts or free meals). The age of the main breadwinner is included in the regression to allow for objective differences in the minimal costs between the different age groups. Adding the age squared to age allows to model the effect of differing ages, rather than assuming that the effect is linear for all ages.

Education can be a determinant of the reference group and the habits of a household; therefore, education dummies are also included. The dummy variables I include in the regression for

[5] See Appendix A for detrending application.

education refer to primary education, secondary education, high school, university, and post-bachelor. The sex of the reference person is included as a dummy variable, where the omitted category in the regression is male. Also, marital status is used as a differentiating factor, many studies have revealed that individuals who are divorced, separated, or widowed are likely to experience lower levels of living than they did when they were married.

Differences in the cost of living may be expected between different geographic regions, then dummies are added to control for it.

In answering the question "What income would be minimally necessary to make ends meet", it is conceivable that respondents model their answer in relation to their actual income, so the logarithm variable of disposable income is included. Another variable taken into account is the job occupational status, where five dummies indicate where an individual is self-employed, salaried-worker, unemployed, retired, and in other conditions.

Year dummies are also included to account for aggregate changes over regions. The earliest year is the base year (2004).

The last parameter, ε_i, is the error term.

Data are treated as repeated cross-section. In this empirical analysis, standard errors are clustered at the household level since in the sample it is included the longitudinal component of the dataset. I estimate the model with an Ordinary Least Squares (OLS) estimator.

In this study, I investigate the association between the minimum income question and economic negative shocks at the regional level, the coefficient of interest is β.

As robustness analysis, I define the aggregate regional shock based on the unemployment rate.

Chapter 5

Results

In this section, the results obtained from the analysis are presented. I will start providing evidence of the impact of macroeconomic shocks on money needed. Then I will complement the baseline specification including interactions between the aggregate shock indicator and socio-economic characteristics, such as gender, marital status, age, and employment status, following the work of Clark et al. (2016) to provide suggestive evidence about the possible factors underlying the baseline results.

5.1 Baseline specification

Table 5.1 shows the results from pooled OLS regressions.
In Column 1 of Table 5.1 the binary indicator *hit_by_the_crisis_gdp*, is based on GDP; in Column 2 of Table 5.1, the binary indicator *hit_by_the_crisis_unrate* is based on the unemployment rate.

Comparing the two regressions, there is not much difference in coefficients and signs, suggesting that results do not depend heavily on the macroeconomic indicator used to identify the negative shock. The estimated effect of *hit_by_the_crisis* is negative and statistically significant at 1% level.

This indicates that negative economic shocks may lead individuals to revise downward their evaluation about the money needed for an acceptable standard of living.

A possible explanation of this result can be the psychological processes of adaptation. In periods of economic recession, individuals might be influenced by the media that claim about financial strictness, the consequences for people in terms of job loss or economic losses, and the general climate of emergency; these factors can drive household to make great efforts to take pleasure

in small mercies and cut down personal desires to modest proportions. So, the threshold of the subjective minimum income necessary for sustaining the household could decrease in time of crisis even if it can be the moment where individuals need more economical sustain. It is not the demand for income that decreases, but the perception of the individuals towards their life expectations and their fundamental needs.

Dep. Var.: Real money needed (log of)	(1)	(2)
	gdp	unrate
hit_by_the_crisis_gdp	-0.023***	
	(0.004)	
hit_by_the_crisis_unrate		-0.021***
		(0.006)
Year dummies:		
2006	-0.071***	-0.075***
	(0.006)	(0.007)
2008	-0.112***	-0.115***
	(0.006)	(0.008)
2010	-0.064***	-0.073***
	(0.006)	(0.007)
2012	-0.067***	-0.065***
	(0.006)	(0.006)
2014	-0.037***	-0.042***
	(0.006)	(0.006)
2016	-0.043***	-0.056***
	(0.006)	(0.008)
Household income (log of)	0.201***	0.201***
	(0.007)	(0.007)
Female (HH head)	-0.012***	-0.012***
	(0.004)	(0.004)
Number of children	0.008**	0.008***
	(0.003)	(0.003)
Age of HH head	0.098***	0.098***
	(0.009)	(0.009)
Age^2 of HH head	-0.010***	-0.010***
	(0.001)	(0.001)
Married	0.065***	0.065***
	(0.005)	(0.005)
Number of HH members (log of)	0.201***	0.201***
	(0.006)	(0.006)
Number of earners within HH	0.029***	0.028***
	(0.003)	(0.003)
Education of HH head:		
Primary school	0.028***	0.028***
	(0.009)	(0.009)
Middle school	0.095***	0.095***
	(0.010)	(0.009)
High school	0.148***	0.148***
	(0.010)	(0.010)
University	0.195***	0.195***
	(0.012)	(0.012)
Higher education	0.233***	0.232***
	(0.024)	(0.024)
Employment status of HH head:		
Self-employed	-0.022***	-0.022***
	(0.006)	(0.006)
Unemployed	-0.015	-0.015
	(0.013)	(0.013)
Retired	-0.051***	-0.051***
	(0.006)	(0.006)

Other condition	0.039	0.041
	(0.081)	(0.081)
Home owner	-0.038***	-0.038***
	(0.004)	(0.004)
Geographical regions:		
Valle d'Aosta	-0.057**	-0.054**
	(0.023)	(0.023)
Lombardia	0.003	-0.001
	(0.008)	(0.008)
Trentino Alto Adige	-0.132***	-0.132***
	(0.013)	(0.013)
Veneto	-0.101***	-0.094***
	(0.008)	(0.008)
Friuli Venezia Giulia	-0.054***	-0.054***
	(0.012)	(0.012)
Liguria	-0.009	-0.016
	(0.011)	(0.011)
Emilia Romagna	-0.028***	-0.031***
	(0.008)	(0.008)
Toscana	0.012	0.009
	(0.009)	(0.009)
Umbria	-0.036***	-0.039***
	(0.011)	(0.011)
Marche	-0.058***	-0.064***
	(0.010)	(0.010)
Lazio	-0.048***	-0.043***
	(0.009)	(0.009)
Abruzzo	-0.027**	-0.029**
	(0.012)	(0.012)
Molise	-0.041***	-0.035**
	(0.016)	(0.016)
Campania	-0.0671***	-0.071***
	(0.008)	(0.008)
Puglia	-0.100***	-0.103***
	(0.009)	(0.009)
Basilicata	-0.102***	-0.103***
	(0.014)	(0.014)
Calabria	-0.102***	-0.096***
	(0.013)	(0.012)
Sicilia	-0.153***	-0.150***
	(0.009)	(0.009)
Sardegna	-0.123***	-0.123***
	(0.010)	(0.010)
Constant	0.405***	0.408***
	(0.062)	(0.062)
Observations	49,082	49,082
R-squared	0.461	0.460

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5.1 Regression minimum income question and macroeconomic shocks. OLS estimates.

Looking at the other explanatory variables included in the model results in Table 5.1 show that the disposable income has a positive and significant impact on the reported minimum income, consistent with previous empirical analysis (Pradhan and Ravallion, 2000, Hayo and Seifert, 2003, Herrera et al. 2006, Santini, 2010, Guagnano et al., 2013).

Concerning socio-economic characteristics at the individual and household level, all estimated coefficients have the expected signs according to past literature, and they are fairly stable comparing the two columns.

The effect of age enters non-linearly. It is positive for age, but negative for age squared: the incremental effect of age is lower as people get older.

Female headed households report significantly lower minimum incomes than males, being married increases the requested minimum income for an acceptable standard of living. In fact, according to other works, being divorced or widowed lowers the amount of the subjective minim income necessary declared (Hayo and Seifert, 2003).

When the share of children per household increases by one percentage point, the perception of household on necessary minimum income, ceteris paribus, increases slightly in both regressions. Also family size has a positive significant effect: as the household dimension increases, the reported money needed increases as well.

The impact of the number of individuals that earn income in the household is positive: this may be due to the additional cost that concern working, such as transportation and clothing.

Education has a positive and increasing effect on the variable of interest. The higher the level of education, the higher the answer to the MIQ. According to De Vos and Garner (1991), there can be two kinds of explanation for the differences in the reported minimal incomes among the different education groups. The first concerns the fact that higher educated people generally have invested more in their education, and hence will need higher amounts of income to reach the same level of welfare. The second concerns the reference group effect: higher educated people generally have relatively more friends and associations who have higher educations (and higher incomes) than do people with low levels of education. This may influence their perceived minimum incomes; they will need higher incomes to live up to the standards of their reference group. In fact, education is sometimes seen as an alternative indicator of living conditions (Hayo and Seifert 2003).

Regarding employment status, there is no significant effect except for self-employed and retired household's head. Retired household heads (with respect to employed head, the reference category) report lower minimum income amounts. The same holds for self-employed household heads, but the magnitude is lower in this case. In the literature, a number of papers have found that unemployed individuals have lower self-rated welfare with or without controls for income (Herrera et al. 2016). Furthermore, as shown in the work of Celidoni and Weber (2020),

individuals after retirement need a lower amount of money and this is also accompanied by a drop in consumption, not due by a drop in utility but the money needed may fall because home production of services becomes advantageous, and retirees can use the increased leisure time to purchase goods in a more efficient way.

Owning a property house decreases the self-perception of minimum income necessary. It may be because renters include the rent or other expenses in the amount of money stated. In fact, generally, house is a large expenditure voice to worry about for those who do not have one of property.

There is a strong indication of the importance of location in answering the MIQ. Here the omitted region is Piemonte. All the other regions have negative coefficients with respect to it, except the one for Lombardia, but it is not significant. Region located in the South and the Islands show lower coefficients. Following Ravallion and Lokshin (2002) the geographical effects on the minimum income question may be attributed to perceptions of relative welfare within the local community, in that people in richer areas (other things constant) feel relatively to need a higher necessary minimum income. According to Herrera et al. (2006), also the level of inequalities in the area has a significant impact on subjective poverty. In their analysis, they state that households ask less when they live in areas with greater inequalities, probably due to the nature of the relative contest.

Looking at year dummies, where the baseline year is 2004, the coefficients are negative and significant for all years. The 2008 and 2012 display the larger negative coefficients. This result signals that the reported minimum amount of money needed has a decreasing dynamic, even after accounting for other variables. These two years represent in fact two important crises in the history of Italy (and the whole world): the Financial crisis (2008) and the Sovereign Debt Crisis (2012). As observed by Santarelli (2013) in her paper, the subjective evaluation of poverty is highly dependent on contextual economic circumstances. She found that in Italy the minimum income level to live a decent life is declared constantly decreasing since 2008, the starting year of the economic crisis, because people redefine their needs in case of negative economic circumstances. This because people consider their economic conditions in comparison with those of the others. People compare how fast or slow living conditions are changing relative to others, not only their immediate neighbours, but also other regions and countries (Hayo and Seifert, 2003).

5.2 Further analysis

In this subchapter, I will complement the baseline specification including interactions between the aggregate shock indicators and socio-demographic characteristics to provide suggestive evidence about the possible factors underlying the baseline results.

Following the work of Clark et al. (2016), I construct some interaction terms. I investigate four main categories, following cited work, of specific characteristics that can influence the subjective response: gender, marital status, age, and employment status.

In tables 5.2, 5.3, and 5.4 results are reported. I test after each regression the joint significance of the coefficients of interest.

Dep. Var.: Real money needed (log of)	(1)	(2)	(3)	(4)
	gdp sex	unrate sex	gdp mstatus	unrate mstatus
hit_by_the_crisis_gdp	-0.021***		-0.025***	
	(0.004)		(0.005)	
hit_by_the_crisis_unrate		-0.018***		-0.022***
		(0.006)		(0.007)
hit_by_the_crisis_gdp*sex	-0.007			
	(0.006)			
hit_by_the_crisis_unrate *sex		-0.011*		
		(0.006)		
hit_by_the_crisis_gdp*maritalstatus			0.004	
			(0.006)	
hit_by_the_crisis_unrate *maritalstatus				0.002
				(0.006)
Female (HH head)	-0.008	-0.006	-0.011***	-0.012***
	(0.005)	(0.005)	(0.004)	(0.004)
Married	0.065***	0.065***	0.063***	0.064***
	(0.005)	(0.005)	(0.006)	(0.006)
Year dummies:				
2006	-0.071***	-0.075***	-0.071***	-0.075***
	(0.006)	(0.007)	(0.006)	(0.007)
2008	-0.112***	-0.115***	-0.112***	-0.115***
	(0.006)	(0.008)	(0.006)	(0.008)
2010	-0.064***	-0.072***	-0.064***	-0.073***
	(0.006)	(0.007)	(0.006)	(0.007)
2012	-0.067***	-0.065***	-0.067***	-0.065***
	(0.006)	(0.006)	(0.006)	(0.006)
2014	-0.037***	-0.042***	-0.037***	-0.042***
	(0.006)	(0.006)	(0.006)	(0.006)
2016	-0.043***	-0.056***	-0.043***	-0.056***
	(0.006)	(0.008)	(0.006)	(0.008)
Household income (log of)	0.200***	0.201***	0.200***	0.201***
	(0.007)	(0.007)	(0.007)	(0.007)
Number of children	0.008**	0.008***	0.008**	0.008***
	(0.003)	(0.003)	(0.003)	(0.003)
Age of HH head	0.098***	0.098***	0.098***	0.098***
	(0.009)	(0.009)	(0.009)	(0.009)
Age^2 of HH head	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Number of HH members (log of)	0.201***	0.201***	0.201***	0.201***
	(0.006)	(0.006)	(0.006)	(0.006)

