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**“Topics Related to Economics and Mental Health”**

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### **ABSTRACT IN ENGLISH (100 words):**

This thesis explores the intersection of mental health and economics through a review of the literature on five key subtopics: economic fluctuations, inequality, lockdowns, narratives and social media. The empirical evidence confirms that mental health is procyclical and is negatively affected by inequality. The COVID-19 pandemic, associated lockdown measures and narratives, together with the rise of social media, have posed diverse challenges for mental health. By synthesizing these findings, we provide valuable insights into the dynamics between mental health and economics, informing strategies to promote well-being in diverse contexts.

### **ABSTRACT IN CATALAN/ SPANISH (100 words)**

Este trabajo explora la intersección entre salud mental y economía a partir de la revisión de cinco subtemas fundamentales: fluctuaciones económicas, desigualdad, cuarentenas, narrativas y redes sociales. La evidencia empírica confirma que la salud mental es procíclica y se ve afectada negativamente por la desigualdad. La pandemia de la COVID-19, las cuarentenas y las narrativas asociadas a esta, junto con el surgimiento de las redes sociales, han presentado diversos desafíos a la salud mental. Resumiendo estos hallazgos, nos aportamos valiosas intuiciones acerca de la dinámica entre salud mental y economía, ofreciendo estrategias para promover el bienestar en diversos contextos.

**KEYWORDS IN ENGLISH (3):** MENTAL HEALTH, MACROECONOMIC FLUCTUATIONS, COVID.

**KEYWORDS IN CATALAN/ SPANISH (3):** SALUD MENTAL, FLUCTUACIONES MACROECONÓMICAS, COVID.

# Topics Related to Economics and Mental Health

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## Abstract

This thesis explores the intersection of mental health and economics through a review of the literature on five key subtopics: economic fluctuations, economic inequality, lockdowns, narratives and social media. The empirical evidence confirms that economic fluctuations have procyclical effects on mental health, with studies revealing the deterioration of mental well-being during economic crises. Economic inequality is shown to impact mental welfare and societal trust, highlighting the adverse effects of disparities in wealth. The unique circumstances of the COVID-19 pandemic and associated lockdown measures have posed diverse challenges for mental health. Narratives impact mental health through expectations and trust. The rise of social media and narratives has raised concerns about their influence on mental well-being, particularly among young people. By synthesizing these findings, this abstract provides valuable insights into the complex dynamics between mental health and economics, informing evidence-based interventions and strategies to promote well-being in diverse contexts.

# I. Introduction

Social scientists have long demarcated their respective fields into normative and positive science. The normative deals with what is desirable, and the positive deals with cause and effect. While scientists generally concentrate on the positive, the motivation and justification for their research is informed by the normative. Practitioners do not focus their research on the worst policies, for instance those that increase unemployment, ruin trust in societies or deteriorate the condition of mental health patients. When these questions are addressed, they serve only to inform us what not to do. In consequence, our concept of what is desirable drives what we wish to investigate objectively.

This thesis addresses the interaction between mental health and economics. The relation is relevant to economists for three separate reasons. First, mental health affects economic behavior and macro-economic indicators. For instance, Ridley et al. (2020) proposes that mental disorders can potentially perpetuate poverty, and the World Economic Forum (2013) estimates that mental health disorders can potentially cost the world economy 6 trillion dollars by 2030. Second, economic circumstances influence mental health. On one hand, this should inform economists when designing, evaluating and recommending policies. On the other hand, it may also motivate further avenues of investigation for those economists who prefer socially relevant research. Third, economic factors may explain the mechanism and interaction between social phenomena and mental health.

The thesis reviews the current literature on five topics: economic fluctuations, economic inequality, lockdowns during COVID-19, narratives and social media. Each of these topics is relevant to economists. Economic fluctuations and economic inequality are economic phenomena that have been found to influence mental health, more so than for instance economic growth (Easterlin, 1974). The lockdowns during the COVID-19 crisis not only had a direct effect on consumption and production, but may also affect economic growth through its relation to mental health. Finally, social media and narratives are concerned and interact with reference points and expectations. These concepts have a fundamental place in economics, and therefore give economics a role in explaining the mechanism by which these social phenomena interact with mental health.

The subsequent sections of this paper follow a structured approach to examine the interplay between mental health and economics. Section II provides an examination of the existing literature on economic fluctuations, exploring their implications for mental health and their influence on economic behavior. Section III focuses on economic inequality and its connections with mental health and economic outcomes. Section IV analyzes the impact of lockdown measures during the COVID-19 crisis on mental health. Sections V and VI review the literature on narratives and social media, respectively, to understand their influence on mental well-being and their intersection with economic phenomena. Finally, Section VII concludes by summarizing the key findings and suggesting avenues for future research. Through this comprehensive review, we aim to deepen our understanding of the relationship between mental health and economics and contribute to the existing knowledge in this field.

