

Introduction

Addiction has been found to be a serious global public health issues. A form of addiction is substance use disorders. Deaths by substance use disorders have caused 35.1 million deaths in 2019 alone, as per the Global Burden of Disease Study (2019). The aim of this paper is to analyse the impact of the macroeconomic conditions, which are represented by the misery index and welfare, which is represented by the Human Development Index, with accommodation for corruption and income inequality as control variables on addiction.

Literature Review

"Addiction is a complex disease of a complex brain; ignoring this fact will only hamper our efforts to find effective solutions through a comprehensive and systemic understanding of the underlying phenomena." Due to our brain's complexity, it can be harder to control impulses and emotions. The only way we can find effective treatments for addiction is through scientific research (Volkow & Koob, 2015:2). A form of addiction is substance abuse. Substance use is defined as the ingestion of psychoactive substances in amounts that do not hinder functioning socially, educationally, or occupationally, while substance intoxication is concerned with the physiological response to ingesting those substances. There are several perspectives that are used to assess substance use disorders, like the genetic, biological and the sociocultural perspective, as cultural attitudes play a role in encouraging or discouraging problematic drinking, as well as religiosity and extent of practising religion (Barlow et al., 2017: 405-425; Hooley et al., 2017: 426).

Almost all synthetic indicators include both unemployment and inflation. This is because they have both direct and indirect impacts on policies and individuals. Not only does inflation disrupt the income distribution, hence contributing to social and political problems, but also it has a negative effect on the allocation of resources and negatively affects the current account balance. Unemployment has both psychological and sociological costs. It decreases tax revenues, which in turn disrupts the distribution of income and reduces output, as well as loss in social status, reduction in self-esteem and increases crime (Özcan & Açıkalın, 2015: 160; Grabia, 2011:104). Arthur Okun's misery index, which is also known as the Economic Discomfort Index, is a macroeconomic indicator that is made up the summation of unemployment and inflation. The index is one of the most widely accepted and commonly used indices by economists and politicians. The higher the index value, the worse the economic conditions (Lechman, 2009: 1-8).

Salazar Silva et al. (2014: 35-36) defined human development as a process that seeks to augment human opportunities and the environment of possibilities in which people can lead healthy and creative lives. Based on the human development model, Mahbub ul Haq (1995: 13) evaluated human development in the following way. He argued that economic growth is insufficient in ensuring a better quality of life and the profound wealth of a nation is its citizens. Based on this, the United Nations Development Program (UNDP) recognized the role that economic conditions play in people's health and human development, hence in 1990 the Human Development Index (HDI) to be able to monitor the evolution of certain capabilities across countries and time. The Human Development Index (HDI), is made up of several components, which are life expectancy at birth, mean years of formal education, and gross national income (GNI) per capita. The values range from zero to 1. According to the UNDP, HDI values for nations are divided into four brackets that reflect different levels of human development, which are low HDI (0.667–0.720), Medium HDI (0.723–0.742), High HDI (0.745–0.760), and Very High HDI (0.760–0.830) (Cabello-Rangel et al., 2020: 2-4).

The control variables chosen are corruption and income inequality. To begin with, Corruption is defined as the abuse of public power for private benefits and agendas and the entity that engages in corrupt acts is not held accountable. The roots of corruption are embedded in social and cultural history, as well as political and economic development, along with the bureaucracy of traditions and policies of a nation (Akçay, 2006: 29-30; Pradhan, 2012:1-4). The variable representing corruption is The Corruption Perception Index (CPI), which was established in 1995 by Transparency International as a composite index used to evaluate the perceptions of corruption in the public sector across different countries across the globe.

The values range from zero to 100. The lower the value of the index, the higher the corruption level. (Transparency International, 2020).

Like fairness, equality, is an instrumental value in society. Regardless of ideology, culture, and religion inequality is a concern for innumerable people, as it can be a sign of lack of mobility of income and opportunity. This lack of mobility acts as a disadvantage for certain segments of society.

