Summary

Most economists agree on the fact that the concept of human capital dates back to Adam Smith (1776) who emphasizes the importance of workers’ skill in "The Wealth of Nations". Rosen (2008) believes that the premises of the notion can be found in Petty (1676) who compares the value of human life to the value of other instruments used for war. According to Blaug (1976), the birth of human capital theory was announced by Theodore Shultz in 1960, but was in fact launched two years later with the publication of the special issue of the Journal of Political Economy entitled "Investment in Human Beings". In this special issue, Becker (1962) considers that investing in human capital consists in "activities that influence future real income through the imbedding of resources in people. [...]. The many ways to invest include schooling, on-the-job training, medical care, vitamin consumption, and acquiring information about the economic system. [...] all improve the physical and mental abilities of people and thereby raise real income prospect". In the same special issue, Weisbrod (1962) states that "The principal forms of direct investment in the productivity and well-being of people are: health, learning (both in school and on the job), and location (migration)". Since then, the interest and the use of the concept of human capital has never ceased to increase.

The concept of social capital is much more contemporaneous. In Chapter 4, we identify its first appearance in Jacobs (1961), but a much more accomplished definition is proposed in the seminal works of Loury (1977). In their review of the literature on social capital, Durlauf and Fafchamps (2004) consider that "The success of social capital as a federating concept may result from the fact that no social science has managed to impose a definition of the term that captures what different researchers mean by it within a discipline, [...]. Therefore, we will satisfy ourselves by stating that the study of social capital is that of network-based processes.

With respect to the general definitions provided above, social capital may be considered as a subset of human capital. Nevertheless, modern literature manages to separate the two and to study them separately, without considering that social capital could be an aspect of human capital.

Durlauf and Fafchamps (2004) implicitly distinguish between papers on social capital according to their focus on the "nature" or the "function" of that capital. The "nature" of social capital opposes its individual versus community characteristics or the nature of the ties in play: "weak" versus "strong" (see the seminal work of Granovetter (1973) on that topic). We believe that the same classification should be applied to the human capital literature. The "nature" of human capital is generally defined according to the scope of its applications and its characteristics in terms of depreciation; general human capital is usually viewed as useful in a huge set of human actions, both on and outside the labor market. It can be accumulated by education, research or experience. Vocational human capital is generally considered to be related to a particular position, it is accumulated through training and experience. Finally, specific human capital is
generally seen as connected to a particular firm or kind of activity and is mainly accumulated through experience ("learning by doing").

In the majority of papers focussing on the nature of either human or social capital, the ultimate goal is to study their functions. Furthermore, it is possible to assign each of the papers to at least one of the following categories depending on their focus: papers dealing with the question of the accumulation of capital, those assessing their economic value and those stressing the externalities associated with them. We will briefly describe these three main categories, for both human and social capital (from here on respectively HK and SK):

1. Accumulation of HK and SK
   For HK, we find in this category the articles dealing with the creation of human capital, often addressing the production of R&D and those that focus more specifically on the transmission of human capital, either through formal processes, such as school, training, etc. or through informal processes, i.e. intra-familial transmission of human capital, peers effects\(^1\) (Hoxby, 2000), etc. We should also mention that other research focuses on the depreciation of HK.
   For SK, this category includes the papers covering the creation of networks, norms or trust.

2. Economic value of HK and SK.
   In general, papers dealing with this question examine the effect of HK or SK on wages, productivity or growth. For HK, should be mentioned the seminal works of Becker, summarized in his book entitled Human Capital, Mincer (1974) for his "wage equation", Psacharopoulos (1994) for his computations of private and public rates of returns of human capital "around the world" and Mankiw et al. (1992) for a macroeconomic perspective. For SK, one of the major contributions is due to Granovetter (1974) focussing on the effect of social ties for the worker. He stresses the importance of weak versus strong ties.

3. Externalities of HK and SK
   An extraordinary amount of articles focus on the externalities produced by HK or SK. These externalities can be of very different kinds and magnitudes, e.g. the relationship between HK and health (Grossman, 1975), HK and fertility, HK and population growth (Shultz, 1997), SK and crime (Calvó-Armengol et al., 2007), SK and inequalities (Calvó-Armengol et al., 2004 and 2006), SK and the creation of HK (Coleman, 1988), etc.