## II. Macroeconomic Fluctuations and Mental Health

In this section, we focus on how fluctuations in the aggregate economy affect mental health. The literature on this topic dates back to the 1970s, but it has become even more relevant in the face of the large macroeconomic shocks of the 21st century, namely the Great Financial crisis, the Eurozone crisis, and COVID-19. The main objective of this literature is to understand the effects of the business cycle on mental health outcomes.

Here we focus on the most recent developments in this literature, starting with the work by Ruhm on the effects of recessions on health. Ruhm (2000) uses aggregate US state data over the period 1972-1991 on ten different causes of death, including chronic liver disease and cirrhosis of the liver, motor vehicle accidents, and suicide, which he broadly defines as being related to mental health. He also uses unemployment rates as the primary proxy of economic conditions in a given state. His estimated fixed-effects models indicate that an increase in unemployment reduces predicted mortality to a statistically significant degree for all causes of death except suicide. In fact, "suicides are predicted to *rise* 1.3% for each one percentage point increase in state unemployment rates." Since suicides are among the most widely studied indicators of mental health, this study illustrates that recessions have

a negative effect on mental health. This result is confirmed by Ruhm's subsequent studies.

Ruhm (2003) uses microdata from the 1972-1981 National Health Interview Surveys (NHIS) to examine how health status and medical care utilization fluctuate with macroeconomic conditions and the results suggest that mental health may be procyclical. The fixed-effects regressions using state unemployment rates as the main indicator of macroeconomic conditions find that a 1 percentage point drop in state unemployment rates lead to a large and statistically significant 7.3% decline for non-psychotic mental disorders. This result adds to the previous evidence that mental health varies procyclically. As Ruhm points out, this result "lends credence to psychological theories relating stress to economic insecurity."

Ruhm (2013) employs panel data econometric techniques to update the results of his previous studies using US data from multiple sources over the 1976-2009 period. Consistent with previous studies, suicides increase with joblessness and "the effect may have strengthened over time, with the one point growth in unemployment being associated with a 0.9% rise in suicides in 1976 versus a 2.4% growth in 2009." This result is robust to using different 20 year analysis windows, and is statistically significant for all periods beginning after 1980, and almost significant in earlier sample windows. Ruhm (2013) also finds an increased procyclicality of poisoning deaths, and considers this to be "a physical manifestation of what was previously primarily a mental health problem." Therefore, Ruhm's studies point to a procyclical behavior of mental health in the US.

While Ruhm's work is based on US data, there has also been extensive research with European data. Here we only look at two of those studies for brevity. First, Breuer (2014) employs a panel data set of 275 regions in 29 European countries over the period 1999-2010 to study the relationship between unemployment and suicide mortality. The author uses data from Eurostat on suicide rates and unemployment rates at the regional level and estimates two-way fixed effects regressions. He also tests whether the results are influenced by serial or spatial autocorrelations. The benchmark regression shows that the suicide rate is positively related to unemployment, and the relationship is particularly pronounced for men. If unemployment rates increase by 1 percentage point, suicide rates increase by 0.09

per 100k inhabitants, and male suicides increase by 0.21 per 100k male inhabitants. The relationship is also positive for women, but not statistically significant. Perhaps, we could explain this gender inequality by noting that women have lower labor force participation rates than men and also receive lower compensation than men, which would mean that they are less affected by an increase in unemployment. Overall, a 1 percentage point increase in unemployment would increase the number of suicides of the male population by approximately 500 per year in the EU-27. Furthermore, an increase in gross value added of 1% would decrease male suicide by 0.5%. Thus, two factors affect male suicides in an economic downturn: a decrease in growth, and an increase in unemployment. These results are robust to sample size variation and after including region-specific trends, and are not significantly affected by serial and spatial correlation. Breuer (2014) finds that mental health is procyclical in Europe, which strengthens Ruhm's finding for the US.

Avdic, de New, and Kamhofer (2021) explore the causal effect of the business cycle on mental health using rich German survey data linked to aggregated economic data on state-level production from 2002 to 2016. The mental health measures they use include a self-reported, validated mental health summary score based on the 12-item short form survey as well as a set of objective mental health indicators. The advantage of survey data is that it can capture subjective mental health problems that are not captured by administrative data; the disadvantage of survey data is that it is inherently subjective and possibly biased. Exploiting variations in industry composition across federal states, the authors construct a shift-share adjusted measure of regional GDP to assess how individuals are affected by a change in their macroeconomic environment. The authors claim that this econometric approach addresses possible endogeneity between the business cycle and mental health. To complement this analysis, they also provide a case study of the Great Financial Crisis using an event study approach. For both analyses, the paper finds strong procyclical effects on mental health. In particular, the main model estimates that a one percent increase in real GDP per capita leads to an improvement of the mental health measure of 0.09 standard deviations. Furthermore, a one percent increase in real GDP also decreases mental health-related hospital admissions between 1 and 3% depending on the model specification. These results confirm the existing evidence and underline that, regardless of the differences in the structures of the US

and German labor markets, the business cycle effects on mental health are very similar. While a strong welfare state like that of Germany was able to cushion the labor market distress of the Great Recession, the policies in place were not successful in improving mental health outcomes substantially when compared to the US. This suggests that good macroeconomic stabilization policies might not be enough to improve mental health during recessions, thus that public health policies take the distress caused by economic fluctuations more seriously.