Number earners within HH	0.028***	0.028***	0.028***	0.028***
	(0.003)	(0.003)	(0.003)	(0.003)
Education of the HH head:				
Primary school	0.028***	0.028***	0.028***	0.028***
	(0.009)	(0.009)	(0.009)	(0.009)
Middle school	0.095***	0.095***	0.095***	0.095***
	(0.010)	(0.010)	(0.010)	(0.009)
High school	0.148***	0.148***	0.148***	0.148***
	(0.010)	(0.010)	(0.010)	(0.010)
University school	0.195***	0.195***	0.195***	0.195***
	(0.012)	(0.012)	(0.012)	(0.012)
Higher education	0.233***	0.232***	0.233***	0.232***
	(0.024)	(0.024)	(0.024)	(0.024)
Employment status of HH head:				
Self-employed	-0.022***	-0.022***	-0.022***	-0.022***
	(0.006)	(0.006)	(0.006)	(0.006)
Unemployed	-0.015	-0.015	-0.015	-0.015
	(0.013)	(0.013)	(0.013)	(0.013)
Retired	-0.051***	-0.051***	-0.051***	-0.051***
	(0.006)	(0.006)	(0.006)	(0.006)
Other condition	0.039	0.041	0.039	0.041
	(0.081)	(0.081)	(0.081)	(0.081)
Home owner	-0.038***	-0.038***	-0.038***	-0.038***
	(0.004)	(0.004)	(0.004)	(0.004)
Geographical regions:				
Valle d'Aosta	-0.057**	-0.054**	-0.057**	-0.054**
	(0.023)	(0.023)	(0.023)	(0.023)
Lombardia	0.003	-0.001	0.003	-0.001
	(0.008)	(0.008)	(0.008)	(0.008)
Trentino Alto Adige	-0.132***	-0.132***	-0.132***	-0.132***
	(0.013)	(0.013)	(0.013)	(0.013)
Veneto	-0.101***	-0.094***	-0.101***	-0.094***
	(0.008)	(0.008)	(0.008)	(0.008)
Friuli Venezia Giulia	-0.054***	-0.054***	-0.054***	-0.054***
	(0.012)	(0.012)	(0.012)	(0.012)
Liguria	-0.009	-0.016	-0.009	-0.016
	(0.011)	(0.011)	(0.011)	(0.011)
Emilia Romagna	-0.028***	-0.031***	-0.028***	-0.031***
	(0.008)	(0.008)	(0.008)	(0.008)
Toscana	0.012	0.009	0.012	0.009
	(0.009)	(0.009)	(0.009)	(0.009)
Umbria	-0.036***	-0.039***	-0.036***	-0.039***
	(0.011)	(0.011)	(0.011)	(0.011)
Marche	-0.058***	-0.064***	-0.058***	-0.064***
	(0.010)	(0.010)	(0.010)	(0.010)
Lazio	-0.048***	-0.043***	-0.048***	-0.043***
	(0.009)	(0.009)	(0.009)	(0.009)
Abruzzo	-0.027**	-0.030**	-0.027**	-0.029**
	(0.012)	(0.012)	(0.012)	(0.012)
Molise	-0.041***	-0.035**	-0.041***	-0.035**
	(0.016)	(0.016)	(0.016)	(0.016)
Campania	-0.067***	-0.071***	-0.067***	-0.071***
	(0.008)	(0.008)	(0.008)	(0.008)
Puglia	-0.100***	-0.103***	-0.100***	-0.103***
	(0.009)	(0.009)	(0.009)	(0.009)
Basilicata	-0.102***	-0.103***	-0.102***	-0.103***
	(0.014)	(0.014)	(0.014)	(0.014)
Calabria	-0.102***	-0.096***	-0.102***	-0.096***
	(0.013)	(0.012)	(0.013)	(0.012)
Sicilia	-0.153***	-0.150***	-0.153***	-0.150***
	(0.009)	(0.009)	(0.009)	(0.009)
Sardegna	-0.123***	-0.123***	-0.123***	-0.123***
	(0.010)	(0.010)	(0.010)	(0.010)
Constant	0.404***	0.407***	0.406***	0.409***
	(0.062)	(0.062)	(0.062)	(0.062)

Observations	49,082	49,082	49,082	49,082
R-squared	0.461	0.460	0.461	0.460

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5.2 Regression minimum income question and macroeconomic shocks plus interaction with sex (column 1 and 2) and with marital status (column 3 and 4). OLS estimates.

In Table 5.2 the interaction with sex and marital status respectively are presented. Looking at the first two regressions, the F-test on the economic shock variable and the interaction term gives a value of F=19.64 (p-value=0.0000) and F=8.71 (p-value=0.0002) respectively, so I reject the null hypothesis at 1% significance level.
Female head-households present higher adaptability, so lower answer to the minimum income question in period of crisis.

In the last two colums of Table 5.2, where I analyzed the interaction with the marital status, the values are F=18.93 (p-value=0.0000) and F=7.15 (p-value=0.0008), so I reject the null hypothesis at 1% significance level. Being married and experiencing an economic crisis increase the answer to the minimum income level.

Dep. Var.: Real money needed (log of)	(1)	(2)
	gdp age	unrate age
hit_by_the_crisis_gdp	-0.118***	
	(0.038)	
hit_by_the_crisis_unrate		-0.101***
		(0.038)
hit_by_the_crisis_gdp*age	0.034**	
	(0.014)	
hit_by_the_crisis_gdp*age2	-0.003**	
	(0.001)	
hit_by_the_crisis_unrate *age		0.027*
		(0.014)
hit_by_the_crisis_unrate*age2		-0.002*
		(0.001)
Age of HH head	0.081***	0.084***
	(0.012)	(0.012)
Age^2 of HH head	-0.008***	-0.009***
	(0.001)	(0.001)
Year dummies:		
2006	-0.071***	-0.076***
	(0.006)	(0.007)
2008	-0.112***	-0.115***
	(0.006)	(0.008)
2010	-0.064***	-0.073***
	(0.006)	(0.007)
2012	-0.067***	-0.066***
	(0.006)	(0.006)
2014	-0.038***	-0.042***
	(0.006)	(0.006)
2016	-0.043***	-0.056***
	(0.006)	(0.008)
Household income (log of)	0.200***	0.200***
	(0.007)	(0.007)

Female (HH head)	-0.011***	-0.011***
	(0.004)	(0.004)
Number of children	0.008**	0.008***
	(0.003)	(0.003)
Married	0.065***	0.065***
	(0.005)	(0.005)
Number of HH members (log of)	0.201***	0.201***
	(0.006)	(0.006)
Number of earners within HH	0.028***	0.029***
	(0.003)	(0.003)
Education of HH head:		
Primary school	0.028***	0.028***
	(0.009)	(0.009)
Middle school	0.095***	0.095***
	(0.010)	(0.009)
High school	0.148***	0.148***
	(0.010)	(0.010)
University	0.195***	0.195***
	(0.012)	(0.012)
Higher education	0.233***	0.232***
	(0.024)	(0.024)
Employment status of HH head:		
Self-employed	-0.022***	-0.022***
	(0.006)	(0.006)
Unemployed	-0.015	-0.015
	(0.013)	(0.013)
Retired	-0.051***	-0.051***
	(0.006)	(0.006)
Other condition	0.039	0.041
	(0.081)	(0.081)
Home owner	-0.038***	-0.038***
	(0.004)	(0.004)
Geographical regions:		
Valle d'Aosta	-0.058**	-0.054**
	(0.023)	(0.023)
Lombardia	0.003	-0.001
	(0.008)	(0.008)
Trentino Alto Adige	-0.132***	-0.132***
	(0.013)	(0.013)
Veneto	-0.101***	-0.094***
	(0.008)	(0.008)
Friuli Venezia Giulia	-0.055***	-0.054***
	(0.012)	(0.012)
Liguria	-0.009	-0.016
	(0.011)	(0.011)
Emilia Romagna	-0.028***	-0.031***
	(0.008)	(0.008)
Toscana	0.012	0.009
	(0.009)	(0.009)
Umbria	-0.036***	-0.039***
	(0.011)	(0.011)
Marche	-0.058***	-0.064***
	(0.010)	(0.010)
Lazio	-0.049***	-0.043***
	(0.009)	(0.009)
Abruzzo	-0.027**	-0.029**
	(0.012)	(0.012)
Molise	-0.041**	-0.035**
	(0.016)	(0.016)
Campania	-0.067***	-0.071***
	(0.008)	(0.008)
Puglia	-0.100***	-0.103***
	(0.009)	(0.009)
Basilicata	-0.102***	-0.103***
	(0.014)	(0.014)
Calabria	-0.102***	-0.096***

	(0.013)	(0.012)
Sicilia	-0.153***	-0.150***
	(0.009)	(0.009)
Sardegna	-0.123***	-0.123***
	(0.010)	(0.010)
Constant	0.454***	0.449***
	(0.065)	(0.065)
Observations	49,082	49,082
R-squared	0.461	0.460

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5.3 Regression minimum income question and macroeconomic shocks plus interaction with age. OLS estimates.

In Table 5.3 the results of the interaction with the variable age and age squared are presented. Computing the F-test, the values are F=14.41 (p-value=0.0000) and F=6.62 (p-value=0.0002) respectively, then I do not reject the null hypothesis at 1% significance level. This effect on age reflects the fact that the young have a higher threshold as regards the minimum income amount necessary, and the effect diminishes getting older. So, the older in period of crisis show a higher level of adaptation with respect to the young.

In Table 5.4 the results for the interaction with the variables indicating the employment status are presented. The joint significance test has values F=7.69 (p-value=0.0000) and F=3.85 (p-value=0.0017) respectively, then I do not reject the null hypothesis at the 1% significance level.

Dep. Var.: Real money needed (log of)	(1)	(2)
	gdp unemployed	unrate unemployed
hit_by_the_crisis_gdp	-0.024***	
	(0.005)	
hit_by_the_crisis_unrate		-0.020***
		(0.006)
hit_by_the_crisis_gdp*selfemployed	0.003	
	(0.010)	
hit_by_the_crisis_gdp*unemployed	0.004	
	(0.025)	
hit_by_the_crisis_gdp*retired	0.003	
	(0.006)	
hit_by_the_crisis_gdp*othercondition	-0.081	
	(0.158)	
hit_by_the_crisis_unrate*selfemployed		-0.007
		(0.010)
hit_by_the_crisis_unrate*unemployed		-0.053**
		(0.025)
hit_by_the_crisis_unrate*retired		0.001
		(0.006)
hit_by_the_crisis_unrate*othercondition		-0.093
		(0.158)
Employment status of HH head:		
Self-employed	-0.023***	-0.018**
	(0.008)	(0.008)
Unemployed	-0.017	0.012

	(0.019)	(0.019)
Retired	-0.053***	-0.052***
	(0.006)	(0.006)
Other condition	0.078	0.086
	(0.133)	(0.134)
Year dummies:		
2006	-0.071***	-0.075***
	(0.006)	(0.007)
2008	-0.112***	-0.114***
	(0.006)	(0.008)
2010	-0.064***	-0.072***
	(0.006)	(0.007)
2012	-0.067***	-0.065***
	(0.006)	(0.006)
2014	-0.037***	-0.041***
	(0.006)	(0.006)
2016	-0.043***	-0.056***
	(0.006)	(0.008)
Household income (log of)	0.200***	0.201***
	(0.007)	(0.007)
Female (HH head)	-0.011***	-0.012***
	(0.004)	(0.004)
Number of children	0.008**	0.008***
	(0.003)	(0.003)
Age of HH head	0.098***	0.098***
	(0.009)	(0.009)
Age^2 of HH head	-0.010***	-0.010***
	(0.001)	(0.001)
Married	0.065***	0.065***
	(0.005)	(0.005)
Number of HH members (log of)	0.201***	0.201***
	(0.006)	(0.006)
Number of earners within HH	0.028***	0.028***
	(0.003)	(0.003)
Education of HH head:		
Primary school	0.028***	0.028***
	(0.009)	(0.009)
Middle school	0.095***	0.095***
	(0.010)	(0.010)
High school	0.148***	0.148***
	(0.010)	(0.010)
University	0.195***	0.195***
	(0.012)	(0.012)
Higher education	0.233***	0.232***
	(0.024)	(0.024)
Home owner	-0.038***	-0.038***
	(0.004)	(0.004)
Geographical regions:		
Valle d'Aosta	-0.057**	-0.054**
	(0.023)	(0.023)
Lombardia	0.003	-0.001
	(0.008)	(0.008)
Trentino Alto Adige	-0.132***	-0.132***
	(0.013)	(0.013)
Veneto	-0.101***	-0.094***
	(0.008)	(0.008)
Friuli Venezia Giulia	-0.054***	-0.054***
	(0.012)	(0.012)
Liguria	-0.009	-0.016
	(0.011)	(0.011)
Emilia Romagna	-0.028***	-0.031***
	(0.008)	(0.008)
Toscana	0.012	0.009
	(0.009)	(0.009)
Umbria	-0.036***	-0.039***
	(0.011)	(0.011)

Marche	-0.058***	-0.064***
	(0.010)	(0.010)
Lazio	-0.048***	-0.043***
	(0.009)	(0.009)
Abruzzo	-0.027**	-0.029**
	(0.012)	(0.012)
Molise	-0.041***	-0.035**
	(0.016)	(0.016)
Campania	-0.067***	-0.071***
	(0.008)	(0.008)
Puglia	-0.100***	-0.104***
	(0.009)	(0.009)
Basilicata	-0.102***	-0.103***
	(0.014)	(0.014)
Calabria	-0.102***	-0.096***
	(0.013)	(0.012)
Sicilia	-0.153***	-0.150***
	(0.009)	(0.009)
Sardegna	-0.123***	-0.123***
	(0.010)	(0.010)
Constant	0.406***	0.407***
	(0.062)	(0.062)
Observations	49,082	49,082
R-squared	0.461	0.460

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5.4 Regression minimum income question and macroeconomic shocks plus interaction with job status. OLS estimates.

The coefficient of the interaction between the macroeconomic shocks measured with the unemployment rate and the unemployed status has a negative effect. When an individual is unemployed and experiences an economic recession, she/he revises downwards the answer to the MIQ.