Inequality also adversely affects stability and growth in the macroeconomy, as well as providing room for abuse of political power. A form of inequality is income inequality, which is defined as the inconsistent distribution of income across households. The proxy representing income inequality in the equation is the Gini Coefficient. The range of values for the Gini Coefficient is from zero to 1, where zero represents full income equality and 1 represents the highest level of income inequality. Countries with very high inequality levels have Gini coefficients lie in the range between 0.5 and 0.7, while for countries with relatively low income inequality the range lies between 0.20 and 0.35, like the case of the panel countries used (Todaro and Smith, 2011:204-209).

$$RY1 = \beta_0 + \beta_1X1 + \beta_2X2 + GINI + CPI + \epsilon$$

The equation above reflects the relationship between Deaths by Substance Use Disorders, the Human Development Index (HDI) and the Misery Index.

RY1 = Deaths by Substance Use Disorders

ϵ = represents the error term,

B0=intercept

B1= Slope for HDI , X1= Variable for HDI

B2= slope for Misery Index , X2= Variable for Misery Index

Corruption = (CPI). Inequality = GINI

Conceptual Framework

Methodology

To reflect the relationship between the variables that will be inspected, Ordinary Least Square (OLS) regression method on EViews will be used across five panel countries, which are Japan, Sweden, Switzerland, United Kingdom and United States for the period 2000 to 2019. Hausman test will be conducted to assess whether fixed or random cross section method will be used. Data for the annual unemployment and inflation rate were used to calculate the Misery Index and were collected from the World Bank Database. As for the Human Development Index, the data was collected from the United Nations Development Programme, while data for deaths by substance use disorders were collected from the Global Health Data Exchange database. The data for the control variable, corruption, which will be measured by the Corruption Perception Index (CPI) was collected from Transparency International, while for income inequality, which will be measured by the Gini coefficient, was collected from the World Bank Database. All of the variables were converted to percentages for ease of calculation.

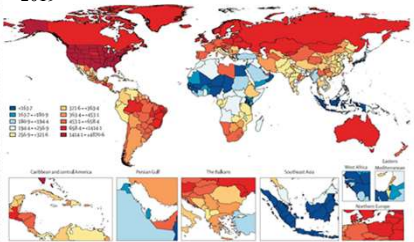
Results

The findings from the Hausman Test for Deaths by Substance Use Disorders, misery index and HDI show that the probability value is less than 5% level of significance, hence fixed effect model is more appropriate. The new equation will be as follows:

$$RY1 = -0.041555(X1) - 0.000312(X2) + 0.018285 + 0.008457 - 0.041555 + \epsilon$$

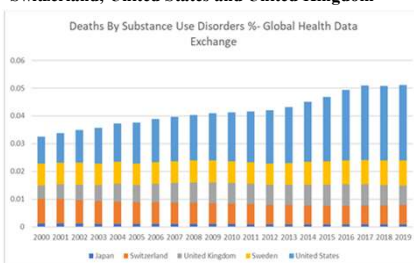
The relationship between deaths by substance use disorders and both the independent variables were found to be an inverse relationship, which means that the poorer the welfare and economic conditions, the higher the deaths by substance use disorders. The P values for all the independent and control variables were found to be less than 5%, which indicates that they are highly significant. The (R-squared) coefficient reflects that 86 percent of the of the variations in Deaths by Substance use disorders is explained by Human Development Index, which is an improvement from the initial model due to accommodation for control variables. The F-Statistic shows that the overall model is significant.

a) Deaths By Substance Use Disorders - Globally 2019



Source: Global Burden of Disease Report 2019

b) Deaths By Substance Use Disorders - for the period 2000 to 2019 in Japan, Sweden, Switzerland, United States and United Kingdom



Source: Global Health Data Exchange

Conclusion

The current research conducted fills a gap, as there is a lack of papers investigating the effect of both the misery index and the HDI together, with accommodation for corruption and income inequality together as control variables. The equation proposed is a new one that has not been found in the literature before. The relationship between deaths by substance use disorders and both the proxy for macroeconomic conditions and welfare was found to be both significant and direct, which was similar to some researchers' findings when they analysed the relationship between the deaths by substance use disorders and each of the variables studied individually (Salazar Silva et al ,2014: 36-39 ; Ruhm, 1995: 600-601). This paper provides policy makers with insight as to how their decisions affect the quality of life and the welfare of the general public. This paper also provides significant room for expanding on this research to accommodate for other variables and countries.

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