Up to this point, the studies analyzed in this section have broadly focused on mortality and mental health indicators, yet another strand of the literature has focused on using data on demand for mental health medications to study the effect of macroeconomic fluctuations on mental health. We present two of those studies, one for the US and one for Sweden. Bradford and Lastrapes (2013) estimate the relationship between mental health drug prescriptions and the level of labor market activity in the US. Based on monthly data from the National Ambulatory Medical Care Survey of physicians and aggregated by US census regions, the authors find that the number of mental health drug prescriptions rises by about 10% when employment falls by 1% and when unemployment rises by 1%, but the results are statistically significant only for the Northeast region of the US. One important issue with this paper is that the authors are unable to link drug prescriptions with physician diagnoses, so there might be a classification error in their mental health medication list; nonetheless, the authors do not consider the correlation between classification error and economic activity important. The main innovation of this study compared to the others we looked at comes from the econometric model. The authors employ standard time-series regressions and vector autoregressions for their analysis. Furthermore, the authors consider different different measures of mental health drug prescriptions and macroeconomic conditions for robustness. The time-series regressions estimate the reduced-form effect of the economy on mental health drug prescriptions to find that prescriptions rise by about 10% when employment falls by 1% in the Northeast. The results for other regions are not statistically significant. A limitation of this approach is that the authors cannot really distinguish between demand and supply factors of prescriptions, but they find similar results for mental health visits which they claim should be less affected by supply factors as the number of doctors practicing does not fluctuate much. The reduced-form VARs are



consistent with these findings, as the impulse responses indicate that a shock to the unemployment rate leads to a strong and positive response of prescriptions only in the Northeast.

Instead, the Swedish study by Dackehag et al. (2023) fails to find evidence that the use of psychotropic medication increases during economic downturns. The authors exploit a panel of administrative data from 1980 to 2013 and use a simple linear regression model to assess the relationship between macroeconomic conditions and individual use of psychotropic medication. They uncover a negative association between unemployment and the use of mental health drugs, driven mainly by young men and older women. Interestingly, they also find that mortality increased in the same population groups, which indicates worsened mental health during economic downturns. The authors reconcile these findings by underlining the importance of access to drugs and individual behavior. On the demand side, economic downturns put financial strain on lower income individuals who might find the co-payment for prescriptions in place in Sweden too high for their diminished budget. On the supply side, the Swedish health authorities cut their budget during the Great Recessions. These two effects together could account for the decrease in the use of mental health drugs during economic downturns, and underline the dangers of cutting healthcare spending during recessions.

Under a variety of specifications and approaches, these studies confirm the naive intuition that economic downturns lead to worse mental health. They also provide some hints as to what government policies might reduce the impact of macroeconomic fluctuations on mental health. Nonetheless, there is considerable room for future research on two fronts: measurement, and methodology. First, the literature should strive to develop better subjective and objective measures of mental health that can be integrated to create an aggregate index that is easily understood by policymakers. Data collection should also put more emphasis on economic determinants of mental health and should strive to capture the heterogeneous effects macroeconomic fluctuations might have on individuals from different socioeconomic groups. Second, the studies analyzed above show that the literature has been mostly focused on panel data, with a minor focus on reduced-form time-series. While these econometric techniques are very advanced, they fail to account for general equilibrium effects and for the potential endogeneity of macroeconomic fluctuations

and mental health. On the one hand, structural vector autoregressive models can help address endogeneity issues if we can construct an aggregate indicator of mental health conditions. On the other hand, structural macroeconomic models can help us to uncover the mechanisms underlying the relationship between macroeconomic fluctuations and mental health. Such mechanisms include households' expectations of a worse labor market during a recession and following such recession, households' expectations of the growth trajectory of the economy, the demand and supply of mental health drugs, the demand and supply of psychological and psychiatric services. Understanding these mechanisms is particularly important for advanced economies, as that could enhance macroeconomic stabilization policies with an added public health dimension.

### III. Economic Inequality and Mental Health

Economic inequality refers to the uneven distribution of resources within a particular population, encompassing disparities in income and opportunities. Its influence on the mental health and well-being of societies is complex, with various studies yielding conflicting results when examining different forms of economic inequality. This section provides a concise overview of studies investigating the relationship between economic inequality and mental health, primarily focusing on indicators such as happiness and trust.

One widely used approach to analyze the impact of economic inequality on well-being is by correlating macro-level measures of inequality with happiness levels across different countries. The GINI index is commonly employed to gauge income inequality, while happiness measures are derived from surveys. However, the findings from such studies are mixed. Some studies suggest a (small) positive association between inequality and happiness (Berg and Veenhoven, 2010), while others indicate a negative relationship (Alesina et al., 2004).