In the subjective poverty literature, unemployment status is one of the primary conditions that lead the perception of the household to feel poor, both in monetary but also nonpecuniary point of view (Herrera et al. 2006, Clark et al. 2016, Ravallion and Lokshin, 2000). Although unemployed individuals show higher adaptation in a period of crisis, this may not reflect how they actually feel.

I performed additional robustness checks[6] to understand the stability of the results described so far. I used different smoothing parameters for the Hodrick Prescott filter, following Angelini et Mierau (2014). I applied to the GDP the smoothing parameter of 100 and then 500, and to the unemployment rate the smoothing parameter of 6.25 and 500. All of these robustness checks confirm the results reported in Table 5.1.

[6] See Appendix B

Chapter 6

Conclusions

The purpose of this thesis was to analyze the association between subjective poverty and macroeconomic shocks. I analyzed the SHIW (Survey on Households Income and Wealth) dataset provided by the Bank of Italy and the ISTAT dataset for the macro data in the period 2004-2016.

Answers to the minimum income question, which are typically used in the subjective poverty analysis, are negatively associated to regional macroeconomic shocks, identified through the Hodrick Prescott filter. In periods characterised by negative aggregate economic shocks, individuals revise downwards the minimum amount of money needed they consider necessary to make ends meet, when controlling for standard socio-demographic characteristics.

This can be due to psychological processes that may take place in situation of hardship or crisis. In negative and untrusted climate contexts, people revise their needs adapting to the situation and lowering their level of lifestyle.

Regarding geographic heterogeneity, results show a lower level of the money needed reported to the MIQ, particularly in the South. Year dummies show lower coefficients in the years 2008 and 2012, particularly fragile periods for the Italian economy.

Other relevant characteristics are the level of education, where the more educated declares also higher levels of minimum income needed, and family composition, where the larger family or household where there are more individual that earn incomes require higher amount answering to the MIQ.

Further analyses explore the interaction between experiencing negative economic shocks and specific household characteristics or social-economic status. Specifically, the variables considered are gender, marital status, age, and employment status. Female, elderly, and unemployed individuals, from my results seem to have a higher propensity to revise downwards their answer to the MIQ during economic crisis.

This analysis should be considered as an initial investigation about how subjective evaluations about the money needed to live comfortably but not in luxury change depending on the macroeconomic context.

In this thesis, data are considered as pooled cross-sections. An interesting development of this thesis using SHIW data could be exploiting the longitudinal dimension of the dataset. This would help controlling for unobserved time-invariant individual characteristics in subjective assessments.

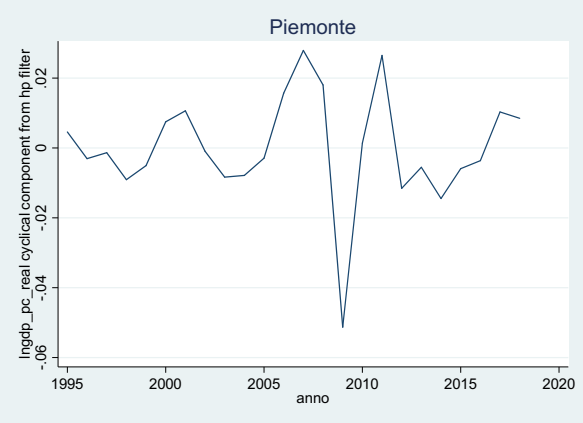
Furthermore, and more generally, it would be interesting to look at intra-household subjective evaluation heterogeneity[7] or to study the effects and influences of the actual periods that we are living, the pandemic crisis due to Covid-19, on subjective assessments.

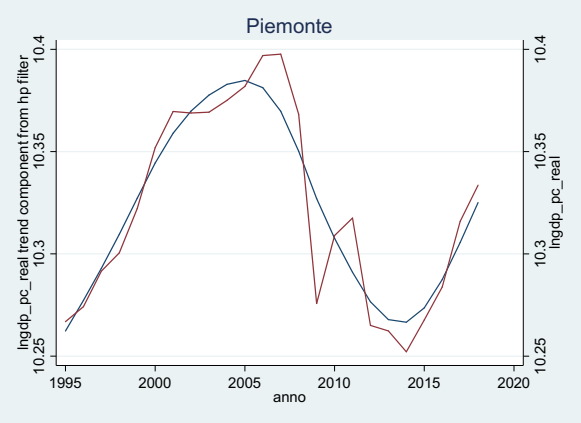
[7] Posel and Rogan, 2014.

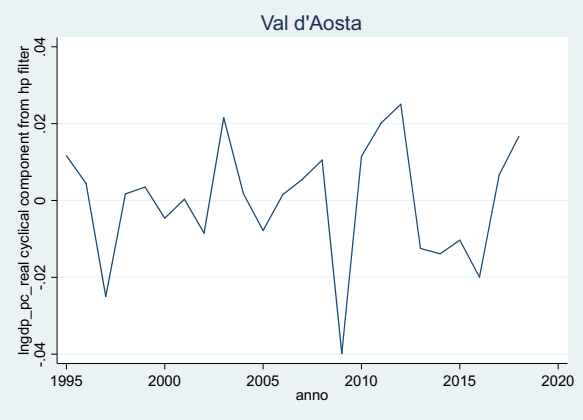
Appendix A

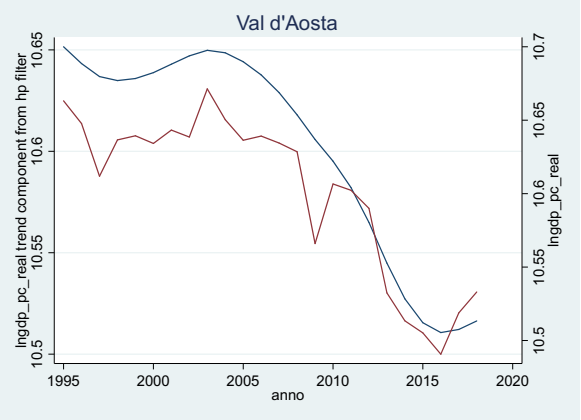
Application of the HP filter

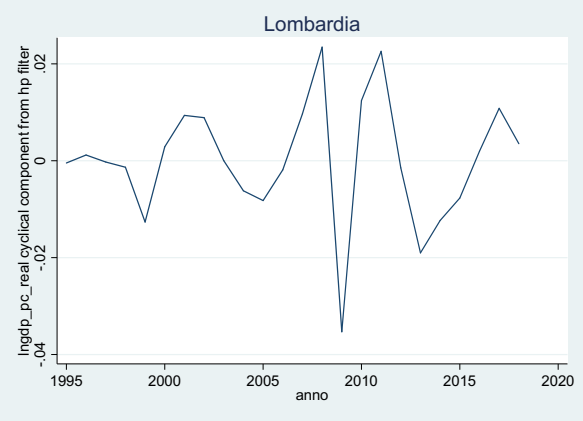
Applying Hodrick-Prescott filter on GDP, smooth parameter 6.25:

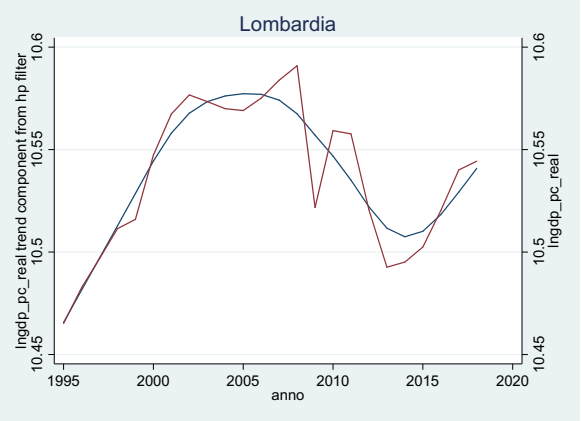


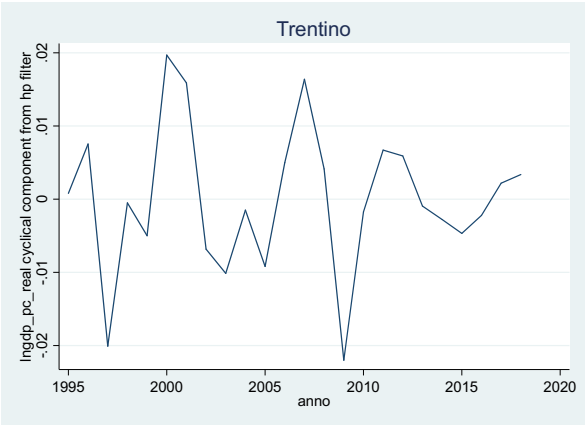


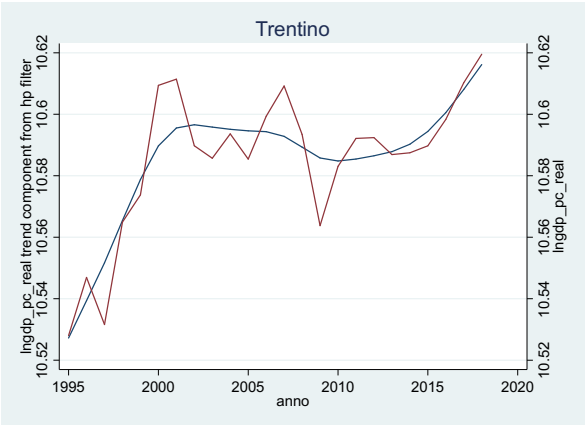


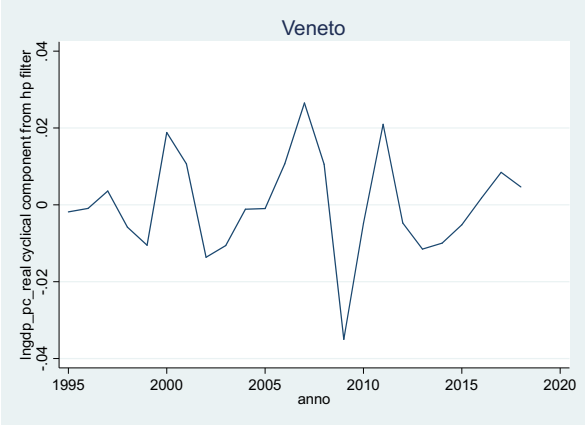


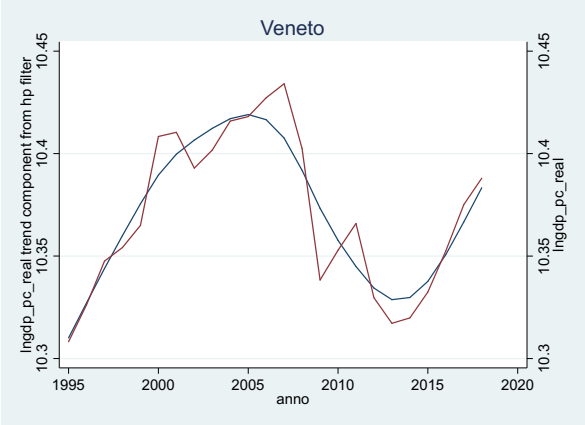


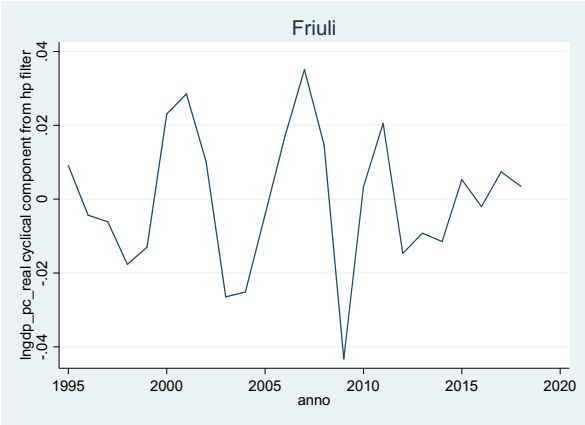


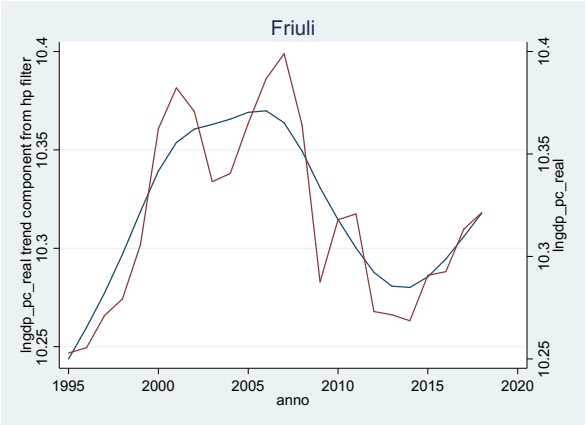

Trentino
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
1995
2000
2005
2010
2015
2020
anno

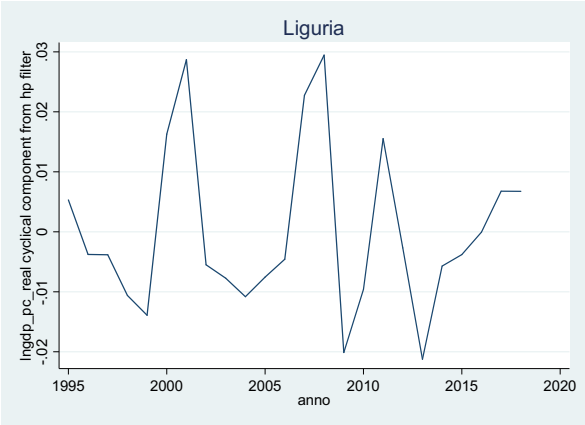

Trentino
lngdp_pc_real trend component from hp filter
10.52
10.54
10.56
10.58
10.6
10.62
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

