https://economix.fr/

The mental health consequences of globalisation

Document de Travail
Working Paper
2019-26

Maria Cervini
Antonia Lopez Villavicencio

UMR 7235

EconomiX - UMR7235
Université Paris Nanterre
Bâtiment G - Maurice Allais, 200, Avenue de la République
92001 Nanterre cedex

Email : secretariat@economix.fr

The mental health consequences of globalisation*

Antonia López-Villavicencio† Maria Cervini Pla‡

November 12, 2019

Abstract

Micro evidence for employed workers has led to the claim that globalisation, i.e. higher trade exposure, has far-reaching implications for mental health problems in some advanced countries. Evidence for other aspects of globalisation at the cross-country level is scarce. Using information on depression and anxiety, combined with proxies for different dimensions of globalisation, we undertake a detail analysis in a large sample of countries. We go beyond the simple impact of globalisation in observable labor market outcomes and show that more globalized counties experience higher mental distress than less globalized countries. In particular, we show that even though trade globalisation reduces mental health disorders at the country-level, the positive influence of social globalisation prevails over the economic dimension. Hence, our results complement documented consequences of globalisation on mental health outcomes by showing that factors involving cross-border movement of cultures and openness of media play a major role.

JEL Classification: F60, I1, C33

Keywords: Mental Health, globalisation, anxiety, depression

Corresponding author: Antonia Lopez-Villavicencio, EconomiX-CNRS, University of Paris Nanterre, 200 avenue de la République, 92001 Nanterre Cedex, France. Phone: + 33 (0) 1 40 97 78 22. Email: alopezvi@parisnanterre.fr.

†EconomiX-CNRS, University of Paris Nanterre, France. Email: alopezvi@parisnanterre.fr.

‡Universitat Pompeu Fabra, Spain. Email: mail.

1 Introduction

Today, about 970 million people around the world suffer from a mental or substance use disorder. In particular, according to WHO's Global Burden of Disease 2017, the largest number of these people had an anxiety or depression disorder (around 4 and 3.3 percent of the global population, respectively). Twenty percent of workers in the OECD countries currently suffer from some form of mental disorder and 50% of people experience mental health problems at least once over their lifetime (Colantone, Crino, and Ogliari (2019)). Moreover, even though mental health disorders are still significantly under-reported, particularly at lower incomes where data is scarcer, it is estimated that almost three-quarters of the global burden of disease worldwide occurs in low-and middle-income countries.

Mental disorders are not limited to a small group of predisposed individuals but are a major public health problem with noticeable economic consequences. Indeed, it is projected that, between 2011 and 2030, the cumulative economic output loss associated with mental disorders would be around US$ 16.3 trillion worldwide, making the economic output loss related to mental disorders comparable to that of cardiovascular diseases, and higher than that of cancer, chronic respiratory diseases, and diabetes (see Trautmann, Rehm, and Wittchen (2016)). Moreover, evidence suggests that there is a negative correlation between prevalence of particular mental health disorders (depression and anxiety have been the most widely assessed) and self-reported life satisfaction. This suggests that life satisfaction and happiness tends to be lower in individuals experiencing particular mental health disorders. Mental health is also known to be an important risk factor for the development of substance use disorders (either in the form of alcohol or illicit drug dependencies).

A recent literature associates the prevalence of mental disorders for employed workers in advanced economies with the process of globalisation. Even though much of this work is rather limited in its geographical scope and/or in their concept of globalisation, i.e. flow of goods, it is useful in delineating the sorts of factors that link mental health to the forces of globalisation. For instance, Colantone, Crino, and Ogliari (2019) suggest that, by increasing competitive pressures, trade can carry significant mental health problems for exposed workers in the U.K. In particular, they document that import competition worsens mental distress by inducing greater job displacement, lower wage growth and a reduction in job satisfaction due to heavier workload, greater job insecurity and gloomier expectations about the future. In a similar vein, Lang, McManus, and Schaur (2019) provide evidence that Chinese import competition, i.e. the "China syndrome", in local labor markets tends to worsen stress, anxiety, and depression in the U.S. Evidence focusing explicitly on the effects of globalisation on mental health in emerging economies has been com-

paratively limited so far. A useful exception is Crozet, Hering, and Poncet (2018) that using data from the China Family Panel Studies they look at the other side of "China syndrome" and investigate the repercussions from enhanced exports on Chinese well-being. Their results show that enhanced export opportunities improve life satisfaction of the local population. However, they do not observe any negative effects on mental health following rapid export growth.

In this paper, we make several novel contributions to the literature. First, we consider globalisation as a comprehensive, multidimensional process that covers not only economic, as it is usually the case, but also social and cultural aspects. Understanding globalisation as a multidimensional process is closer to the common usage and definitions of the term than an individual indicator like trade openness, and helps to account for the possibility that the comprehensive concept may be more than the sum of its constituent parts (e.g. Lang, McManus, and Schaur (2019)). Relying on this aggregate concept of globalisation also allows us to avoid possible collinearity and simultaneity problems with multiple interrelated dimensions of globalisation (e.g., trade, capital flows, technology diffusion, liberalization policies).

The influences of individual factors on mental health are then addressed separately. Disentangling the multidimensional concept of globalisation is also important. Indeed, globalisation is a complex network of interrelated processes which could impact mental health of a nation's population in opposite directions. For instance, trade globalisation might be seen as a work-related risk factor for individuals working in an industry exposed to a stronger foreign competition. However, it is important to keep in mind that mental disorders are not limited to this group of individuals. Cultural or social cross-communication are key factors in the breakdown of boundaries in the world that might impact mental health more generally than just in exposed workers (Kelly (2018)). In particular, it is suggested that modalities such as the internet, film and television, are factors that play a key role in enhancing globalisation, can lead to identity confusion among individuals and be a source of stress (e.g. Bargh and McKenna (2004), Arnett (2002)). Yet, globalisation also implies increasing levels of trade in health services, such as movement of health workers, medical tourism, and foreign direct investment, all of them with potentially positive effects of mental distress. Therefore, we consider the following aspects: economic flows (trade and financial), social flows (migration, exports of technology and trade in personal services) and social liberalization indicators (access to telephone, television and internet). The influences of these individual factors on mental health in the total population should be addressed separately, while keeping in mind the fact that one group of processes very often amends the other.