Nevertheless, even if studies consistently pointed to a negative relationship between inequality and happiness, several confounding factors would need to be considered. Most notably, relative inequality within a society implies that some individuals also experience absolute poverty. The hardships associated with poverty, such as inadequate housing, lack of nutritious food, limited access to healthcare and mental

health services, and overall stress, all contribute negatively to mental health (Adler et al., 2003). Other examples are current social status, and correlates of both economic inequality and mental well-being

An example of a study that does not suffer from such methodological issues is given by Schneider (2012). This study involved participants estimating the average wages for different occupations and subsequently reporting their perception of fair wages. The findings indicate that participants generally perceive more inequality than they consider fair. After adjusting for participants' socio-economic status, the study reveals that individuals who believe there is greater inequality report lower life satisfaction, while a preference for larger inequality is associated with higher life satisfaction. Additionally, the research establishes a strong positive relationship between the perception of social mobility and life satisfaction. Specifically, a 3-point difference in the perception of social mobility on a 5-point scale is estimated to have the same impact on life satisfaction as unemployment.

Alesina et al. (2001) explores factors moderating the relationship between inequality and happiness. The study correlates Gini coefficients of different US states and European countries with survey data on happiness and preferences. The key finding is that in the US, only politically leftist and rich individuals are negatively affected by income inequality, while the poor are not significantly impacted. In contrast, both the poor and politically left individuals in Europe experience negative effects from income inequality. The authors speculate that this disparity in results stems from a higher perceived social mobility in the United States, which would align with the findings of Schneider's study (2012).

The combined findings of Schneider (2012) and Alesina et al. (2001) suggest that the effect of economic inequality on happiness is heterogeneous. Economic inequality may be negatively related to well-being only if individuals prefer less inequality. Furthermore, perceptions of equality of opportunity (social mobility) likely have a more positive association with mental well-being. However, even in the case of social mobility, the relationship may be heterogeneous with some researchers hypothesizing that perceptions of social mobility might negatively impact the wealthy, who would then perceive their social status to be more precarious.

The studies conducted by Schneider (2012) and Alesina et al. (2001) have limitations in identifying broader societal mechanisms through which economic inequality influences happiness. Schneider's study (2012) is limited to Germany and can hence only estimate intra-societal impacts of economic inequality. On the other hand, the findings of Alesina et al. (2001) may be interpreted as evidence for the societal impact of economic inequality by demonstrating that inequality between European countries affects life satisfaction, whereas the same effect is not observed among US states. This discrepancy could be due to the deleterious effects of economic inequality affecting the US on a national level and not the state level.

One potential societal mechanism through which economic inequality may impact mental health is via social trust. Extensive research has been dedicated to this topic, with some studies establishing a negative relationship (Kawachi et. al., 1997; Elgar and Aitken, 2011), while others fail to identify a significant connection (Leigh, 2006; Steijn and Lancee, 2011). Another mechanism is Crime, Kelly (2000) finds a significant relationship between economic inequality and violent crime across countries, while controlling for absolute poverty. Additional potential mechanisms include the impact of economic growth (Persson and Tabellini, 1994) and reduced human capital formation (Bénabou, 1996). Generally, cross-country research tends to identify detrimental societal effects of economic inequality. However, such research is susceptible to confounding factors and cannot definitively rule out reverse causation or the influence of unidentified factors. For example, it could be hypothesized that in societies with low trust, individuals may fear that government funds intended to reduce economic inequality will be misallocated, leading to an unfavorable view of the allocation process. An unidentified factor driving correlations could be political stability, which could both cause distrust and economic inequality, creating a spurious relationship between the two.

Thus far, this section has discussed evidence regarding the potential relationship between economic inequality and happiness. In the following, we will delve into two potential mechanisms that may explain this relationship. The first mechanism centers around inequality preferences. Studies creating scenarios where one individual receives a monetary gift and must share it with another participant, such as Dictator games, indicate that people generally value some level of equality in outcomes. This suggests that individuals are willing to sacrifice some of their own gains for the sake

of greater equality. Ultimatum games employ a similar setup but allow the other participant to reject the offer. If the offer is rejected, both participants receive nothing. Generally, individuals reject offers they perceive as unfair, demonstrating a willingness to give up money to uphold equality (Forsythe et al., 1994). While revenge may partly explain this rejection behavior, studies where computers make the offers on behalf of participants show that many individuals still reject low and unequal offers (Yamagishi, 2012).

A second potential mechanism is social comparison. Individuals in lower socio-economic positions often perceive themselves as falling short in comparison to those who enjoy greater economic advantages (Kawachi et al., 1997). Especially when such inequality is highly visible, its impact may be amplified due to availability bias (Tversky and Kahneman, 1973). Feeling economically inferior to peers may also influence one's reference points for consumption, resulting in decreased mental well-being in line with prospect theory (Kahneman and Tversky, 1979). This social comparison mechanism may be further influenced by the rise of the internet and social media, where peers may showcase activities that others cannot afford.

#### **IV. Mobility Restrictions and Mental Health**

This section addresses the following question: what is the effect, if any, of mobility restrictions on mental health? This question becomes relevant since as a response to the COVID outbreak, governments all over the world implemented different types of mobility restrictions.

