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## **Sesión plenaria: Tesis doctorales en curso**

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### **Título de la tesis:**

**The impact of health on living standards and economic growth during the first half of the 20<sup>th</sup> century**

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## *Introduction*

The improvement in world living standards during the last two centuries is beyond dispute. Today's world citizens live longer, healthier and are better nourished than their counterparts at any time of human history. This process did not follow a unique pattern as its pace varied significantly across continents, countries and even regions. In fact, nowhere else were these changes most evident than in Western countries where daily caloric supply has almost doubled in some cases (Fogel, 2004: 9), life expectancy at birth has increased by more than 40 years on average (Riley, 2005: 538) and the quality of life has risen as improved medical knowledge allows for better prevention and treatment of diseases (Mokyr and Stein, 1997).

### *Project 1: Going beyond GDP for the measurement of living standards*

The aforementioned changes continue today shaping human relationships, population structure and economic performance worldwide. This begs the questions: are countries aware of the impact of health on their citizens' living standards? Which tools or indicators do they use for this purpose? The most used indicator is gross domestic product per capita (GDP), which has been criticised for the measurement of living standards<sup>1</sup> since its creation. An important critique concerns the health aspect of a nation, since GDP only accounts for health care costs, which leads to a permanent underestimation of living standards as the economic gains of better health widely exceed its costs (Murphy and Topel, 2006; Hickson, 2009). This underestimation is particularly well illustrated by the European experience during the first half of the 20th century. Europeans witnessed substantial health improvements as increases in life expectancy at birth (Riley, 2005), nutrition (Fogel, 2004) or stature (Hatton and Bray, 2010). On the other hand, countries' economic performance remained at low levels partly as a consequence of two world wars and the great depression. Taking this historical context as a point of departure, it stands to reason that if I aim at measuring and comparing to which extent Europeans became better off, I have to develop a welfare indicator that includes health and economic indicators in a meaningful way.

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<sup>1</sup> Living standards is a multidimensional concept (Easterlin, 2000). In this paper, I will specifically refer to the combination of the level of living and health when I use the words *living standards* or *welfare*.

In line with this idea, a number of indicators have been developed in the last decades among which the *Human Development Index* (HDI) is the best known. However, the use of HDI has been criticised in scientific analyses due to the arbitrary way in which its three dimensions are weighted. To solve this problem, another strand of literature has worked in a different direction using a micro-founded theoretical framework to combine the utility from income and health improvements measured with longevity (Jones and Klenow, 2010; Murphy and Topel, 2006). This research will take this approach to develop a new indicator that combines income and health (measured with life expectancy) into a single indicator.

### *Project 2: Understanding the causes of life expectancy increases in Europe*

This project will focus on two points. Firstly, I will investigate the causes of life expectancy increases in Europe. So far, they have been attributed to several factors, among which the most important are: better nutrition (Fogel, 2004), advances in medical knowledge (Mokyr and Stein, 1997; Mokyr, 2000), public expenditure in the form of public infrastructures (e.g. sewage system, water supply, etcetera) and health care (Ferrie and Troesken, 2008; Cutler and Miller, 2005) and the decline of fertility and family size (Millward and Baten, 2010). But, what was their respective influence on life expectancy developments in Europe? Secondly, I will analyse the observed time gap between the steep increase in health conditions during the first half of the 20th century and the aforementioned potential causes, which were in place already in the second half of the 19th century to answer the following questions. What accounts for this time gap? Is it something specific of those societies or does it also apply to present societies?

### *Project 3: Health and economic growth*

#### *Subproject 1: Accounting for income differences across countries and over time*

Why are some countries richer than others? To account for income differences across countries, the literature mainly draws on the amount of physical and human capital that an economy has at its disposal. However, recent research has shown that the remaining residual variance attributed to differences in productivity is more than a half of total cross-country

income variance.<sup>2</sup> This residual productivity can be partly explained by many factors such as geography, institutions or health.

But, how can health status influence economic performance? If we consider two countries with the same amount of physical capital and technology level, we recognise that workers with better health conditions will be more productive. This can happen in several ways as Weil (2007) indicates. Firstly, healthy workers work harder, longer and more intelligently. Secondly, health improvements promote schooling as individuals have more time to amortise such investments in human capital. And thirdly, student's performance might increase as they will have higher cognitive functioning levels.

In this research, I will take Weil's approach to account for income differences across countries and over time in Europe for the first half of the 20th century by considering differences in health status.

### *Subproject 2: Exploring the effect of longevity on economic growth*

What is the effect of health on economic growth? A large microeconomic literature points out the existence of a positive relationship.<sup>3</sup> At the macroeconomic level, there is not a clear consensus yet. Whereas a number of studies have claimed a positive relationship between health and economic growth (Bloom and Sachs, 1998; Gallup and Sachs, 2001), a recent study by Acemoglu and Johnson (2007) has challenged this view for the period 1940-1980. The authors find that health conditions measured with life expectancy at birth has a negative impact on GDP per capita and no clear effect on total GDP. My research aims at contributing to this debate by analyzing the effect of increasing life expectancy on economic performance in Europe for the period 1870-1950 taking a similar approach as Acemoglu and Johnson (2007).

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<sup>2</sup> See Caselli (2005) for a review.

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