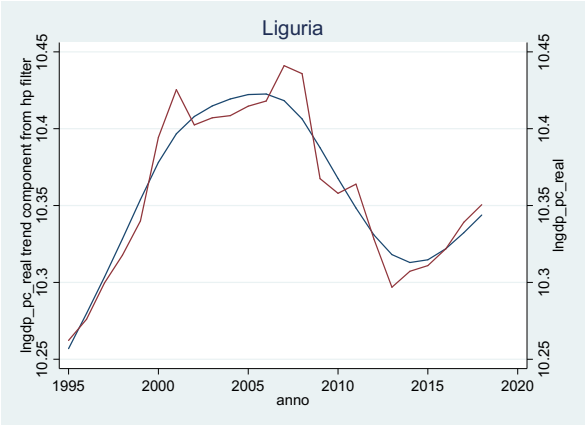

Veneto
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

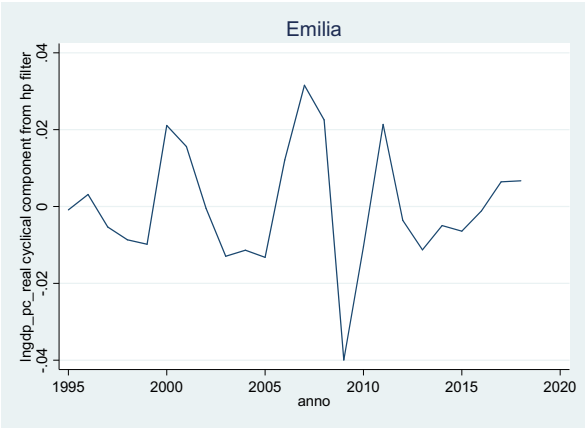

Veneto
lngdp_pc_real trend component from hp filter
10.3
10.35
10.4
10.45
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

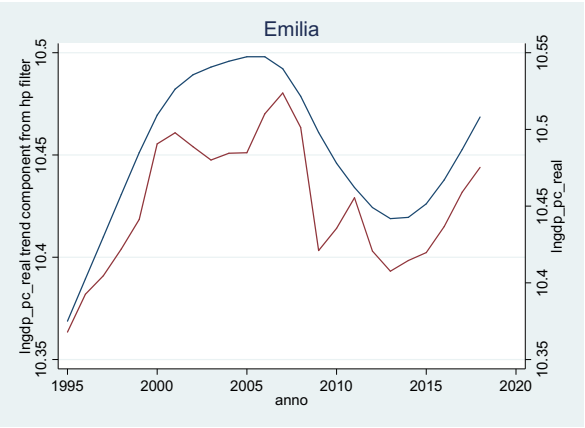

Friuli
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

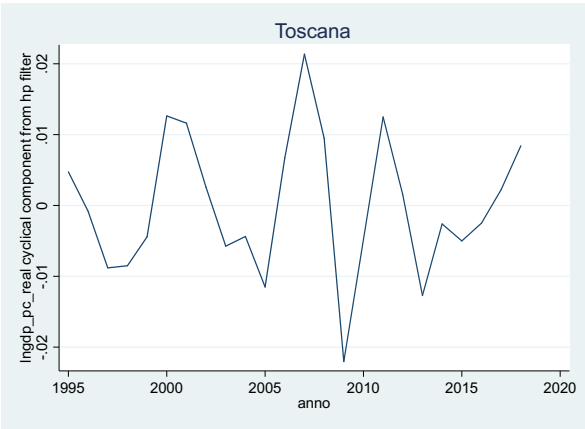

Friuli
lngdp_pc_real trend component from hp filter
10.25
10.3
10.35
10.4
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

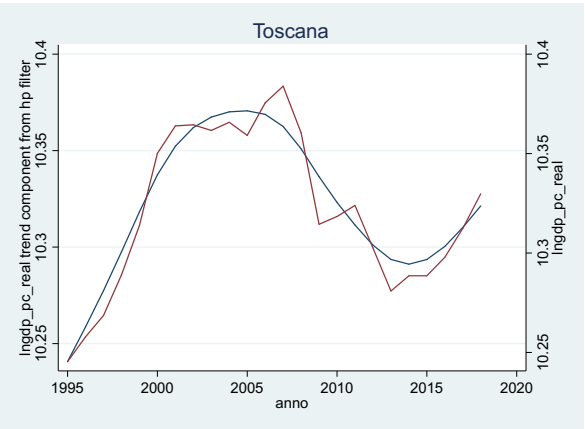

Liguria
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
.03
1995
2000
2005
2010
2015
2020
anno

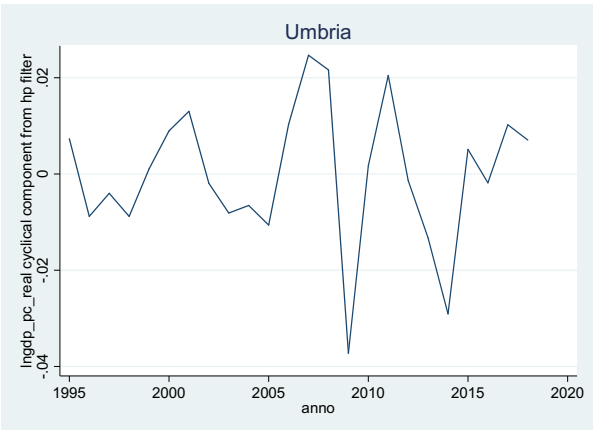

Liguria
lngdp_pc_real trend component from hp filter
10.25
10.3
10.35
10.4
10.45
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

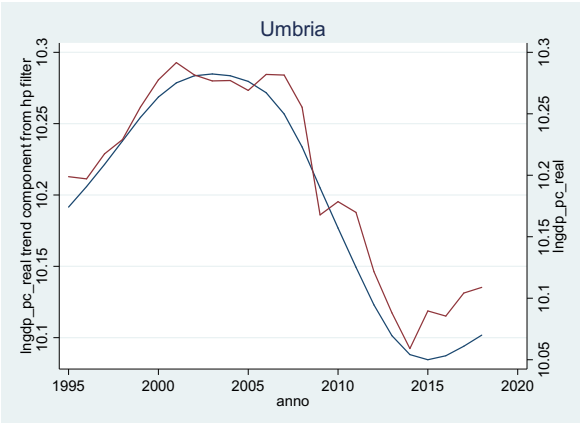

Emilia
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

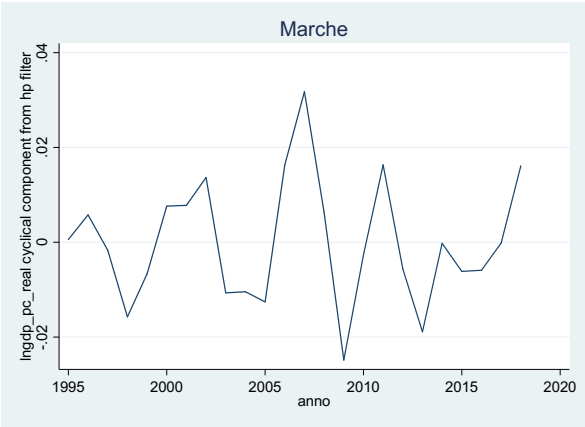

Emilia
lngdp_pc_real trend component from hp filter
10.35
10.4
10.45
10.5
lngdp_pc_real
10.35
10.4
10.45
10.5
10.55
1995
2000
2005
2010
2015
2020
anno

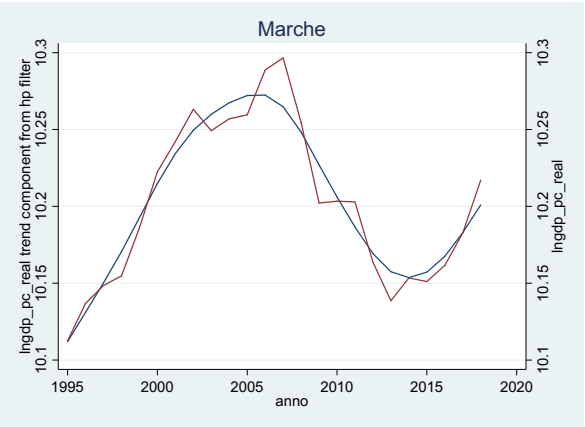

Toscana
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
1995
2000
2005
2010
2015
2020
anno

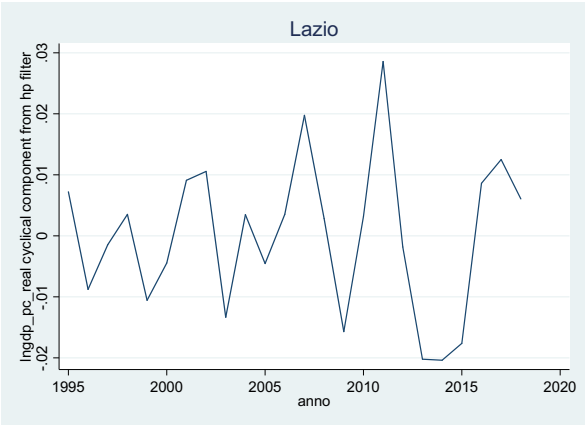

Toscana
lngdp_pc_real trend component from hp filter
10.25
10.3
10.35
10.4
lngdp_pc_real
10.25
10.3
10.35
10.4
1995
2000
2005
2010
2015
2020
anno

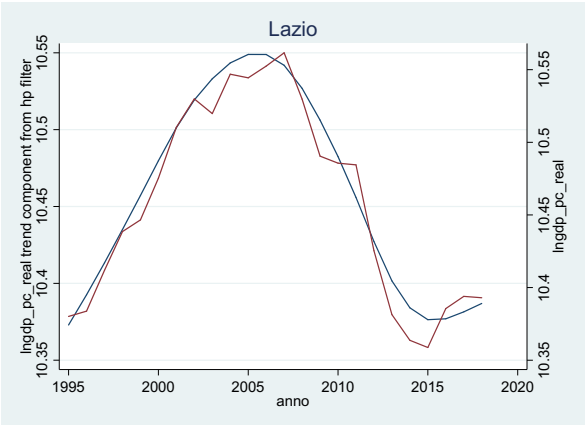

Umbria
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
1995
2000
2005
2010
2015
2020
anno

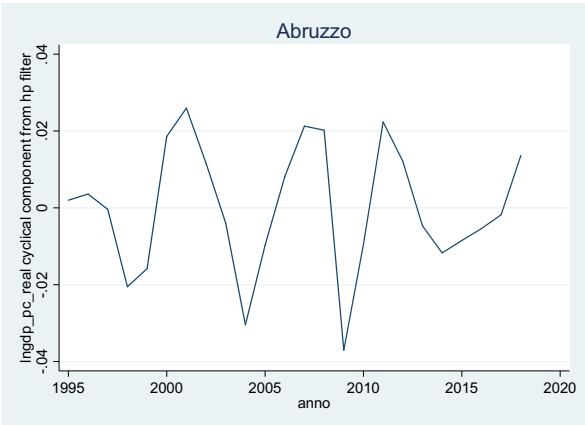

Umbria
lngdp_pc_real trend component from hp filter
10.1
10.15
10.2
10.25
10.3
lngdp_pc_real
10.05
10.1
10.15
10.2
10.25
10.3
1995
2000
2005
2010
2015
2020
anno

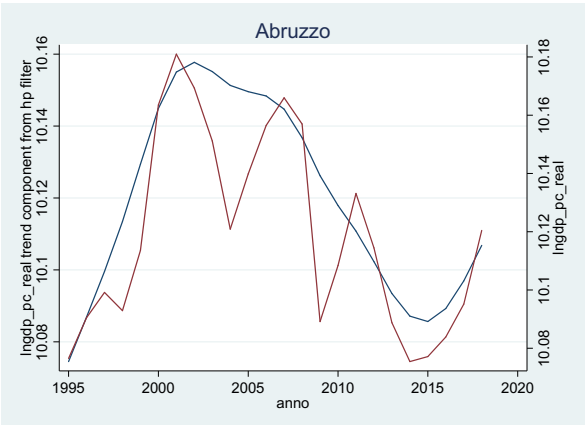

Marche
lngdp_pc_real cyclical component from hp filter
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

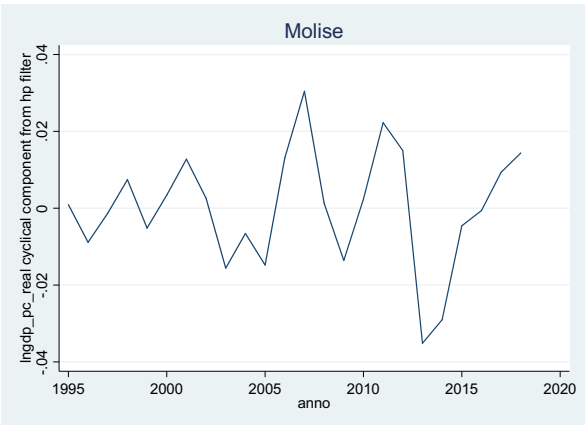

Marche
lngdp_pc_real trend component from hp filter
10.1
10.15
10.2
10.25
10.3
lngdp_pc_real
10.1
10.15
10.2
10.25
10.3
1995
2000
2005
2010
2015
2020
anno

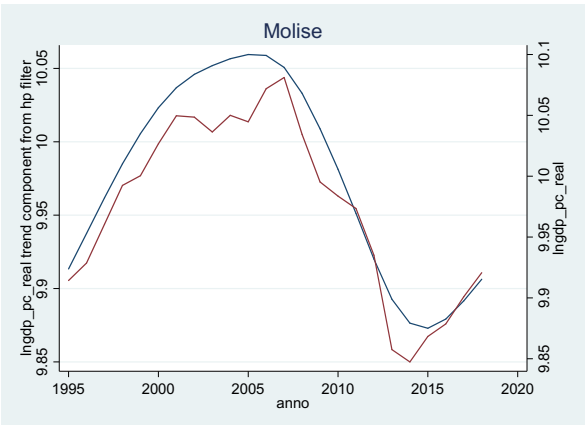

Lazio
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
.03
1995
2000
2005
2010
2015
2020
anno