To answer this question we will discuss three articles that took advantage of the different approaches followed by different governments to identify the causal effect of such policies on mental health.

The first article is Serrano-Alarcón et al (2021). The authors study whether the easing of mobility restrictions led to a recovery of mental health even when getting infected was still a threat.

To do this, they leverage on the different timing lockdowns in the UK: in March 2020 the UK imposed a nationwide lockdown; in mid May, England eased mobility restrictions (at least partially) while Scotland kept them for two more weeks. By

looking at average COVID-19 deaths per region, they argue that this difference reflects a different approach to policy rather than different performances of policies which in turn allows them to use a difference-in-difference approach to identify the causal effect of mobility restrictions on mental health.

They find that the easing of mobility restrictions in England improved mental well being.<sup>1</sup> Their results do not depend on age group nor sex but do depend on education level and financial situation: individuals with lower levels of education or economically affected by the pandemics saw an improvement on their mental health from the easing while those with high education level and not economically affected by the pandemics did not. This suggests that long-standing lockdowns may aggravate pre-existing socio-economic inequalities in mental health. Their findings also suggest mental health being more responsive to lockdowns than the pandemics itself.

The second article is by García-Prado et al (2022). In this work, they assess whether lockdowns imposed as a containment measure against COVID-19 worsened mental health issues of the population older than 50 in 16 countries in Europe and Israel.

To identify the causal effect of mobility restrictions they combine differences across countries in the strictness of the lockdown measures and differences across individuals regarding their pre-COVID-19 level of face-to-face social interactions. In particular, they assign individuals to treatment and control groups according to their pre-COVID-19 face-to-face interactions: those with a larger number of social interactions (above sample median) are assigned to the treatment group. They compare the evolution of outcomes of individuals in the treatment and control groups in countries with strict mobility restrictions against countries with less strict restrictions.

The critical assumption behind this is that the restrictions will affect more those individuals that had more frequent face-to-face interactions before the outbreak of the COVID-19.

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<sup>1</sup> They find that the easing of restrictions is associated with a 0.31 points reduction in the General Health Questionnaire measured on a Caseness scale which ranges from 0 (best mental health status) to 12 (worst mental health status).

For this identification strategy to be valid, they rely on two assumptions: (i) the effect of lockdown restrictions on individuals with more frequent face-to-face interactions differs from that on individuals with less frequent face-to-face interactions; and (ii) the difference in the way the pandemic affects the behavior of individuals in treatment/control groups corresponds only to the strictness of lockdown policies they face.

The rationale behind the first assumption is that a more socially active life requires more mobility and thus those individuals with more frequent face-to-face interactions before the outbreak were more affected by the mobility restrictions. The second assumption is sustained by empirical evidence.<sup>2</sup>

After controlling for the standard sociodemographic variables, they find statistically significant evidence in favor of lockdown measures deteriorating mental well being (measured as self reported variations in insomnia, anxiety and depression). Moreover, they find that, for individuals over 50, lockdown measures increased the probability of suffering from insomnia, anxiety or depression by 5, 7, and 5 percentage points respectively.

On the one hand, they find that the deterioration of mental health due to lockdowns is significant irrespective of household composition, labor status, or physical health. On the other hand, age and sex seem to matter. For individuals between 50 to 65, the effect is significant in all three outcomes considered, while for individuals between 65 and 75 the effect is significant only in terms of anxiety. For individuals above 75, the coefficients are not statistically significant. In line with the literature, they also find that the effect is larger for women than for men.

Both articles offer evidence in favor of a negative effect of mobility restrictions on mental health using a dif-in-dif approach. However, the validity of the results hinge on the validity of the parallel trend assumption. The work by Altindag et al (2022) instead takes advantage of the specific nature of the restrictions imposed by the Turkish government to identify the causal effect of lockdowns on mental health.

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<sup>2</sup> A possible objection is that individuals may ignore the restrictions and keep with their pre-COVID frequency of interactions. However, the authors mention a couple of empirical articles that suggest that (i) individuals with similar levels of interactions react similarly to different mobility restrictions; and (ii) individuals complied with lockdowns.

Altindag et al (2022) measure the effect of age-specific mobility restrictions on the mental health of senior adults in Turkey. As a response to COVID-19 outbreak, the Turkish government imposed a strict curfew on individuals aged 65 and older and those with certain health conditions. In other words, individuals born before January 1956 were subject to a full lockdown, while individuals born on or after January 1956 were exempt.

The article exploits the binding age cutoff to estimate the effect of lockdowns in mental health. They adopt a regression discontinuity approach relying on the fact that individuals near the cutoff age do not present systematic differences and are thus comparable. They report the following results.

First, they find that the lockdown decreased the number of days that individuals had gone outside in the previous week and that it also increased the probability of never leaving home. Second, they show that the reduction in social interactions due to the curfew increases the probability of experiencing somatic symptoms by 0.18 standard deviation and nonsomatic symptoms by 0.16 standard deviation.