Second, we rely on a large sample of countries, allowing us to go beyond a case study with a simple comparison of national conditions. Our analysis explores the influence of globalisation on mental health worldwide and, separately, for advanced and emerging countries. This distinction is important since most of the consequences of globalisation may be totally different for these two groups of countries. Indeed, the literature provides evidence of a positive link between trade and mental distress in some western countries. The arguments is that the changing nature of work, i.e. the increasing fragmentation of the labour market, the demand for flexible contracts, increased job insecurity, a high work pace, long and irregular working hours, low control over job content and process, and low pay, together with new occupational hazards related to the globalisation process act as acculturative stressors (e.g Colantone, Crino, and Ogliari (2019) or Lang, McManus, and Schaur (2019)). However, there are potential mechanisms working in the opposite direction, particularly in emerging countries. For instance, globalisation, in theory, intends to provide more jobs, specially for low-income workers in developing countries, and this work in return can contribute to lower distress among the population. While the precise impact of different manifestations of globalisation in developing countries is hard to predict, it may at least be conceivable that data tell a different story compared to western countries.[1]

Overall, the process of globalisation clearly has both negative and positive results and it is likely to create both losers and winners. Since there is no clear a priori effect of globalisation on mental distress at the country level, the sign and magnitude of the effects are thus open to empirical investigation. To the best of our knowledge, this is the first paper that put together data covering 67 countries for the 1990-2016 period, providing the largest data set that can be used in empirical studies linking globalisation and mental health.

Our results show that, at the multidimensional level, there is a positive relationship between globalisation and both depression and anxiety. However, unlike previous studies based on employed workers, this study finds that trade globalisation reduces depression and anxiety at the country level. The overall positive effect is then explained by a strong, positive, influence of the social component of globalisation. Indeed, factors linked to cross-border movement of cultures and openness of media, e.g. migration, telephone subscriptions, the share of households with a television and individuals using internet, etc, prevail over the economic dimension. In

[1]Even though the link between globalisation and mental health in emerging economies is unexplored in the literature, there is evidence showing that globalisation, in particular tighter trade linkages, has improved social conditions and contributed to a reduction in inter-state wars in in recent decades in emerging market economies (e.g. Black and Brainerd (2002) and Lee and Pyun (2016)).

sum, our findings suggest that globalisation appears to be neither the magic solution to improve life conditions, as some proponents would claim, nor an unmanageable risk for mental distress, as others have sought to portray it. Our paper provides complexity and diversity of the outcomes.

In what follows, Section 2 reviews the existing literature that represent the point of departure for our analysis. Section 3 introduces the data set and presents some descriptive statistics. The empirical analysis is found in the sections that follow. Section 5 presents the results. Finally conclusions are presented in Section 6.

2 Evidence on globalisation and mental health

There is a broad literature that analyses the effects of globalisation on labour market outcomes, in most cases using micro data. For example, Autor, Dorn, and Hanson (2013) explore the effect of rising Chinese import competition between 1990 and 2007 on US local labour markets. They find that rising imports cause higher unemployment, lower labor force participation, and reduced wages in affected local labour markets. McManus and Schaur (2016) explore how the international trade affects occupational safety in US manufacturing industries. Using Chinese import growth in 1996-2007 as a shock of competition, they find that import competition increase work place injuries, especially at small firms that are most affected by foreign imports.

Regarding mental health, most of the research also relies on micro data. For example, Bechtel, Lordan, and Rao (2012) analyse the causal relationship between income inequality and mental health in Australia. They find that mental health is only adversely affected by the presence of relative deprivation to a very small degree. Using data for the UK, Dustmann and Fasani (2016) explore the effect of local crime rates on the mental well-being of the population and find that crime causes considerable mental distress of residents, especially property crime. Another example is Farré, Fasani, and Mueller (2018) that show strong connection between unemployment and mental disorders using data from the Spanish Health Survey. Exploiting the collapse of the construction sector to identify the causal effect of job loss, they find that an increase of the unemployment rate by 10 percent due to collapse of the sector, raised mental disorders in the affected population by 3 percent.

The relationship between globalisation and mental health is more scarce. As far as we know, most of the literature relies on survey data for employed workers in some advanced economies. For instance, using Danish data on individuals' health and Danish matched worker-firm data, Hummels, Munch, and Xiang (2016) find

that when firm exports rise for exogenous reasons, the hazard rates of worker-level stress, injury and illness increase.[2] Recently, Colantone, Crino, and Ogliari (2019) study the effect of import competition on workers' mental distress using information on mental health of workers from the British Household Panel Survey combine with measures of import competition in more than 100 industries over 1995-2007. They provide evidence that an increase in import competition has a positive, statistically significant, and large impact on mental distress. In particular, for a one standard deviation increase in import competition, a worker would need a yearly monetary compensation of 180 British pounds to make up for the ensuing utility loss. They detect that import competition worsens mental distress through greater job displacement, lower wage growth, a reduction in job satisfaction due to heavier workload, greater job insecurity and gloomier expectations about the future, in terms of career progression and overall financial perspectives. Similarly, Lang, McManus, and Schaur (2019) show that average mental, physical, and general health worsens for employed workers in local U.S. labor markets exposed to greater import competition from China.[3]

For emerging economies, also using micro data, Crozet, Hering, and Poncet (2018) explore the inverse of the China syndrome: they analyse the extent to which increased export opportunities have influenced well-being of Chinese workers. The analysis is based on panel data covering approximately 25,000 adults across 122 Chinese localities in 2010, 2012 and 2014. Their results show that perceived life satisfaction has improved significantly when local export markets have increased, beyond improving local GDP per capita and individual incomes. However, they fail to find evidence of deteriorating physical and mental health following greater exposure to international markets as suggested by Hummels, Munch, and Xiang (2016). Similarly, Tanaka (2019) provides evidence that exporting has large positive impacts on working conditions for workers in Myanmar. In particular, exporting leads to the adoption of better fire safety and health management, improvement in interactions with unions (including allowing unions), and increases in wages. As in Crozet, Hering, and Poncet (2018), there is no evidence on the causal effects of exporting on mental health.

[2]According to Hummels, Munch, and Xiang (2016), a 10% exogenous increase in exports increases women's rates of depression by 2.5%, and hospitalizations due to heart attacks or strokes by 15%. Furthermore, men and women have higher injury rates. They also show that men and women work longer hours and take fewer sick-leave days.

[3]Lang, McManus, and Schaur (2019) find that moving a region from the 25th percentile to the 75th percentiles of import exposure corresponds to a 7.8% increase in the morbidity of poor mental health and also corresponds to adding about 3 days of poor mental health per year for the average adult.

3 Data and Conceptual Issues

In this section we present the main variables that we use for the empirical analysis. We start by presenting the measurements of mental health. We then describe the different indicators for globalisation as well as the control country-level factors.