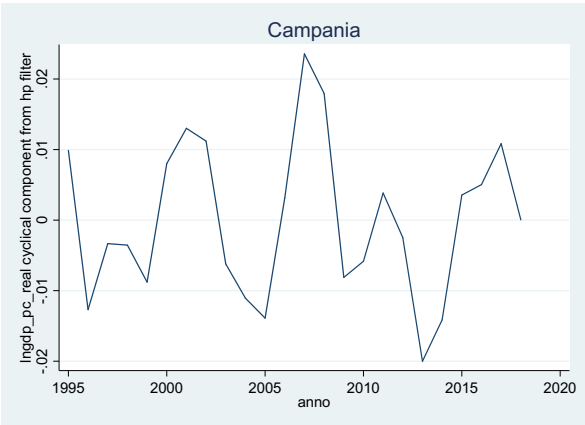

Lazio
lngdp_pc_real trend component from hp filter
10.35
10.4
10.45
10.5
10.55
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

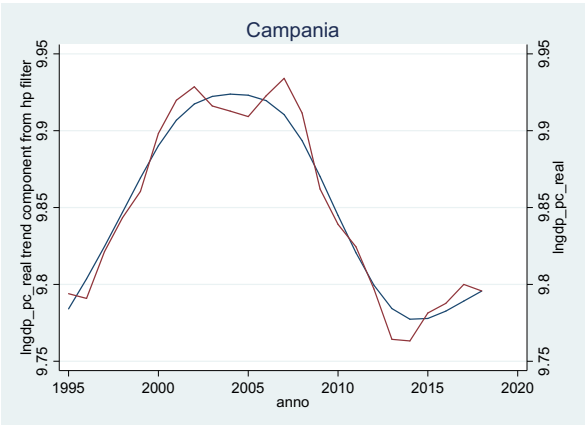

Abruzzo
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

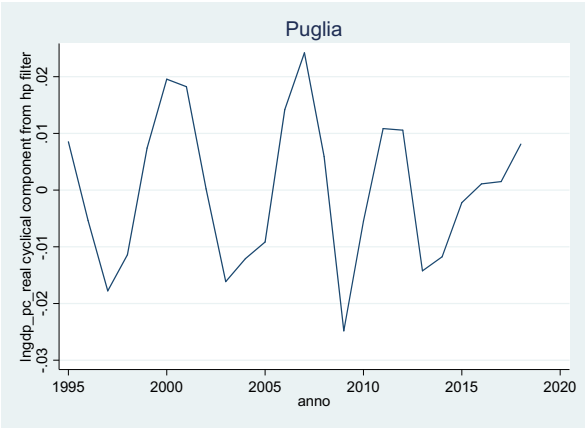

Abruzzo
lngdp_pc_real trend component from hp filter
10.08
10.1
10.12
10.14
10.16
10.18
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

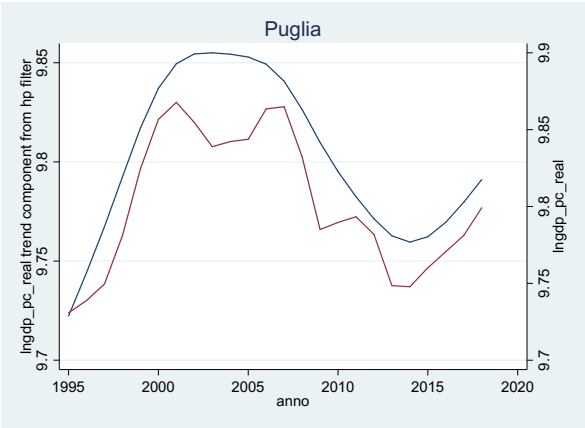

Molise
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

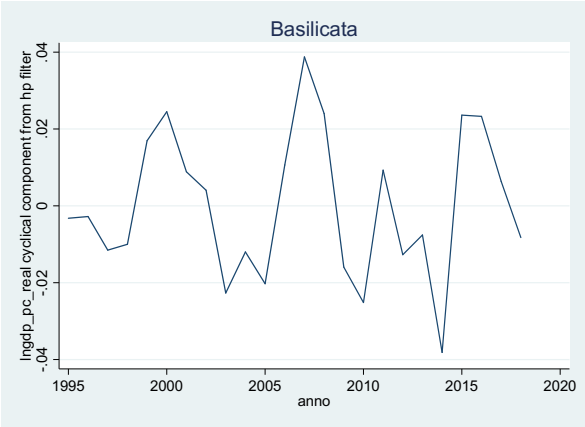

Molise
lngdp_pc_real trend component from hp filter
9.85
9.9
9.95
10
10.05
10.1
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

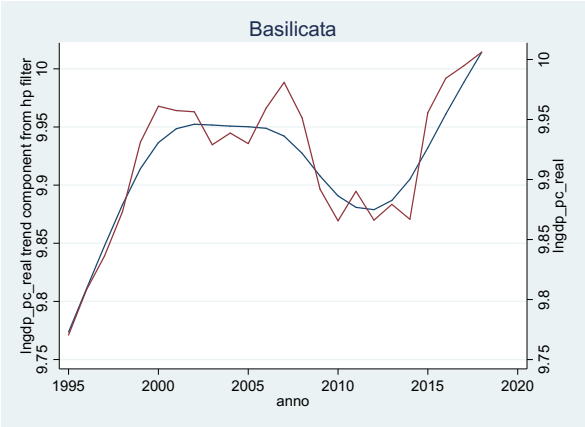

Campania
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
1995
2000
2005
2010
2015
2020
anno

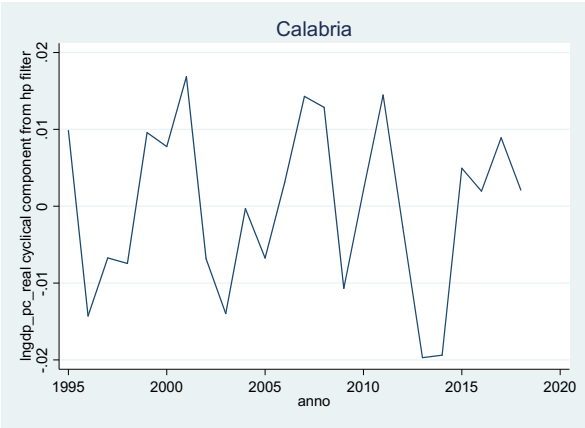

Campania
lngdp_pc_real trend component from hp filter
9.75
9.8
9.85
9.9
9.95
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

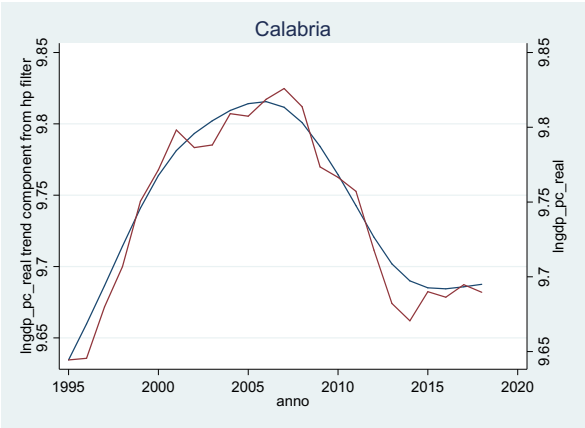

Puglia
lngdp_pc_real cyclical component from hp filter
-.03
-.02
-.01
0
.01
.02
1995
2000
2005
2010
2015
2020
anno

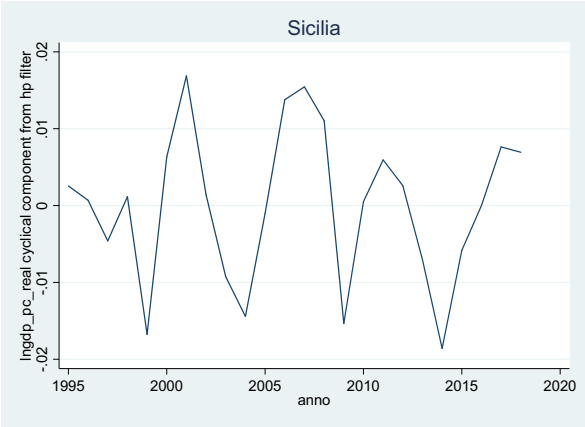

Puglia
lngdp_pc_ real trend component from hp filter
9.7
9.75
9.8
9.85
9.9
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

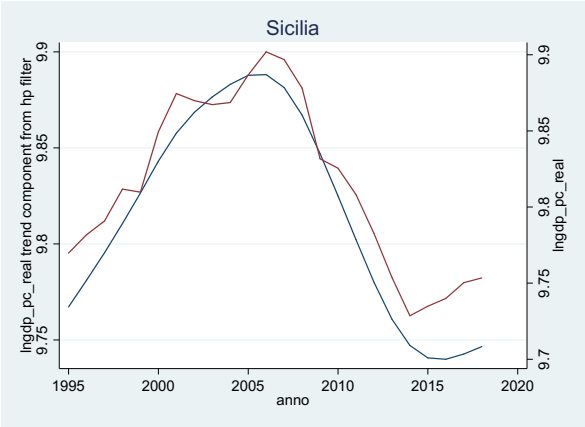

Basilicata
lngdp_pc_real cyclical component from hp filter
-.04
-.02
0
.02
.04
1995
2000
2005
2010
2015
2020
anno

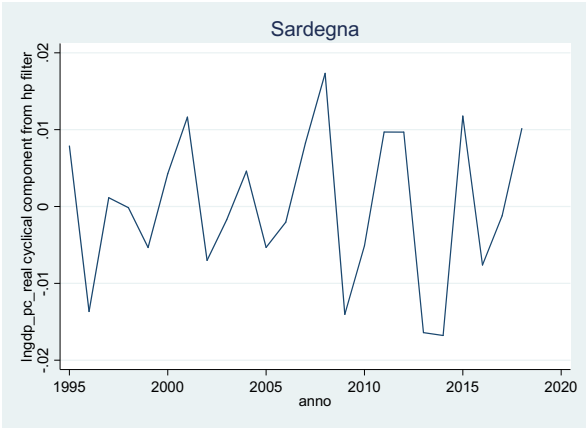

Basilicata
lngdp_pc_real trend component from hp filter
9.75
9.8
9.85
9.9
9.95
10
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

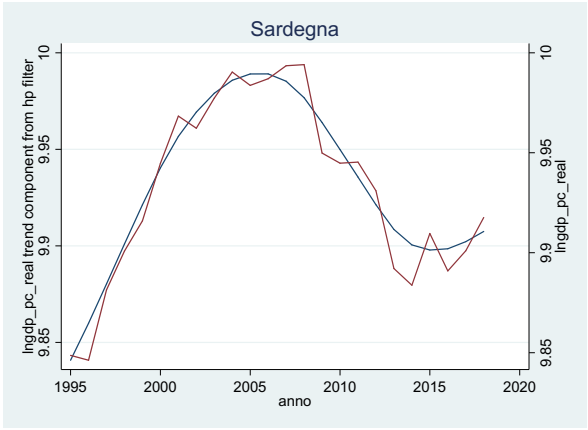

Calabria
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
1995
2000
2005
2010
2015
2020
anno


Calabria
lngdp_pc_real trend component from hp filter
9.65
9.7
9.75
9.8
9.85
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

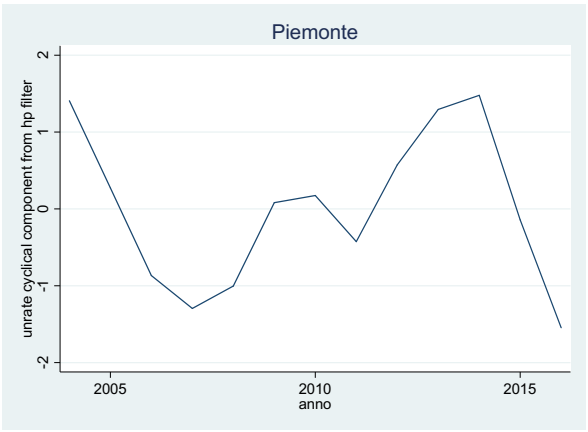

Sicilia
lngdp_pc_real cyclical component from hp filter
-.02
-.01
0
.01
.02
1995
2000
2005
2010
2015
2020
anno

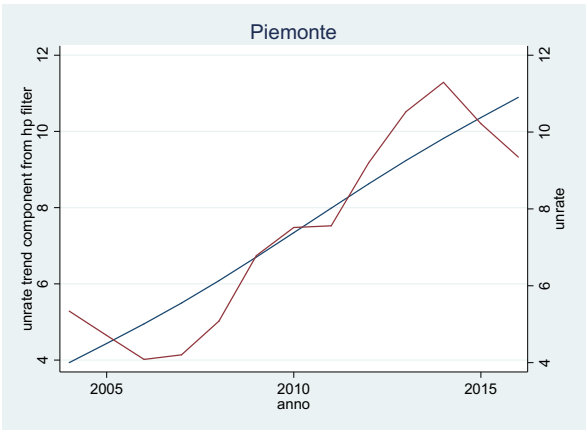

Sicilia
lngdp_pc_real trend component from hp filter
9.75
9.8
9.85
9.9
lngdp_pc_real
1995
2000
2005
2010
2015
2020
anno