When exploring potential channels through which mobility restrictions may have affected the mental health of Turkish elderly, the only channel they found to be statistically significant is the social and physical isolation channel.<sup>3</sup>

A growing stream of literature has studied optimal policy response to the pandemic using SIR models. This literature suggested that better outcomes may be attainable by means of tight lockdown policies targeting the elderly. The findings discussed in this section, by shedding light on the mental health costs of such policies, raise a word of caution and suggest that, if implemented, they should be complemented with other measures to mitigate the effects they may have on mental health. These complementary policies should be targeted to most affected groups such as women, the elderly, and/or those with lower educational levels.

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<sup>3</sup> They evaluated 3 alternative channels: employment and income, household conflict channel, religious beliefs and practices. All of them were found to be non significant.



## V. Narrative Economics and Mental Health

Another lens through which we can analyze the economic effects of mental health is narratives. In this section, we will see the general approach of narratives to economic analysis, its particular use in the study of topics related to mental health, and some examples that show the propagation mechanisms (through social media and networks) during the Covid-19 pandemic.

The narrative approach to economics has recently gained some traction through the pioneering work by Shiller (2017). Narratives are causal stories that people come up with to explain phenomena. For a narrative to be 'successful', it must be accepted by a large group of people. Shiller explains how the viral nature of narratives could ultimately lead to economic fluctuations. Narratives are linked to various behavioral heuristics and biases. On top of this, we tend to construct our own narratives by following the movement of economic indicators. Consequently, this influences our economic decisions and ultimately contributes to economic fluctuations.

Narratives seem to spread in the same way a disease would. When people talk - either in person or on social media - they exchange information and contagion of narratives takes place. Similar to how epidemics arise and fade through contagiousness, stories share the same traits as well, with the most plausible explanation for events surviving the test of time. Therefore, the SIR model mentioned in the previous section also lends itself useful in the analysis of economic narratives.

Due to the advent of social media, we have seen an increase in the propagation of ideas much faster than before. People can get information faster than ever but there has been a proportionate increase in fake news simultaneously. The spread of health misinformation on social media has been well-documented (see for example, Wang et al (2019), Suarez-Lledo and Alvarez-Galvez (2021)). Using survey data and descriptive statistics, Haydabrus et al (2023) study how the rise in fake news contributed to increased mental health issues in Ukraine.

Similarly, Ravenelle et al (2021) argue that narratives, especially through fear mongering, fake news, and diffusion of distrust, led to resistance to vaccination in many countries. Through a mix of surveys and interviews, they found that participants who identified themselves as liberals or left-leaning also reported feeling

media sensationalism and conflicting narratives during the coverage of the pandemic. This skepticism toward media led to an increase in compensatory control, where people restrained themselves from overexposure to news to protect their mental health from media burnout. This could have a negative effect on the population given the importance of media in dissemination of health information.

In this context, narratives gather much more importance. Through narratives, a person or a set of people can change the perception of an event in the society by manipulating the way it is presented. This leads to echo chambers on social media where people gravitate towards views that align with their prior. Ultimately, this leads to polarization, with effects ranging from choice of breakfast to electoral outcomes.

The Covid-19 pandemic gave an interesting setup to analyze the effect of narrative economics as a tool to study mental health outcomes. A specific example is considered in Tubadji et al (2023). They see that the general public's mental health can be affected by the public policy response to the threat of pandemic. They take three countries (Britain, Italy and Sweden) which had distinct approaches to the COVID-19 pandemic based on aggressiveness. While Britain had an early lockdown and Italy had a delayed lockdown, Sweden had no lockdown. They develop a narrative economics of language 'Culture-Based Development' approach for their study. They use Google trend data for seed keywords (death and suicide) and a diff-in-diff model to find that while countries had a pre-existing culturally relative disposition towards death-related anxiety, the sensitivity to public policy towards COVID-19 was also country specific. However, significant spillovers from one specific national lockdown public policy to another country's mental health were also identified.

Other studies have also pointed towards the amplification mechanism of networks in sustaining narratives. In Singh et al (2020), the authors explain the dual effects of networks during the pandemic. They state that the pandemic distanced people from loved ones, such that there is an effect of isolation in physical terms. However, there was a significant increase in pandemic-related news to the extent that it was the only visible news. This increased exposure to news additionally contributed to distress and depression. Although people felt disconnected from their real networks - friends

and family - they felt over-connected to people and events in their social networks. Here again, narratives had the power to alter the perception of events in real time.

The drawback of such studies is that although the stories seem plausible to real-world experiences during the pandemic, they are 'narratives' themselves, in that they do not have any quantitative or analytical ground (except Tubadji et al (2023)). A purely economic approach to narratives and mental health would hence be interesting. For example, we could consider coming up with a network model of information propagation where a random number of agents want to 'twist' the narrative. A further analysis of what kind of networks would lead to increased effect of the seed information could be a measure of the effect of narratives on mental health.