A. Mental Health

The data currently available from population-based surveys on mental health are often limited to a few specific mental health disorders. Fortunately, the Institute for Health Metrics and Evaluation (IHME) from the University of Washington provides estimates of the prevalence of a wide range of mental health disorders across all age groups based on a wide variety of data sources and a set of assumptions in their IHME's Global Burden of Disease (GBD). This is currently one of the only sources which produces global level estimates across most countries on the prevalence and disease burden of mental health.[4]

We concentrate on the prevalence of depression and anxiety for 65 countries over the 1990-2016 period. According to the World Health Organization (WHO) depressive disorders are characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Depression can be longlasting or recurrent. Anxiety disorders, in turn, refer to a group of mental disorders characterized by feelings of anxiety and fear, including generalised anxiety disorder (GAD), panic disorder, phobias, social anxiety disorder, obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). As with depression, symptoms can range from mild to severe. The duration of symptoms typically experienced by people with anxiety disorders makes it more a chronic than episodic disorder. As seen in tables 1 and 2, prevalence of depression vary by country, from a low of 2.3% in Poland to 5.6% of the population in Morocco in average over the studied period. In the case of anxiety, a 2.0% of the population is affected in Vietnam compared to 8.7% in New Zealand. Note that the prevalence also differs by country group, the average depression and anxiety being both higher in advanced economies.[5]

[4]The GBD acknowledges the clear data gaps which exist on mental health prevalence across the world: despite being the 5th largest disease burden at a global level (and within the top three across many countries), detailed data is often lacking. This is particularly true of lower income countries. Moreover, the range of epidemiological studies the IHME draw upon for global and national estimates are unequally distributed across disorders, age groups, countries and epidemiological parameters.

[5]Since many people experience both conditions simultaneously (comorbidity), it is inappropriate to simply add these two figures together to arrive at a total for common mental disorders.

Table 1: Average Depression and Anxiety in the period. Advanced countries

	Mental health		**globalisation**		
	Depression	Anxiety	globalisation	Economic globalisation	Social globalisation
Australia (AUS)	4.80	6.54	77.75	63.52	82.21
Austria (AUT)	3.43	5.36	85.87	79.07	84.37
Belgium (BEL)	3.88	5.22	87.83	85.77	82.09
Canada (CAN)	4.03	5.22	80.94	65.87	86.07
Switzerland (CHE)	3.96	5.34	87.04	79.83	88.17
Germany (DEU)	3.90	6.64	84.09	74.80	82.00
Denmark (DNK)	3.51	5.31	86.20	80.79	85.77
Spain (ESP)	3.52	5.13	79.33	69.17	74.97
Finland (FIN)	5.20	3.73	83.44	77.37	82.34
France (FRA)	4.38	6.69	83.44	72.92	80.32
Great Britain (GBR)	4.17	4.63	86.39	77.48	85.07
Greece (GRC)	4.21	5.76	75.08	63.88	73.61
Ireland (IRL)	4.29	5.77	82.03	87.96	83.59
Island (ISL)	3.47	5.28	69.91	65.88	84.49
Italy (ITA)	3.49	5.51	78.29	65.29	73.95
Japan (JPN)	3.09	3.54	69.60	52.28	72.96
Luxembourg (LUX)	3.81	5.33	82.99	89.41	88.07
Netherlands (NLD)	4.09	6.82	86.95	85.78	80.65
Norway (NOR)	3.75	7.64	83.67	74.40	88.13
New Zealand (NZL)	4.10	8.66	75.69	70.93	81.60
Portugal (PRT)	4.71	5.36	77.70	71.82	72.40
Switzerland (SWE)	4.58	5.32	86.81	78.87	86.52
United States (USA)	4.74	6.74	78.11	61.61	79.56
Group mean	**4.05**	**5.70**	**81.27**	**73.72**	**81.69**

Table 2: Average Depression and Anxiety in the period. Emerging countries

	Mental health		**globalisation**		
	Depression	Anxiety	globalisation	Economic globalisation	Social globalisation
Argentina (ARG)	3.64	6.24	64.50	43.22	61.11
Bangladesh (BGR)	2.92	3.58	72.39	67.26	65.60
Bolivia (BOL)	3.17	4.24	55.31	49.48	48.58
Brazil (BRA)	3.71	6.07	54.54	36.98	50.40
Chile (CHL)	4.21	6.24	69.61	63.61	64.12
China (CHN)	3.44	3.18	55.32	41.65	40.78
Colombia (COL)	2.32	2.62	54.34	42.07	53.49
Cyprus (CYP)	3.31	5.29	69.81	66.43	78.16
Czech Republic (CZE)	2.80	3.45	78.81	73.99	76.97
Ecuador (ECU)	2.93	4.26	56.06	41.08	55.50
Egypt (EGY)	3.18	4.26	61.71	53.06	43.44
Estonia (EST)	4.28	2.96	73.23	81.10	75.40
Croatia (HRV)	3.25	3.55	67.19	59.39	72.14
Hungry (HUN)	2.95	3.45	78.44	73.65	73.73
Indonesia (IDN)	2.62	3.26	58.30	54.76	40.79
India (IND)	3.79	3.29	50.67	32.53	34.31
Israel (ISR)	4.11	3.05	71.58	67.32	78.55
South Korea (KOR)	2.90	3.79	68.77	51.39	73.69
Laos (LAO)	2.90	4.16	36.43	41.41	31.02
Lithuania (LTU)	4.29	2.92	66.99	68.41	68.64
Latvia(LVA)	3.72	2.94	64.63	70.82	68.67
Morocco (MAR)	5.62	4.96	59.09	50.59	48.71
Mexico (MEX)	2.75	3.09	61.07	50.01	58.39
Malaysia (MYS)	3.32	4.38	73.82	72.94	70.43
Pakistan (PAK)	3.43	3.76	48.92	36.57	29.09
Peru (PER)	2.32	4.24	59.83	52.66	49.86
Philippines (PHL)	2.78	3.23	61.58	57.39	50.79
Polonia (POL)	2.29	3.44	71.29	55.51	68.66
Paraguay (PRY)	2.87	5.99	53.43	46.53	49.89
Romania (ROU)	2.35	3.22	67.00	53.99	60.91
Rusia (RUS)	3.79	2.94	64.59	46.09	59.36
Senegal (SEN)	3.30	2.89	53.76	45.34	37.85
Singapore (SGP)	3.69	3.67	80.30	91.59	82.24
Serbia (SRB)	2.68	3.40	59.37	54.69	67.36
Slovakia (SVK)	2.48	3.44	74.49	68.31	76.01
Slovenia (SVN)	3.19	3.46	69.87	63.71	75.57
Thailand (THA)	3.08	3.29	63.59	61.19	54.91
Tunisia (TUN)	3.91	5.01	62.48	55.86	51.25
Turkey (TUR)	3.81	3.82	64.62	51.76	54.45
Uruguay (URY)	3.44	6.26	66.92	56.29	65.32
Vietnam (VNM)	2.91	2.03	47.03	51.02	34.08
South Africa (ZAF)	3.72	4.01	59.29	48.63	55.45
Group mean	**3.29**	**3.89**	**63.00**	**55.81**	**58.31**