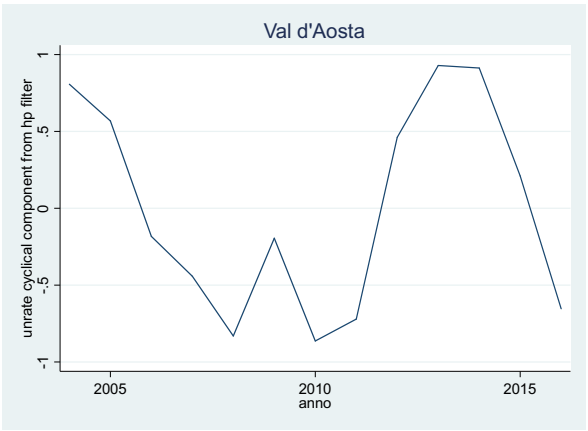


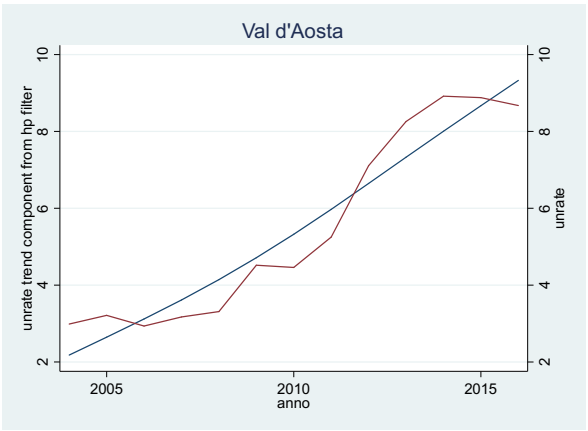


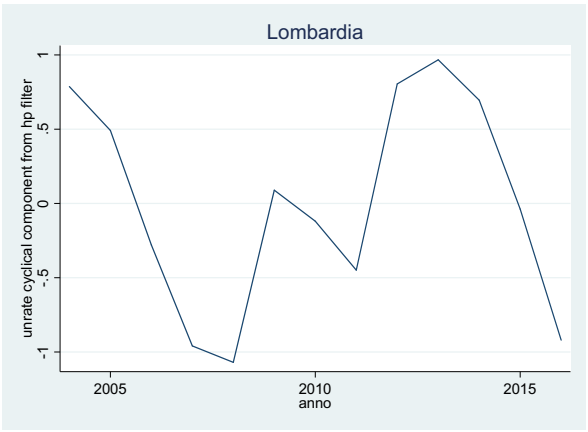
Applying Hodrick-Prescott filter on unemployment rate, smooth parameter 100:

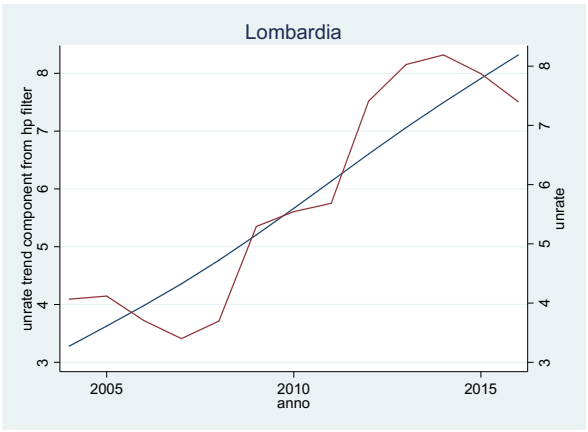


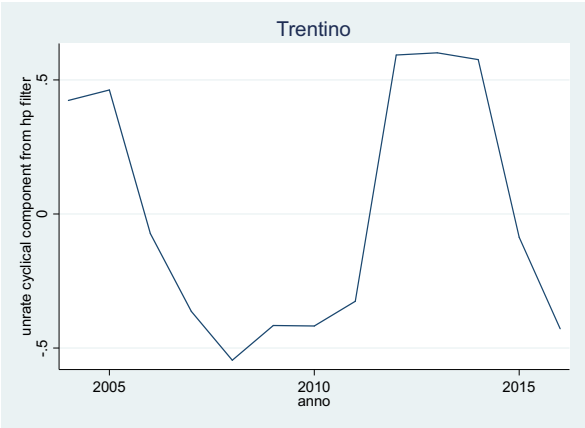


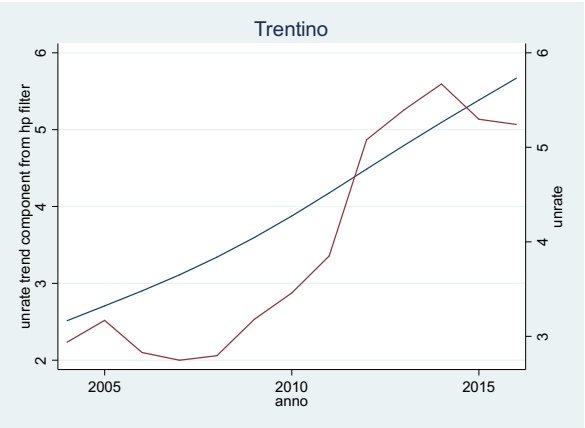


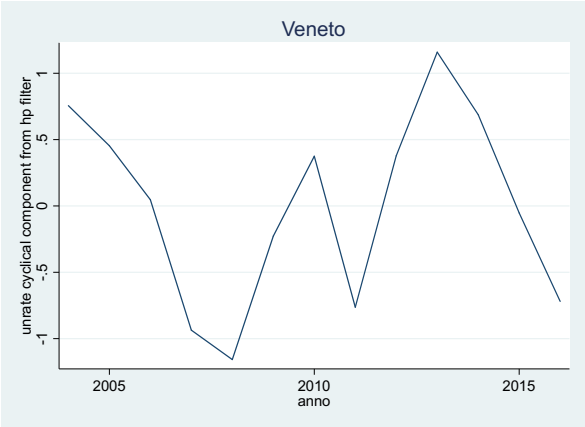


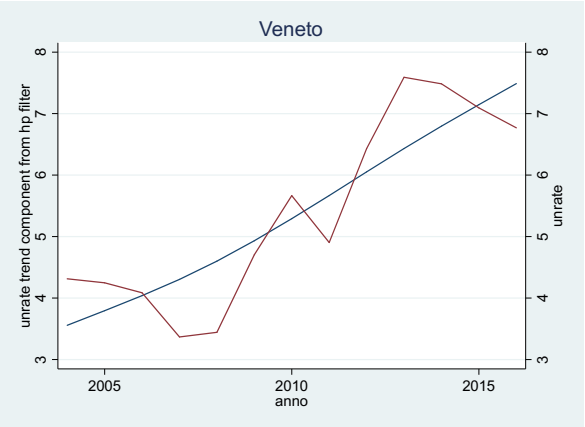


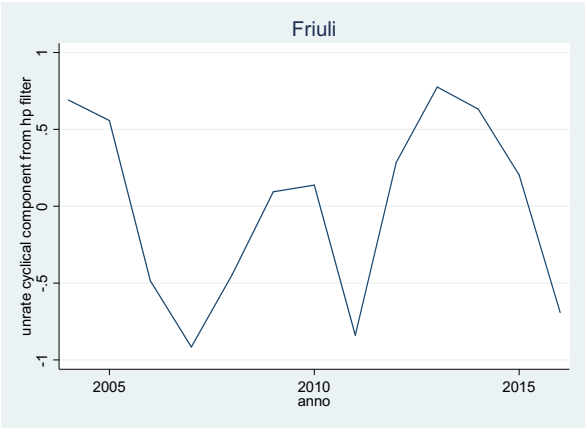


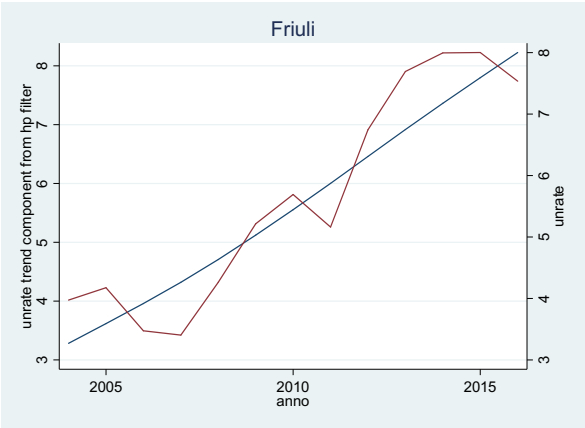

Trentino
unrate cyclical component from hp filter
-.5
0
.5
2005
2010
2015
anno

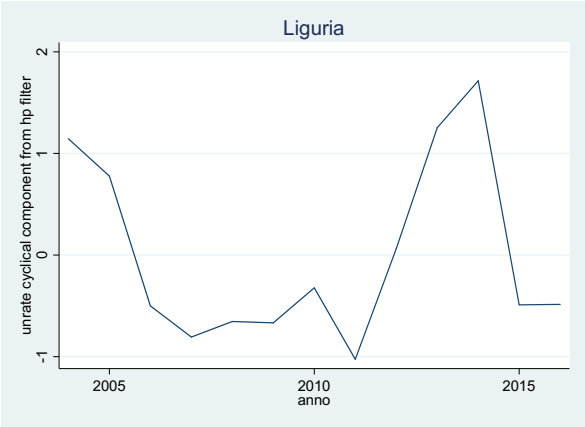

Trentino
unrate trend component from hp filter
2
3
4
5
6
unrate
2005
2010
2015
anno

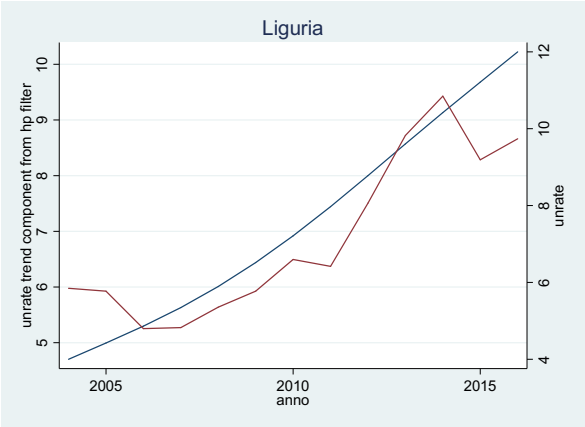

Veneto
unrate cyclical component from hp filter
-1
-.5
0
.5
1
2005
2010
2015
anno

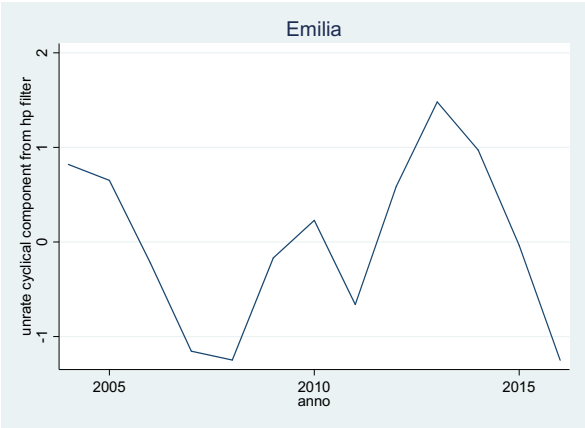

Veneto
unrate trend component from hp filter
3
4
5
6
7
8
unrate
2005
2010
2015
anno

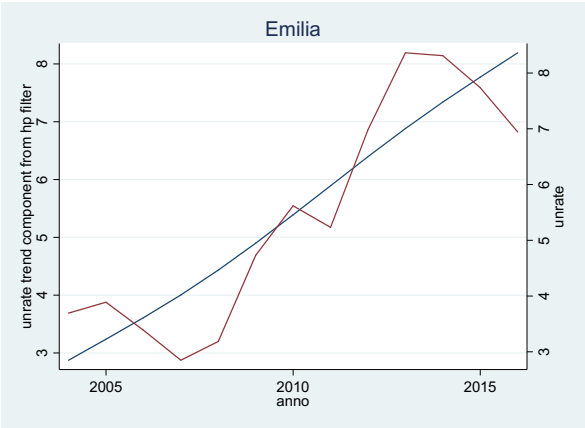

Friuli
unrate cyclical component from hp filter
-1
-.5
0
.5
1
2005
2010
2015
anno

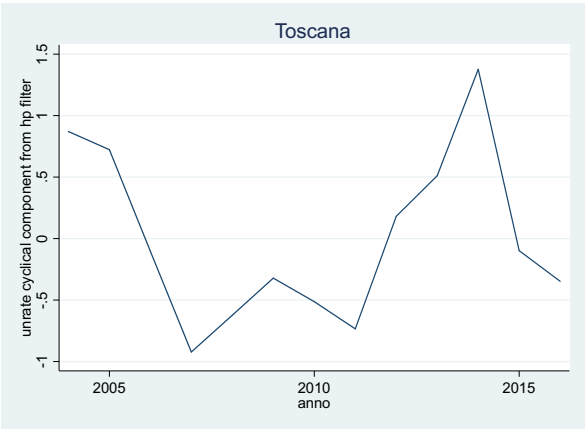

Friuli
unrate trend component from hp filter
3
4
5
6
7
8
unrate
2005
2010
2015
anno

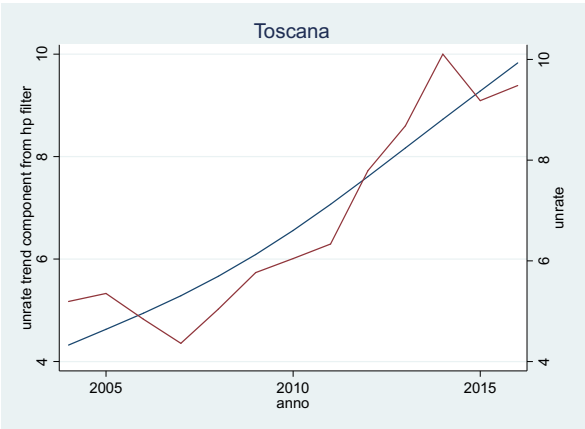

Liguria
unrate cyclical component from hp filter
-1
0
1
2
2005
2010
2015
anno

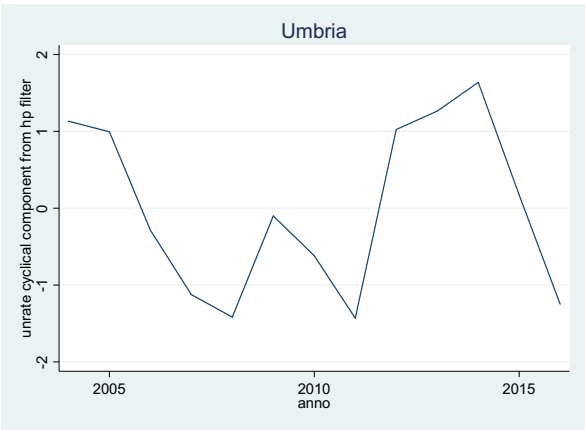

Liguria
unrate trend component from hp filter
4
5
6
7
8
9
10
12
unrate
2005
2010
2015
anno