## VI. Social Media Use and Mental Health

Social media is a relatively new technology – Facebook was founded in 2004 – that has had a profound impact on how we live our lives and interact with each other. The worldwide average time spent on social media daily is around two and a half hours (Statista, 2023), interactions with friends and peers increasingly take place on social media and more and more social media is used as a channel for news consumption. Young people are especially affected by these changes with more than a third of teenagers reporting to use at least one platform “almost constantly” in a recent Pew Research Center (2022) study and since the birth of social media their mental health has deteriorated drastically with rates of major depressive episodes increasing by more than 50% among individuals aged 12 to 25 (Twenge et al., 2019).

During the last years the effects of social media use on mental health have increasingly become a topic of public and academic discourse. The U.S. Surgeon General's Office (2023) published an advisory – a format reserved for significant public health challenges that require the nation's immediate awareness and action – describing the impact the widely used technology can have on youth mental health. The advisory describes young people who are in a critical stage in brain development as particularly susceptible to the potential negative effects of excessive social media use. While social media use can also have positive effects such as creating a feeling of being accepted and supported, facilitating insights into the life of

friends, and providing an outlet for creative expression, excessive use can be detrimental for mental health outcomes for example due to the crowding out of alternative healthy activities. The advisory mentions that adolescents spending more than three hours a day on social media are twice as likely to suffer from mental health problems such as anxiety and depression and excessive use can lead to lowered self-esteem, excessive comparison to others and insecurities relating to one's physical appearance.

The Surgeon General's Office concludes that a multi-faceted approach involving public policy as well as action from individuals and companies is needed to provide a safer social media environment for children and adolescents. It also notes that there are various gaps in our knowledge about the connections between social media and mental health and that existing studies have generated a range of sometimes contradictory results. Two of the most widely cited meta-reviews of this literature are Meier and Reinecke (2020) and Valkenburg, Meier and Beyens (2022). Both papers conclude that the results published in the reviews they analyze suggest that overall effects of social media use on mental health outcomes are mostly negative and moderate but note that there are various dimensions of heterogeneity that need to be considered. Both describe a fragmented research landscape where various diverging definitions of both mental health and social media use are employed and that mostly consists of smaller cross-sectional studies that allow no conclusions with respect to a causal relationship. Meier and Reinecke (2020) find that research focusing on intensive users documents a moderate positive effect on social resources and small negative effects on emotional distress, stress and self-esteem. They found little evidence for moderating effects of age and gender. Valkenburg, Meier and Beyens (2022) show that social media use is associated with both increased well-being and ill-being and that all reviews report a wide range of effect sizes ranging from negative to positive effects on ill-being measures.

The two studies call for more longitudinal, individual-level research that can identify causal effects and shed light on relevant moderators, aspects of social media use that are of particular importance and the time dimension of the relationship between social media use and mental health. The remainder of this section first briefly reviews several influential papers from the medical sciences and then discusses

three papers published in economics journals to showcase some of the approaches taken for analyses.

As discussed above many of the studies that originated from the medical sciences are of a correlational nature. Examples for this kind of research are Barry et al. (2017) who find that the number of social media accounts kept by adolescents was positively related to the presence of symptoms of inattention, anxiety and depression among others and Berryman, Ferguson and Negy (2017) who find that social media use was not related to worse mental health. Kross et al. (2013) show that using Facebook in the moments before leads to more negative feelings and lower life-satisfaction using a two-week experience sampling study which involved subjects answering text-messages five times a day and Valkenburg et al. (2021) find that while the majority of individuals do not experience any effects of social media use on self-esteem there are both a minority that experiences positive effects and a larger one that experiences negative effects. In a very recent paper Maza et al. (2023) conduct a 3-year longitudinal cohort study and find that the frequency of checking social media accounts may be associated with changes in the brain's sensitivity to social rewards and punishments. Another multi-year individual level longitudinal study by Coyne et al. (2020) finds that there is no relationship between social media use and mental health issues.

The economics literature is still relatively sparse on this topic and most of the contributions are very recent. Nevertheless, there are some papers that significantly further our understanding of the causal relationship between social media use and mental health. A paper by Braghieri, Levy and Makarin (2022) uses the sequential rollout of Facebook at U.S. university campuses before the website became available to the public as a source of quasi-experimental variation to explore the impact of social media on student mental health in a difference-in-differences empirical design. Their mental health data comes from the National College Health Assessment survey that some students answered before the introduction of Facebook on their campus and some after. Statistical estimates of the authors' preferred specification relying on a parallel trends assumption see their index of poor mental health increase by 0.085 standard deviation units after the introduction of Facebook (which is about a fifth of the size of the effect of a job loss according to the

authors). They also estimate an alternative specification – using the length of exposure of a student to Facebook on campus as the treatment variable and comparing students within colleges – that doesn't rely on the parallel trends assumption and shows that effect sizes are increasing in exposure length. A heterogeneity analysis shows that the effects are most pronounced among students that were rated as most susceptible to mental illness based on baseline characteristics like age and gender. They also present some suggestive evidence for unfavorable social comparisons driving the effects. Overall, the paper provides insights with respect to possible general-equilibrium effects of social media use in a community. It must be noted that the characteristics of Facebook in specific and social media use in general but also users' level of experience with social media platforms has changed dramatically since the paper's period of analysis. Facebook has come to include features like the news feed and social media overall allows for a more immersive experience nowadays especially since the introduction of smartphones. In addition, while students are a population of great interest younger populations might be even more susceptible to suffer negative mental health effects due to social media use.