B. globalisation

We first use the composite index of of globalisation as proposed by Dreher (2006). This widely used index combines economic, social and political dimensions to measure the concept in a multidimensional way.[6] One of the great advantages of this index (The KOF index) is that it provides a comprehensive concept of globalisation that considers the interaction and integration among people rather than a more narrow term to refer only to international trade. It also allows us to disaggregate the social and economic dimension of globalisation that we use for the subsequent analysis. The index takes values from 1 to 100 with high values indicating high level of globalisation. Tables 1 and 2 provide averages over the 1990-2016 period for each country. As expected, the globalisation indicator is larger in advanced than in emerging countries (81.3 and 63, respectively). Within the advanced countries, Belgium presents the highest indicator and Greece the lowest (87.8 and 75.01, respectively). Regarding emerging countries, the differences are even larger, with Singapore averaging 80.3 and Laos with a low 36.

One of the advantages of the globalisation index is that it can be decompose into economic globalisation and social globalisation. In particular, economic globalisation includes i) trade, hidden import barriers, mean tariff rate, taxes on international trade (in percent of current revenue) and ii) financial globalisation that captures foreign direct investment, portfolio investment, international debt, income payments to foreign nationals, investment restrictions and capital account openness. On the other hand, social globalisation includes: i) interpersonal, factors such as international voice traffic, transfers, international tourism, migration, telephone subscriptions, freedom to visit and international airports; ii) informational factors as Patent applications, number of international students, share of households with a television set and individuals using the internet and, iii) cultural factors capturing trade in cultural goods, trademark applications, trade in personal services, number of McDonald's restaurants and IKEA stores, gender parity expenditure on education and civil freedom.

As Tables 1 and 2 show, social globalisation is higher in both groups of countries compared to economic globalisation. For advanced countries, the social globalisation index is 81.7, while economic globalisation is 73.7. In the case of emerging countries, both social and economic globalisation are lower than for advanced economies (58.3 and 55.8, respectively). We can also observe that there seems to be a high correlation between the two dimensions of globalisation: countries that have high economic globalisation, in general, present high social globalisation. However, we

[6]See Gygli, Haelg, Potrafke, and Sturm (2019) for a full description of the KOF index.

observe countries with a higher index of economic globalisation than social globalisation like Luxembourg or Vietnam, and on the other side countries with a higher social globalisation index compare to economic globalisation like Australia or Colombia.[7]

The relationship between globalisation and mental health is shown in Figures 1 and 1. The figures on the left show the relationship between globalisation and depressions and figures at the right show that between anxiety and globalisation. In Figure 1 each point represents a combination of a country in a given year. Figure 2 shows relationships between the average globalisation score and average mental health for a given country. These figures seem to indicate a positive relationship between the broad concept of globalisation and mental distress. Let us now investigate these links in more detail.

C. Additional Variables

The factors involved in mental health are many and varied. In addition to the aforementioned indicators of globalisation, we include a series of control variables, most of them borrow from the psychology and sociology literature or from micro-oriented studies: the natural logarithm of GDP per capita (in constant US dollars), the percentage of urban population (% of total), the percentage of industrial employment (% of total employment) and the unemployment rate. In all cases, data was extracted from the World Bank's World Development Indicators.

The relationship between a country's GDP and mental health is ambiguous. Some studies conclude that richer countries tend to have a higher proportion of the population with mental problems (Ayelet Meron Ruscio (2017)). However, it could be argue that rich countries have more ability to reduce mental disorders through a wide array of mechanisms such as improved capacity to purchase and provide health care –including mental health–, increased government welfare policies, and higher levels of educational attainment, presumably leading to better mental health behavior (Knapp, Funk, Curran, Prince, Grigg, and Mcdaid (2006)).

We also controlled for urbanization and industrialization. The arguments to do so are several. First, there is evidence that urbanization leads to a massive increase in behavioral disturbance as well as depressive and anxiety disorders. The proposition

[7] Oberlander, Disdier, and Etilé (2017) find high correlation between both dimensions –economic and social– in each country. Meanwhile, Olivier, Thoenig, and Verdier (2008), analyzing the effect of globalisation on diet, predicts that both dimensions have different and opposite effects.

Figure 1: Depression, Anxiety and globalisation. Overall

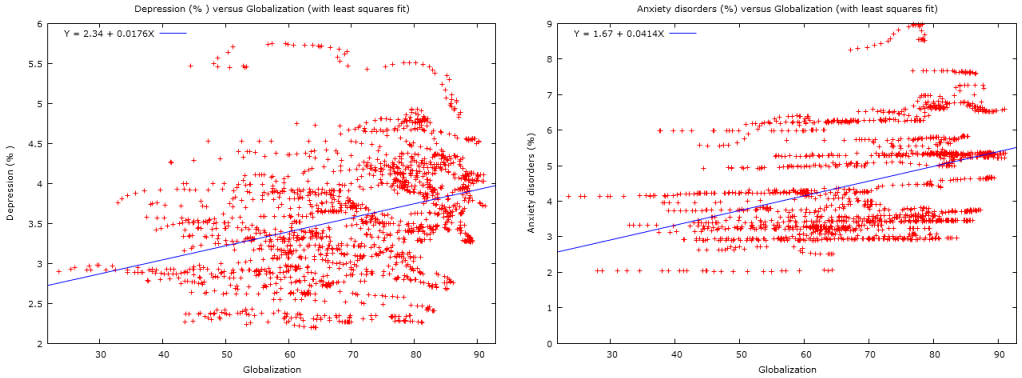
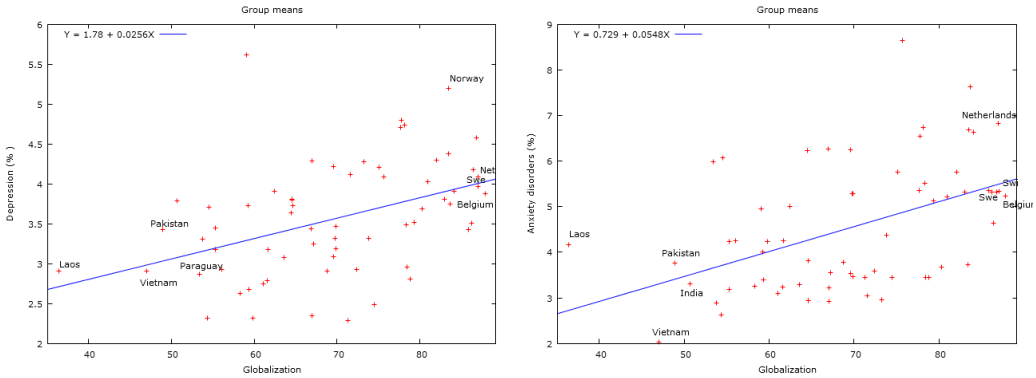