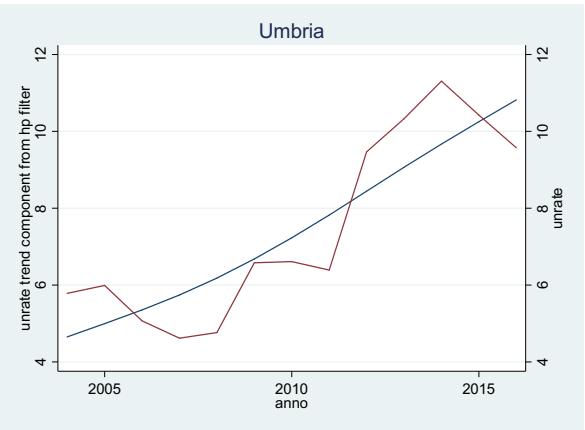

Emilia
unrate cyclical component from hp filter
-1
0
1
2
2005
2010
2015
anno

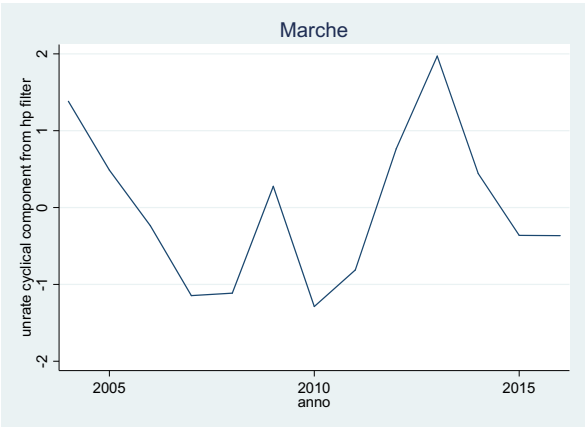

Emilia
unrate trend component from hp filter
3
4
5
6
7
8
unrate
2005
2010
2015
anno

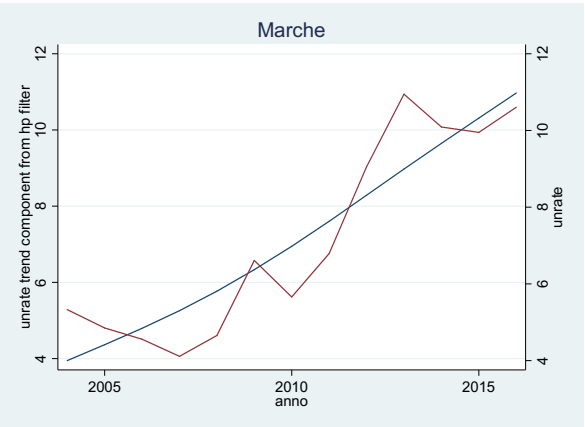

Toscana
unrate cyclical component from hp filter
-1
-.5
0
.5
1
1.5
2005
2010
2015
anno

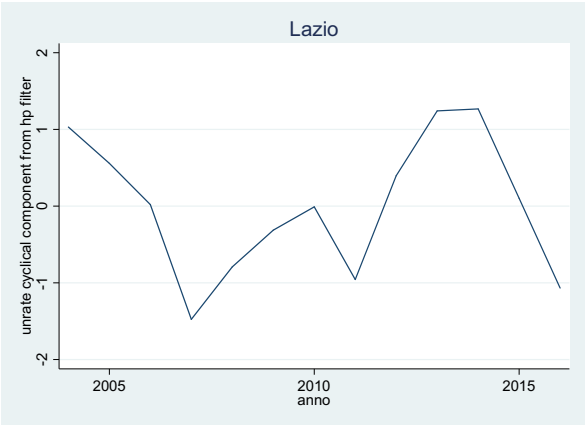

Toscana
unrate trend component from hp filter
4
6
8
10
unrate
2005
2010
2015
anno

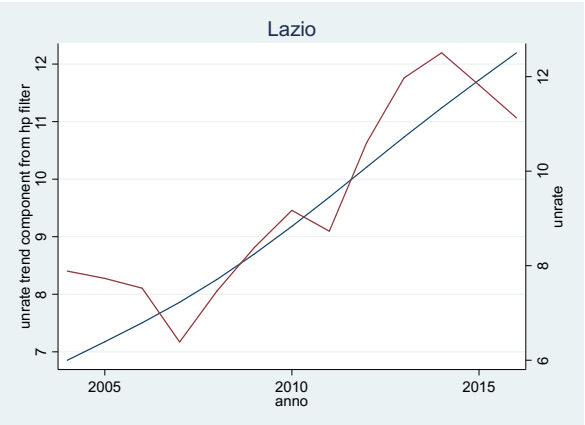

Umbria
unrate cyclical component from hp filter
-2
-1
0
1
2
2005
2010
2015
anno

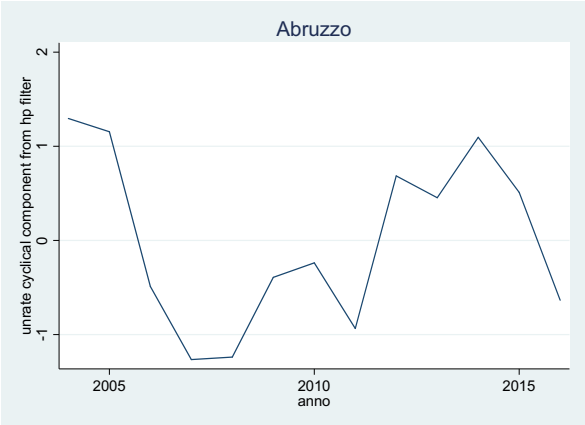

Umbria
unrate trend component from hp filter
4
6
8
10
12
unrate
2005
2010
2015
anno

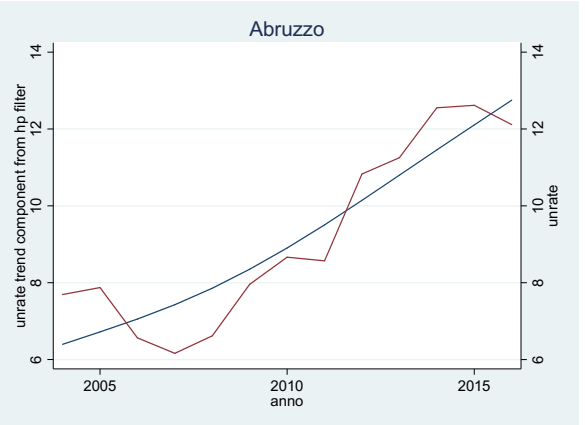

Marche
unrate cyclical component from hp filter
-2
-1
0
1
2
2005
2010
2015
anno

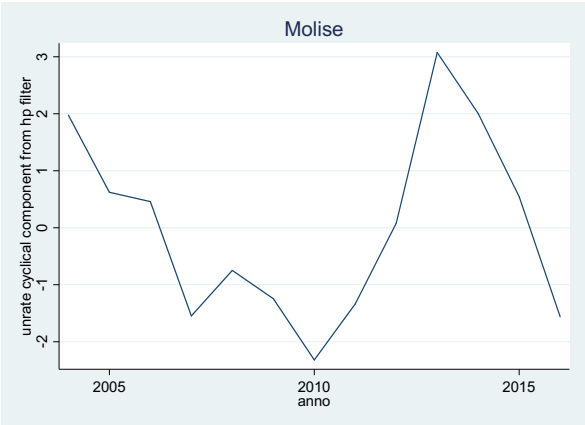

Marche
unrate trend component from hp filter
4
6
8
10
12
unrate
2005
2010
2015
anno

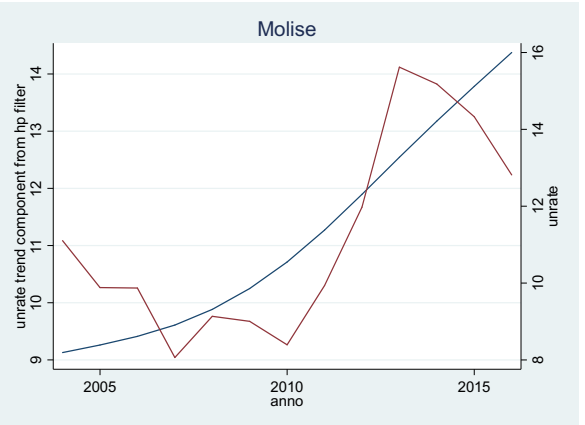

Lazio
unrate cyclical component from hp filter
-2
-1
0
1
2
2005
2010
2015
anno

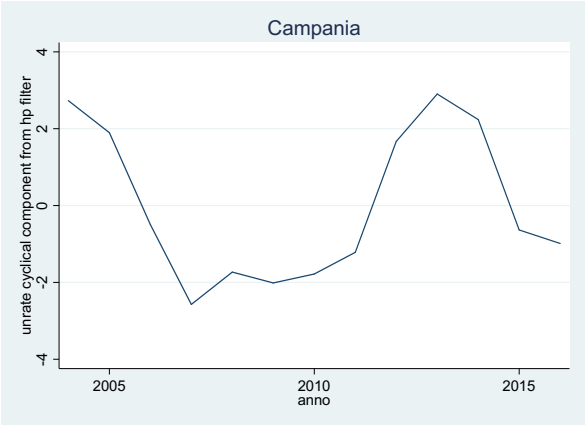

Lazio
unrate trend component from hp filter
7
8
9
10
11
12
unrate
6
8
10
12
2005
2010
2015
anno

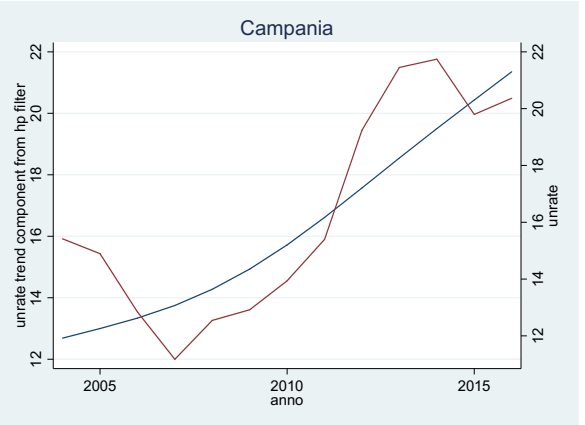

Abruzzo
unrate cyclical component from hp filter
-1
0
1
2
2005
2010
2015
anno

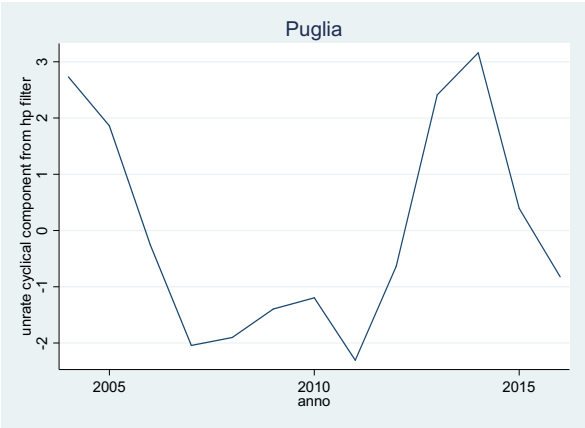

Abruzzo
unrate trend component from hp filter
6
8
10
12
14
unrate
6
8
10
12
14
2005
2010
2015
anno

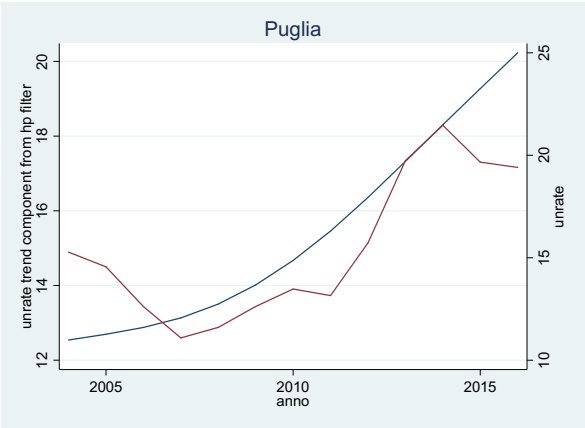

Molise
unrate cyclical component from hp filter
-2
-1
0
1
2
3
2005
2010
2015
anno

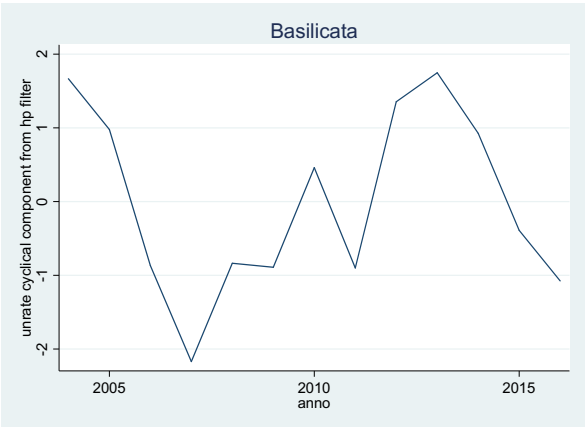

Molise
unrate trend component from hp filter
9
10
11
12
13
14
unrate
8
10
12
14
16
2005
2010
2015
anno