Alcott et al. (2020) conducted a randomized experiment where treated individuals were paid to deactivate their Facebook account for four weeks and over 90% of them complied. The time period is chosen as the run-up to the 2018 U.S. elections as the authors are also interested in several outcomes related to news consumption and political polarization next to subjective well-being measures. Well-being is measured both by endline questions about the last four weeks and daily text messages asking about the individual's state of mind in that moment. There is also a question on the time spent feeling depressed during the last four weeks in the endline survey. Nine out of ten measures of wellbeing were positively impacted by the treatment. With life satisfaction and feeling depressed experiencing some of the largest improvements (around 0.1 standard deviations or around 25-40% the size of a positive psychology intervention). The treatment also lowered incentive-compatible measures of valuations for using Facebook suggesting habit formation effects. A heterogeneity analysis showed that the positive effects on wellbeing are stronger for individuals with less social interactions at baseline and for those with lower wellbeing at baseline suggesting a reinforcement effect. They also find that individuals in the treatment

group report significantly more time spent on offline activities both solitary and social during the last week at endline suggesting a crowding out of other activities as a potential driver of the effect. These estimates provide interesting insights at the individual level but there are several aspects of the experiment that make it hard to tell how informative they are. First the duration of the Facebook deactivation is relatively short, and it is uncertain how the results would generalize to individuals staying off social media for longer periods of time. Second, the experimental sample is limited to the individuals whose reservation price for deactivation is below \$102 and although this seems reasonable from a feasibility perspective, it seems to exclude the group that is of highest interest for the analysis. Third, the authors' argument for the absence of experimenter demand effects doesn't seem fully convincing. A similar experiment conducted by Mosquera et al. (2020) finds comparable results but has a smaller sample size and a period of deactivation of just one week.

McDool et al. (2019) explore the link between internet use and children's mental health. They use neighborhood level broadband speed as a proxy for internet use and outcome data comes from several waves of "Understanding Society – The UK Household Longitudinal Study" that provides a representative sample of 40,000 households and asked the children present about their feelings regarding aspects of their life such as appearance, friends, and life as a whole. Using their most reliable seeming specification including neighborhood fixed effects they document significant negative effects of broadband speed on the outcomes schoolwork, appearance, friends, and school. Effects on family and life as a whole are also negative but insignificant. In their exploration of mechanisms underlying these effects they find evidence for a crowding out of other beneficial activities and more time spent on social media to be potential drivers. This paper provides valuable evidence on the effect of internet use on mental health for a representative sample of individuals in the U.K. The downside of the approach using broadband speed is that it is not clear how much of the effect really is due to social media use itself. Although the authors provide several checks for the random assignment of broadband speed, the identification assumption still seems more likely to be contradicted here than in the two papers discussed above. Other less cited papers exploring the link between internet access and mental health that use more plausibly exogenous variation are

Donati et al. (2021) who also find negative effects on mental health of young people and Golin (2022) who finds negative effects for females only.

Overall, the studies conducted by economists so far seem to present convincing evidence that social media use overall has a negative effect on mental health suggesting that limiting the time spent on social media could be beneficial. It would now be interesting for the design of public policy to investigate further what specific features of social media lead to those effects and what can be done to protect users. An example for this kind of paper is Allcott, Gentzkow and Song (2022) who conducted an experiment that analyzes the effect of letting individuals commit to restrictions of their social media use via a smartphone application. The results of this experiment suggest habit formation and self-control problems and offer a possible solution at the same time.

## VII. Conclusion

In conclusion, we explored the relationship between mental health and economics, highlighting its relevance to economists by reviewing the existing literature on five topics: economic fluctuations, economic inequality, lockdowns during COVID-19, narratives, and social media. Economic fluctuations and economic inequality were identified as economic phenomena that strongly influenced mental health outcomes. The impact of lockdown measures during the COVID-19 crisis extended beyond their direct effects on consumption and production, potentially also affecting economic growth through their association with mental health. Furthermore, the exploration of narratives and social media contributed to understanding how these social phenomena interacted with mental health.

This thesis also identified several avenues for improvements. Firstly, there are several issues regarding the measurement of mental health. A diverse set of measures are used as proxies for mental health making comparisons between different works harder. In addition, most studies use subjective measures of mental health as outcomes which – despite being standard components of psychiatric evaluations – might be subject to reporting and experimenter demand biases depending on the context of the study. Another factor that hinders comparisons are the widely differing methodological approaches employed which in addition often



suffer from identification issues. To make adequate policy recommendations, more work is also needed to properly identify mechanisms underlying the effect on mental health and the individuals that are most susceptible to these effects. Finally, economics research on many topics relating to mental health is still relatively sparse which does not align with the associated costs for society.

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