Figure 2: Depression, Anxiety and globalisation. Country averages



is that breakdown of families, overcrowded physical environments, high levels of violence and accidents, insecure tenure and poor housing, social deviance, competition, class conflict, poverty or economic disparity, among other factors, could be traced to many of the social processes accompanying urbanization and industrialization (see Harpham (1994), Marsella (1998), Bibeau (1997), among others). Moreover, access to the natural environment and outdoor spaces are believe to reduce stress, anxiety and depression (e.g. Beyer, et. al. and Reklaitiene, et. al.). However, the opposite relationship can also be justified since urbanization may provide better access to proper sanitation and health –including mental health– care services (See Ruhm (2000) and Ruhm (2003)).

Finally, we also include the unemployment rate. Indeed, unemployment is one of the most important determinants of physical and mental health. A number of theoretical contributions justify a positive relationship. For instance, in his life-span

development theory Erikson (1959) postulates that healthy emotional well-being among adults depends on the capacity to economically contribute to the family and, more generally, the society. Alternatively, Jahoda (1982) and Warr (1987) claim that unemployment negatively affects mental health since it prevents a person from obtaining the non-monetary benefits of work –such as a structured day, shared experience and opportunities of creativity and mental development. A large body of empirical studies, such as Linn, Sandifer, and Stein (1985), Kim, et. al or Farré, Fasani, and Mueller (2018), also report a negative association between unemployment and a mental health.

4 Empirical Implementation

Starting with the most parsimonious model, we are primarily interested in how mental health is affected by various manifestations of globalisation:

$$MH_{it} = \alpha_i + \delta_t + \beta Glob_{it-1} + \beta \mathbf{X}'_{it-1} + \varepsilon_{it}; \quad i = 1, \ldots, C, t = 1, \ldots, T, \qquad (1)$$

where MH_{it} represents one of the dependent variables of interest (i.e., depression, anxiety) in country i for period t –C and T are the number of countries and time periods, respectively–, $Glob$ denotes globalisation, $\mathbf{X}'$ the vector of control variables described above, α_i and δ_t are full sets of country fixed effects and period fixed effects, respectively and ε is the error term. The parameter of interest is β, the causal impact of globalisation on mental health.

Unavoidably, our strategy undergoes from several limitations. Most of them are data-related. Indeed, using aggregate cross-country level data rather than individual level data impede us to use information on the objectively measured mental health status of each individual and to control for relevant individual-level characteristics such as education, age or household size, etc. These are features that should increase the analytical precision. Having said that, by using country-level information of depression and anxiety, we are able to go beyond the purely economic effects in terms of employed workers and, therefore, to draw some major causal claims about our findings.

Moreover, examining the causal effect of globalisation on mental health is challenging and some potential problems need to be taken into account: unobserved heterogeneity and possible endogeneity of different explanatory variables. Unobserved heterogeneity is based on the circumstance that even a careful selection of determinants cannot ensure that all differences between the countries under consideration

are adequately accounted for. If these unobserved characteristics correlate with the dependent variable or the control variables under consideration, the explanatory power of unobserved characteristics may falsely be assigned to other determinants. Thus, unobserved heterogeneity can result in distorted OLS estimates for all determinants. For this reason, fixed effects models were used in the analysis. These control for differences between the countries that can assumed to be approximately constant over the observed period of time.

Endogeneity problems can occur when interdependencies exist between the dependent variable and one or more determinants. Reverse causality, however, should not be an issue in our case, because a country's globalisation process is unlikely to be driven by the current realization of mental distress. However, all independent and control variables are lagged by one year to mitigate the possibility of simultaneity or reverse causality bias.

5 Results

We now present the empirical results. We start by showing the influence of the broad concept of globalisation on mental distress. We then "unpack" the overarching concept of globalisation into its constituent parts.

5.1 globalisation and mental health: baseline

The baseline estimates of eq.(1) are reported in Table 5.1.[8] In columns (1) and (3), we show estimates of a parsimonious specification, in which depression or anxiety are regressed only on the globalisation indicator, the (log) GDP per capita and individual and time fixed effects. These results show that globalisation induces a significant increase in mental distress, the coefficients β being positive and significant. The regression results can be interpreted as follows: If the globalisation index rises by one standard deviation, the percentage of the population with depression or anxiety increases by about 0.03 and 0.04 percentage points respectively (which is around an increase of 1% in the proportion of people with this problem). However, as this association may in part be driven by country-level confounding, it is also important to consider its robustness by including relevant controls. In column (2) and (4), we show that the adding of country level controls reduces the magnitude of the association, although the parameters for the globalisation dummies remain positive and significant at the 5% level.

[8]We normalize the globalisation indicators by its overall standard deviation for ease of interpretation

Looking at the effect of the main control variables, higher income per capita is associated with lower mental distress, reflecting probably rich countries' ability to reduce mental disorders through a wide array of mechanisms, including improved capacity to purchase health care, increased government welfare policies, and higher levels of educational attainment, presumably leading to better personal mental health behavior. On the contrary, a higher proportion of the population employed in industry relates to higher mental distress risk. Interestingly, the unemployment rate and a high proportion of people residing in urban areas have opposite effects on depression and anxiety: an increase of the scores are associated with higher depression risk but lower anxiety.

The table also shows some interesting results in terms of the differences between emerging and advanced economies. The results in column (5), (7), (9) and (11), without controls for any factors except country and time dummies and GDP per capita, indicate that greater globalisation is associated with a lower (higher) risk of being mentally distressed in emerging (advanced) countries. Even though controlling for individual covariates reduces the magnitude of the association, the signs remain the same, except in the case of depression in emerging countries which becomes non significant. These results suggest that globalisation may be perceived as an opportunity in emerging countries, reducing anxiety and depression.