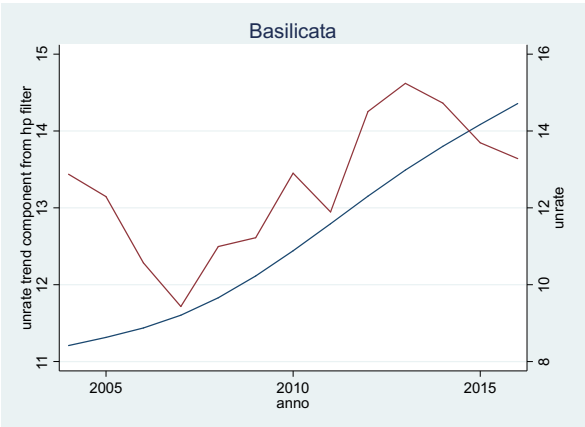

Campania
unrate cyclical component from hp filter
-4
-2
0
2
4
2005
2010
2015
anno

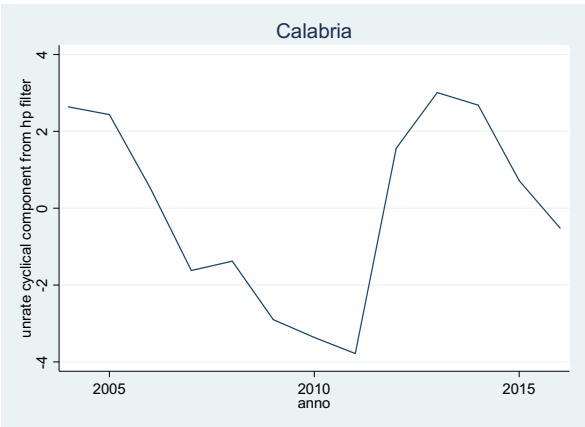

Campania
unrate trend component from hp filter
12
14
16
18
20
22
unrate
12
14
16
18
20
22
2005
2010
2015
anno

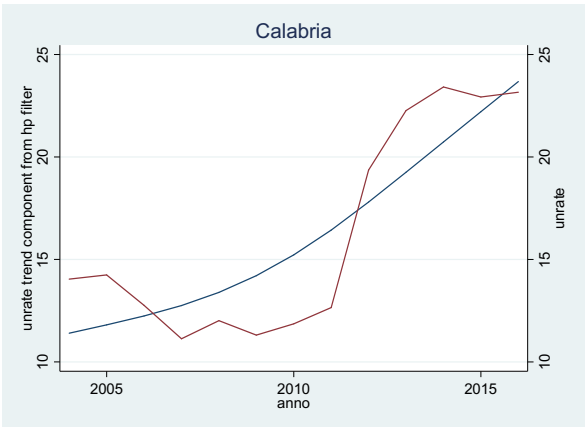

Puglia
unrate cyclical component from hp filter
-2
-1
0
1
2
3
2005
2010
2015
anno

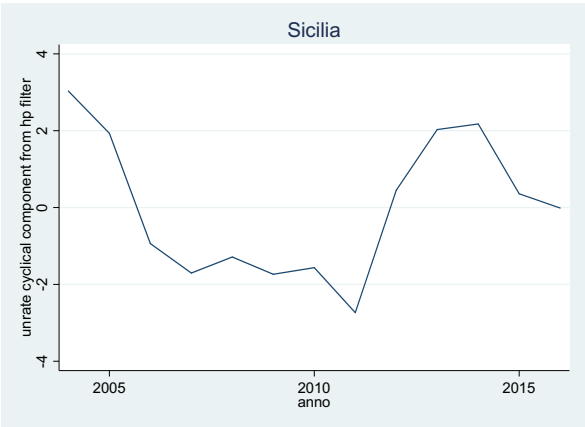

Puglia
unrate trend component from hp filter
12
14
16
18
20
unrate
10
15
20
25
2005
2010
2015
anno

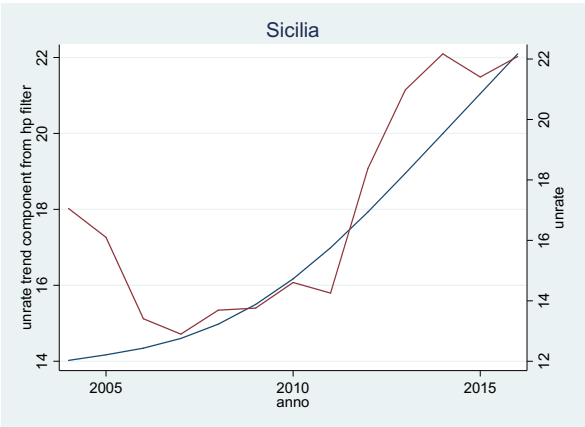

Basilicata
unrate cyclical component from hp filter
-2
-1
0
1
2
2005
2010
2015
anno

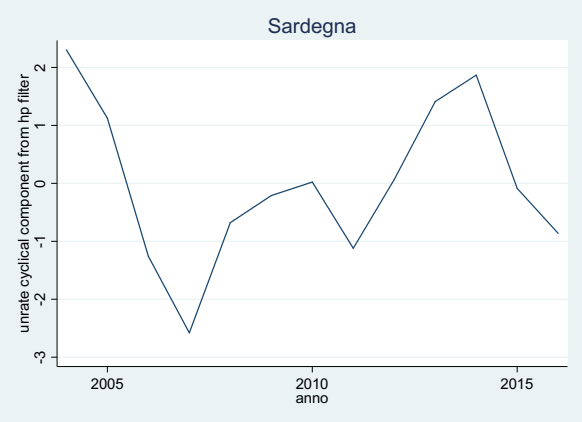

Basilicata
unrate trend component from hp filter
11
12
13
14
15
unrate
8
10
12
14
16
2005
2010
2015
anno

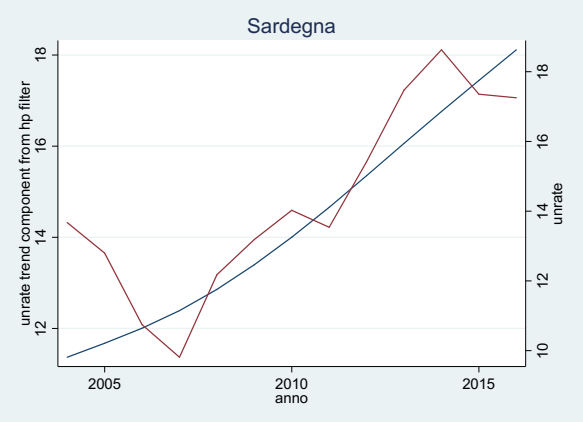

Calabria
unrate cyclical component from hp filter
-4
-2
0
2
4
2005
2010
2015
anno


Calabria
unrate trend component from hp filter
10
15
20
25
unrate
10
15
20
25
2005
2010
2015
anno


Sicilia
unrate cyclical component from hp filter
-4
-2
0
2
4
2005
2010
2015
anno


Sicilia
unrate trend component from hp filter
14
16
18
20
22
unrate
12
14
16
18
20
22
2005
2010
2015
anno


Sardegna
unrate cyclical component from hp filter
-3
-2
-1
0
1
2
2005
2010
2015
anno


Sardegna
unrate trend component from hp filter
12
14
16
18
unrate
10
12
14
16
18
2005
2010
2015
anno

Appendix B

Robustness checks

Table of robustness checks using the smoothing parameter of 100 and then 500 on GDP, and the smoothing parameter of 6.25 and 500 on the unemployment rate.

Dep. Var.: Real money needed (log of)	(1)	(2)	(3)	(4)
	gdp_100	gdp_500	unrate_6.25	unrate_500
hit_by_the_crisis_gdp_100	-0.005			
	(0.005)			
hit_by_the_crisis_gdp_500		-0.000		
		(0.005)		
hit_by_the_crisis_unrate_6			-0.018***	
			(0.004)	
hit_by_the_crisis_unrate_500				-0.016***
				(0.005)
Year dummies:				
2006	-0.051***	-0.050***	-0.065***	-0.063***
	(0.005)	(0.005)	(0.006)	(0.007)
2008	-0.078***	-0.076***	-0.092***	-0.092***
	(0.006)	(0.006)	(0.007)	(0.008)
2010	-0.035***	-0.036***	-0.045***	-0.048***
	(0.006)	(0.006)	(0.006)	(0.007)
2012	-0.028***	-0.030***	-0.034***	-0.033***
	(0.006)	(0.007)	(0.006)	(0.006)
2014	-0.002	-0.005	-0.005	-0.005
	(0.007)	(0.007)	(0.006)	(0.006)
2016	0.002	0.001	-0.017**	-0.013*
	(0.006)	(0.006)	(0.007)	(0.008)
Household income (log of)	0.201***	0.201***	0.201***	0.201***
	(0.007)	(0.007)	(0.007)	(0.007)
Female (HH head)	-0.011***	-0.011***	-0.011***	-0.011***
	(0.004)	(0.004)	(0.004)	(0.004)
Number of children	0.008**	0.008**	0.008**	0.008**
	(0.003)	(0.003)	(0.003)	(0.003)
Age of HH head	0.098***	0.098***	0.098***	0.098***
	(0.009)	(0.009)	(0.009)	(0.009)
Age^2 of HH head	-0.010***	-0.010***	-0.010***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Married	0.065***	0.065***	0.065***	0.065***
	(0.005)	(0.005)	(0.005)	(0.005)
Number of members (log of)	0.201***	0.201***	0.201***	0.201***
	(0.006)	(0.006)	(0.006)	(0.006)
Number of earners witihn HH	0.028***	0.028***	0.028***	0.028***
	(0.003)	(0.003)	(0.003)	(0.003)
Education of HH head:				
Primary school	0.028***	0.028***	0.028***	0.029***
	(0.009)	(0.009)	(0.009)	(0.009)
Middle school	0.095***	0.095***	0.095***	0.095***
	(0.009)	(0.009)	(0.009)	(0.009)

High school	0.148***	0.148***	0.148***	0.148***
	(0.010)	(0.010)	(0.010)	(0.010)
Univerty	0.195***	0.195***	0.195***	0.195***
	(0.012)	(0.012)	(0.012)	(0.012)
Higher education	0.232***	0.232***	0.232***	0.232***
	(0.024)	(0.024)	(0.024)	(0.024)
Employment status of HH head:				
Self-employed	-0.022***	-0.022***	-0.022***	-0.022***
	(0.006)	(0.006)	(0.006)	(0.006)
Unemployed	-0.015	-0.015	-0.015	-0.015
	(0.013)	(0.013)	(0.013)	(0.013)
Retired	-0.051***	-0.051***	-0.051***	-0.051***
	(0.006)	(0.006)	(0.006)	(0.006)
Other condition	0.040	0.041	0.041	0.041
	(0.081)	(0.081)	(0.080)	(0.080)
Home owner	-0.038***	-0.038***	-0.038***	-0.038***
	(0.004)	(0.004)	(0.004)	(0.004)
Geographical regions:				
Valle d'Aosta	-0.052**	-0.051**	-0.053**	-0.053**
	(0.023)	(0.023)	(0.023)	(0.023)
Lombardia	-0.002	-0.002	-0.004	-0.004
	(0.008)	(0.008)	(0.008)	(0.008)
Trentino Alto Adige	-0.129***	-0.129***	-0.132***	-0.132***
	(0.013)	(0.013)	(0.013)	(0.013)
Veneto	-0.103***	-0.102***	-0.099***	-0.100***
	(0.008)	(0.008)	(0.008)	(0.008)
Friuli Venezia Giulia	-0.055***	-0.056***	-0.056***	-0.056***
	(0.012)	(0.012)	(0.012)	(0.012)
Liguria	-0.016	-0.017	-0.019*	-0.021*
	(0.011)	(0.011)	(0.011)	(0.011)
Emilia Romagna	-0.033***	-0.034***	-0.034***	-0.034***
	(0.008)	(0.008)	(0.008)	(0.008)
Toscana	0.008	0.008	0.005	0.005
	(0.009)	(0.009)	(0.009)	(0.009)
Umbria	-0.037***	-0.037***	-0.040***	-0.040***
	(0.011)	(0.011)	(0.011)	(0.011)
Marche	-0.062***	-0.062***	-0.065***	-0.065***
	(0.010)	(0.010)	(0.010)	(0.010)
Lazio	-0.044***	-0.043***	-0.041***	-0.043***
	(0.009)	(0.009)	(0.009)	(0.009)
Abruzzo	-0.025**	-0.025**	-0.025**	-0.028**
	(0.012)	(0.012)	(0.012)	(0.012)
Molise	-0.039**	-0.038**	-0.037**	-0.041***
	(0.016)	(0.016)	(0.016)	(0.016)
Campania	-0.066***	-0.065***	-0.068***	-0.067***
	(0.008)	(0.008)	(0.008)	(0.008)
Puglia	-0.098***	-0.098***	-0.101***	-0.103***
	(0.009)	(0.009)	(0.009)	(0.009)
Basilicata	-0.102***	-0.102***	-0.102***	-0.102***
	(0.014)	(0.014)	(0.014)	(0.014)
Calabria	-0.090***	-0.090***	-0.087***	-0.088***
	(0.013)	(0.013)	(0.013)	(0.013)
Sicilia	-0.144***	-0.144***	-0.144***	-0.145***
	(0.009)	(0.009)	(0.009)	(0.009)
Sardegna	-0.124***	-0.124***	-0.124***	-0.129***
	(0.010)	(0.010)	(0.010)	(0.010)
Constant	4.995***	4.994***	5.014***	5.011***
	(0.062)	(0.062)	(0.062)	(0.062)
Observations	49,082	49,082	49,082	49,082
R-squared	0.460	0.460	0.460	0.460

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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