Table 3: Impact of globalisation on mental health

Sample	**All countries**				**Emerging countries**				**Advanced countries**			
Variable	**Depression**		**Anxiety**		**Depression**		**Anxiety**		**Depression**		**Anxiety**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Glob	0.031**	0.024**	0.039***	0.028**	−0.036***	−0.002	−0.043***	−0.036***	0.094***	0.037*	0.033	0.092***
	(0.012)	(0.012)	(0.008)	(0.011)	(0.013)	(0.014)	(0.008)	(0.007)	(0.021)	(0.020)	(0.021)	(0.022)
(log) GDPPC	−0.183***	−0.217***	−0.015**	−0.055***	−0.151***	−0.192***	−0.057***	−0.023**	−0.159**	−0.111	−0.019	0.047
	(0.022)	(0.025)	(0.011)	(0.019)	(0.015)	(0.027)	(0.014)	(0.011)	(0.069)	(0.085)	(0.068)	(0.070)
Urban pop.		0.012***		−0.004***		0.012***		−0.001**		0.010***		−0.020***
		(0.001)		(0.001)		(0.001)		(0.000)		(0.002)		(0.002)
Emp. in ind.		0.004***		0.004***		0.003**		0.001		−0.003		−0.007**
		(0.001)		(0.001)		(0.001)		(0.001)		(0.003)		(0.003)
Unemp. rate		0.004***		−0.005***		0.002*		−0.008***		0.007***		0.001
		(0.001)		(0.001)		(0.001)		(0.000)		(0.002)		(0.002)
R^2	0.9806	0.9825	0.9965	0.9976	0.9810	0.9807	0.9970	0.9991	0.9569	0.9650	0.9909	0.9941
N. of Obs.	1,650	1,420	1,650	1,145	1,052	711	1,052	711	621	455	621	455

Notes: Standard errors in parentheses. Estimations include country and time fixed effects. ***, **, * = indicate significance at the 1, 5 and 10% level.

5.2 Decomposing globalisation Measures

As we mentioned above, the first goal of our study is to analyse the causal impact of globalisation. Our empirical approach is thus tailored to answering this question. Its applicability to testing individual channels might be more limited given the collinearity and simultaneity problems that bias estimates when the effects of numerous interconnected dimensions of globalisation (e.g., trade, capital flows, migration, etc) are tested simultaneously.[9] Keeping this in mind, we can still gain further insight on the effects of globalisation by unpacking the aggregate index into its two main components, economic and social globalisation, and add them, one at the time, and then together, to the baseline regressions. These gradual steps allow us to provide more robusts results. Indeed, on the other hand, we avoid collinearity between different subcomponents. On the other hand, putting these scores together in the same model help us to consider the more realistically hypothesis that the different aspects of the globalisation process occur simultaneously. Note also that given the evidence of heterogenous effects of globalisation across sub groups of countries, we perform the subsequent analysis distinguishing advanced and emerging countries. Table 5.2 presents the main results.

[9]In order to rule out that coefficients are unstable because of multicollinearity, we checked the variance inflation factor (VIF). When the models contain the sub-indices they do not exhibit a VIF substantially larger than the rule of thumb of 10.

Table 4: Impact of economic and social globalisation on mental health by country groups

Variable	Depression						Anxiety					
	(1) Baseline	(2) Controls	(3) Baseline	(4) Controls	(5) Baseline	(6) Controls	(7) Baseline	(8) Controls	(9) Baseline	(10) Controls	(11) Baseline	(12) Controls
(A) Emerging countries												
Eco. Glob	−0.028*** (0.008)	−0.017* (0.009)			−0.021** (0.008)	−0.018* (0.009)	−0.017*** (0.005)	−0.019*** (0.006)			−0.016*** (0.005)	−0.0018*** (0.006)
Soc. Glob			0.129*** (0.021)	0.115*** (0.026)	0.121*** (0.015)	0.118*** (0.026)			0.039*** (0.013)	0.051*** (0.016)	0.033*** (0.010)	0.048*** (0.016)
(log) GDPPC	−0.168*** (0.022)	−0.203*** (0.023)	−0.199*** (0.021)	−0.230*** (0.023)	−0.224*** (0.024)	−0.243*** (0.024)	−0.067*** (0.014)	−0.074*** (0.014)	−0.094*** (0.014)	−0.103*** (0.014)	−0.083*** (0.015)	−0.090*** (0.015)
Urban pop.		0.013*** (0.001)		0.012*** (0.001)		0.0126*** (0.001)		0.000 (0.001)		0.001 (0.001)		−0.001 (0.001)
Emp. in ind.		0.004** (0.001)		−0.001 (0.00.)		0.001 (0.001)		0.001 (0.001)		−0.001 (0.001)		0.001 (0.001)
Unemp. rate		0.003** (0.001)		0.002 (0.001)		0.002* (0.001)		−0.009*** (0.001)		−0.008*** (0.001)		−0.009*** (0.001)
R^2	0.981	0.976	0.976		0.976		0.977				0.997	
N. of Obs.	1052	895	1052	895	1052	895	1052	895	1052	895	1052	895
(B) Advanced countries												
Eco. Glob	0.057** (0.0231)	−0.028 (0.026)			−0.026 (0.015)	−0.039 (0.025)	−0.034 (0.022)	0.001 (0.026)			−0.051** (0.022)	−0.009 (0.026)
Soc. Glob			0.170*** (0.021)	0.134*** (0.023)	0.166*** (0.021)	0.136*** (0.023)			0.084*** (0.021)	0.133*** (0.023)	0.099*** (0.021)	0.134*** (0.023)
(log) GDPPC	−0.174*** (0.072)	−0.348*** (0.77)	−0.117* (0.067)	−0.231*** (0.071)	−0.094* (0.060)	−0.270*** (0.076)	−0.077*** (0.070)	−0.001*** (0.078)	0.011 (0.067)	0.086 (0.072)	−0.031 (0.069)	0.076 (0.077)
Urban pop.		0.011*** (0.002)		0.006*** (0.002)		0.007*** (0.002)		−0.019*** (0.002)		−0.022*** (0.002)		−0.022*** (0.002)
Emp. in ind.		0.003 (0.002)		0.004 (0.003)		0.004 (0.003)		−0.010*** (0.003)		−0.009*** (0.003)		−0.009*** (0.003)
Unemp. rate		0.007*** (0.002)		0.005** (0.002)		0.006** (0.002)		−0.001 (0.002)		−0.002 (0.002)		−0.001 (0.002)
R^2	0.995	0.996	0.995	0.995	0.967	0.992	0.992	0.991	0.967	0.991	0.995	0.992
N. of Obs.	621	546	621	546	621	546	621	546	621	546	621	546

Notes: Standard errors in parentheses. Estimations include country and time fixed effects. ***, **, * = indicate significance at the 1, 5 and 10% level.

Columns (1), (2), (5), (6), (7), (8), (11) and (12) in Table 5.2 assess the influence of economic globalisation on mental distress. The results indicate that, in general, a higher score is associated with lower depression or anxiety in emerging economies, even when we add country control to the models. However, our empirical analysis does not reveal a significant effect of economic globalisation on advanced countries.

In Table 5.2 we also consider the association between social globalisation and mental distress. It is evident that this dimension has the most stable and pronounced association with both depression and anxiety, as adding different sets of control variables changes the magnitude of the association only slightly. This result remains valid even when we consider both globalisation indices together. Depending on the specification, a one standard deviation on the social globalisation index is associated with an increase the share of the population with a mental distress between 0.04 and 0.18.

The final step of our analysis consists of a further disaggregation of the economic and social dimensions of globalisation in order to better understand the underlying mechanisms. Therefore, economic globalisation consists of trade and capital flows and tariffs and import barriers. Social globalisation, in turn, captures individuals' exposure to external ideas, people, and information flows and is disaggregated into interpersonal (telephone, traffic, tourism, etc), informational (internet users, televisions per capita) and cultural (ikea and McDonald's, gender parity, etc) proximities. Even though some aspects of the index may appear problematic (i.e. the idea that the number of McDonald's is an appropriate measure of cultural proximity), in the absence of other comprehensive measures of globalisation we rely on these measures as by far the best existing measures of globalisation. Table 5.2 present the estimated coefficients of our variables of interest.[10]

The results for emerging economies, which are presented in panel (A) in table 5.2, show that higher trade integration reduces mental distress in most specifications but may constitute a risk-factor for depression in emerging economies. Although, arguably, the biggest attention has so far been directed at the negative impact of trade flows in mental health for employed workers, our results show that, at the country level, trade globalisation process may reduce the risk of mental disorders.

Finally, in table 5.2 we also present the results related to the disaggregation of social globalisation. In line with the results of the previous Section, individuals' exposure to external ideas, people, and information flows are strongly positively related to greater mental disorder risk, particularly in advanced countries. This result

[10]The specifications include all the control variables (not presented in the tables to save space).

may suggest, for instance, that excessive or "maladaptive" use of phones, internet, television, etc. may lead to greater incidences of depression and anxiety in users. It is, however, tricky to parse out whether or not excessive social globalisation causes these symptoms, or rather if it just exacerbates existing depression and anxiety.

Table 5: Impact of decomposed economic and social globalisation index on mental health

Outcome variable	Depression						Anxiety					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12))
(A) Emerging countries												
Trade	0.033***					0.032***	−0.034***					−0.038***
	(0.012)					(0.011)	(0.007)					(0.007)
Financial		0.002				−0.002		−0.005				−0.006
		(0.007)				(0.007)		(0.004)				(0.005)
Interpersonal			0.100***			0.084***			−0.002			−0.010
			(0.025)			(0.025)			(0.016)			(0.015)
Informational				0.077***		0.077***				0.038***		0.039***
				(0.016)		(0.016)				(0.009)		(0.011)
Cultural					0.001	−0.027					0.018	0.004
					(0.018)	(0.017)					(0.011)	(0.011)
(B) Advanced countries												
Trade	−0.080***					−0.063***	−0.084***					−0.079***
	(0.024)					(0.023)	(0.025)					(0.022)
Financial		0.021				0.009		0.047***				0.035**
		(0.017)				(0.016)		(0.017)				(0.017)
Interpersonal			0.194***			0.166***			0.127***			0.085***
			(0.028)			(0.029)			(0.030)			(0.030)
Informational				0.054***		0.022				0.057***		0.035**
				(0.013)		(0.016)				(0.017)		(0.018)
Cultural					0.041***	0.037***					0.054**	0.049***
					(0.014)	(0.015)					(0.014)	(0.014)

Notes: Standard errors in parentheses. Estimations include country and time fixed effect and the following control variables: (log) GDP per capita, unemployment rate, percentage of the population employed in the industry and percentage of the population living in urban areas.. ***, **, * = indicate significance at the 1, 5 and 10% level.

6 Conclusions

Mental disorders are an important public health problem in our society with noticeable economic consequences. Globalisation has often be held responsible for attenuating mental health disorders. The existing evidence for this claim, however, consists mostly of case studies linking some economic aspects of globalisation, i.e. trade integration, and some labour market outcomes for employed workers in advanced countries. Quantitative measures of the range of potentially very different globalisation-related drivers involved have not been examined so far. In this paper we explore the association between two expression of mental disorder, namely depression and anxiety, with globalisation. Importantly, we disentangle the economic and social dimensions of globalisation in order to provide a richer analysis.

Using aggregate country level data we find that the relationship between mental distress and globalisation depends on the specific dimension of globalisation. Indeed, we find that greater globalisation is associated with more depression and more anxiety. In particular, if the globalisation index rises by one standard deviation, the percentage of the population with depression or anxiety increases by about 0.03 and 0.04 percentage points, respectively. In addition to our main result, our analysis generates findings worthy of further examination. First, we find that our main results are driven by social globalization. Specifically, while the social globalisation dimension appear strongly positively related to mental distress, the same is not apparent for economic globalisation. This is a rather surprising finding, given the focus of most of the literature on the link between mental distress of employed workers and economic –trade– globalisation.

Second, exploring the differences between emerging and advanced countries, we observe that higher globalisation is associated with greater mental problems in advanced countries. However, this is not the case in emerging economies. This is related to the fact that in these countries, higher economic globalisation is associated with lower anxiety and depression, counteracting the negative effect of social globalisation. In the advanced countries, in turn, there is no effect of economic globalisation; we only observe that higher social globalisation is associated with greater mental problems.

If globalization is having a significant impact on the risk of mental health as our results show, then there is a need for additional mechanisms able to protect mental health during the globalizing process. Moreover, given that social globalisation seems to be the main driver of mental distress, our results merit further research to gain knowledge on the specific mediating mechanisms related to the cross-border movement of cultures and openness of media.

References

Arnett, J. (2002): "The Psychology of Globalization," *American Psychologist*, 57(10), 774–83.

Autor, D. H., D. Dorn, and G. H. Hanson (2013): "The China Syndrome: Local Labor Market Effects of Import Competition in the United States," *American Economic Review*, 103(6), 2121–2168.

Ayelet Meron Ruscio, e. a. (2017): "Cross-sectional Comparison of the Epidemiology of DSM-5 Generalized Anxiety Disorder Across the Globe," *JAMA Psychiatry*, 74(5), 465–475.

Bargh, J., and K. Y. A. McKenna (2004): "The Internet and Social Life," *Annual Review of Psychology*, 55, 573–590.

Bechtel, L., G. Lordan, and D. S. P. Rao (2012): "Income Inequality And Mental Health-Empirical Evidence From Australia," *Health Economics*, 21, 4–17.

Beyer, K., K. A., A. Szabo, S. Bogar, F. Nieto, and K. Malecki (2014): "Exposure to Neighborhood Green Space and Mental Health: Evidence from the Survey of the Health of Wisconsin," *International Journal of Environmental Research and Public Health*, 21(11), 3453–72.

Bibeau, G. (1997): "Cultural psychiatry in a creolizing world: questions for a new research agenda," *Transcultural Psychiatry*, 34, 9–41.

Black, S. E., and E. Brainerd (2002): "Importing Equality? The Impact of Globalization on Gender Discrimination," NBER Working Papers 9110, National Bureau of Economic Research, Inc.

Colantone, I., R. Crino, and L. Ogliari (2019): "Globalization and mental distress," *Journal of International Economics*, 119, 181–207.

Crozet, M., L. Hering, and S. Poncet (2018): "Looking for the Bright Side of the China Syndrome: Rising Export Opportunities and Life Satisfaction in China," Working Papers 2018-14, CEPII research center.

Dreher, A. (2006): "Does globalization affect growth? Evidence from a new index of globalization," *Applied Economics*, 38(10), 1091–1110.

Dustmann, C., and F. Fasani (2016): "The Effect of Local Area Crime on Mental Health," *Economic Journal*, 126(593), 978–1017.

Erikson, E. H. (1959): "Identity and the Life Cycle," *sychological Issues*, 1(1), 50–100.

Farré, L., F. Fasani, and H. Mueller (2018): "Feeling useless: the effect of unemployment on mental health in the Great Recession," *IZA Journal of Labor Economics*, 7(1), 1–34.

Gygli, S., F. Haelg, N. Potrafke, and J.-E. Sturm (2019): "The KOF Globalisation Index - revisited," *The Review of International Organizations*, pp. 1–32.

Harpham, T. (1994): "Urbanization and mental health in developing countries: A research role for social scientists, public health professionals and social psychiatrists," *Social Science and Medicine*, 2, 233–245.

Hummels, D., J. Munch, and C. Xiang (2016): "No Pain, No Gain: The Effects of Exports on Effort, Injury, and Illness," NBER Working Papers 22365, National Bureau of Economic Research, Inc.

Jahoda, M. (1982): *Employment and Unemployment: A Social-Psychological Analysis*. New York: Cambridge University Press.

Kelly, B. (2018): "Globalisation and psychiatry," *Advances in Psyquiatric Treatment*, 9(6), 464–470.

Kim, S., C. Muntaner, H. Kim, C. Jeon, and M. Perry (2013): "Gain of employment and depressive symptoms among previously unemployed workers: A longitudinal cohort study in South Korea," *American journal of Industrial Medicine*, 56(10), 1245–1250.

Knapp, M., M. Funk, C. Curran, M. Prince, M. Grigg, and D. Mcdaid (2006): "Economic barriers to better mental health practice and policy," *Health policy and planning*, 21, 157–70.

Lang, M., T. C. McManus, and G. Schaur (2019): "The effects of import competition on health in the local economy," *Health Economics*, 28(1), 44–56.

Lee, J.-W., and J. H. Pyun (2016): "Does Trade Integration Contribute to Peace?," *Review of Development Economics*, 20(1), 327–344.

Linn, M. W., R. Sandifer, and S. Stein (1985): "Effects of unemployment on mental and physical health," *American journal of Public Health*, 75(5), 502–506.

Marsella, A. J. (1998): "Urbanization, mental health, and social deviancy: A review of issues and research," *American Psychologist*, 53(6), 624–634.

McManus, T. C., and G. Schaur (2016): "The effects of import competition on worker health," *Journal of International Economics*, 102(C), 160–172.

Oberlander, L., A.-C. Disdier, and F. Etilé (2017): "Globalisation and national trends in nutrition and health: A grouped fixed-effects approach to intercountry heterogeneity," *Health Economics*, 26(9), 1146–1161.

Olivier, J., M. Thoenig, and T. Verdier (2008): "Globalization and the dynamics of cultural identity," *Journal of International Economics*, 76(2), 356–370.

Reklaitiene, R., R. Grazuleviciene, A. Dedele, D. Virviciute, J. Vensloviene, A. Tamosiunas, M. Baceviciene, D. Luksiene, L. Sapranaviciute-Zabazlajeva, R. Radisauskas, G. Bernotiene, M. Bobak, and M. Nieuwenhuijsen (2014): "The relationship of green space, depressive symptoms and perceived general health in urban population," *Scandinavian Journal of Public Health*, 42(7), 669–76.

Ruhm, C. J. (2000): "Are Recessions Good for Your Health?," *The Quarterly Journal of Economics*, 115(2), 617–650.

——— (2003): "Good times make you sick," *Journal of Health Economics*, 22(4), 637–658.

Tanaka, M. (2019): "Exporting Sweatshops? Evidence from Myanmar," *Review of Economics and Statistics*.

Trautmann, S., J. Rehm, and H.-U. Wittchen (2016): "The economic costs of mental disorders: Do our societies react appropriately to the burden of mental disorders?," *EMBO reports*, 17, e201642951.

Warr, P. B. (1987): *Work, Unemployment and Mental Health*. Oxford, United Kingdom:Oxford University Press.

7 Annex

Table 6: Multicollinearity diagnostics: Variance Inflation Factors

Variable Variable	**Advanced countries**	**Emerging countries**
Unemp. rate	1.377	1.171
Urban pop.	1.698	2.489
Tertiary edu.	1.864	3.462
Emp. in ind.	3.003	1.683
(log) GDPPC	3.502	10.634
Trade	3.119	2.942
FDI	3.663	2.486
Migration and other interpersonal	5.288	5.415
Technology exp. and other informational	2.333	8.235
Telephone and other Interpersonal	2.006	3.302
Trade in personal services and other cultural	2.095	6.546
TV, internet and other Informational	3.080	6.442

Notes: This table presents the Variance Inflation Factors. Minimum possible value = 1.0. Values > 10.0 may indicate a collinearity problem