Before briefly presenting the different papers composing this dissertation, Table 1 summarizes how they are related to each other in terms of topics addressed by each of them.

Table 1: Main topics addressed by the different chapters composing this dissertation

\(^1\)We believe that papers on peer effects could also be classified in the category of papers dealing with the externalities of human capital.
Table 1 shows how the five chapters of this dissertation are connected to the literature on human capital, labor market and social capital. The first part of this dissertation concerns the accumulation of human capital, more precisely, it focuses on one of the processes of its creation: we analyze econometrically the determinants of the production of research by US higher education institutions. In the second part we relate the questions of the investment in human capital to its value on the labor market: we design the labor market with frictions, à la Pissarides, to study theoretically the investment decisions made by workers when they have to choose between general and vocational human capital. The aim of the third part of the dissertation is to improve the understanding of the effects of urban migrations: we use the same kind of labor market as in Part 2 (a theoretical labor market designed with frictions) to study the effects that urban migrations are likely to have on the urban labor market and on welfare. The fourth part is devoted to the analysis of the effect of social capital (with a focus on its local component) on the geographical mobility and the risk of unemployment for workers. We propose a theoretical analysis to help understand which effects different aspects of social capital (i.e. its local and professional components) are likely to have on the likelihood to move (kind of externality) and to get a job (economic value). In the last part (Part 5), we look at the interactions between the social supervision of individuals, historically organized by the different political parties (Catholics, Socialists and Liberals), on the voting behavior of individuals in Belgium. Through the study of the creation of the social supervision of individuals, we implicitly examine the process of the creation of social capital and its externalities in terms of voting behavior.

Hereunder, we briefly present each part of the dissertation.

**Part 1: The Determinants of the Production of Research by US Universities**

Higher education institutions have the specificity to ensure the production and the transmission of human capital. The former comes from their research activities, the latter from their educational activities. Economists agree on the fact that R&D is one of the main factors which may improve growth in developed countries. Authors who analyze the importance of basic research, in particular the research produced by universities, agree on the fact that it holds a special place in the development process.

In order to analyze the determinants of the production of research by higher education institutions in the US, we use the information contained in the Shang-
hai ranking to estimate their performances in the production of top level academic research.

We show that it is important to account for the presence of outliers, in both dimensions (x and y axes), among institutions. It appears that most of the top institutions present in the ranking must be considered as outliers. We also treat the endogeneity issue and test for the possible selection bias. We find that the income, the share of this income devoted to expenses in research and the number of professors increase the ability of an institution to produce top level academic research significantly. We also show that the average quality (measured by the wages) of professors matters but nonlinearly, the relationship is convex and at least 30% of institutions are located on the decreasing part of the curve. This suggests that there may exist a trade-off between offering higher wages to attract "better" professors and to devote more means to other productive expenses (such as buying machines, databases, etc.) that also contribute to the production of research.

**Part 2: Investment in Vocational and General Human Capital: A Theoretical Approach**

The aim of this paper is to better understand how International Organizations should design their interventions in developing countries to reach the optimal level of investment in general and in vocational human capital. We analyze this question in a simple theoretical labor market framework designed with frictions, where workers invest in human capital before entering the labor market. We assume that there are only two different available types of human capital: general and vocational human capital. Both of them are productive, but, if general human capital never depreciates, this is not the case for vocational human capital that vanishes if the sector of activity of the worker disappears.

We show that, due to a standard holdup problem, the decentralized equilibrium is characterized by an underinvestment in human capital, but the relative share of each type of human capital chosen by workers is optimal.

Furthermore, we show that the optimal share of each types of human capital

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2 Rogerson (1992) defines the hold-up phenomenon with the following statement: “A hold-up problem occurs when two factors are present. First, parties to a future transaction must take non-contractible specific investments prior to the transaction in order to prepare for it. Second, the exact form of the optimal transaction (e.g. how many units if any, what quality level, the time of delivery) cannot be specified with certainty ex ante.”

In labor economics, one usually says that a hold-up occurs when either an employer or an employee must make an investment but is not able to capture the entire return from this investment. In such a case, the level of investment is generally lower than what would be socially optimal. This suboptimality is entirely due to the hold-up phenomenon which is relatively standard in the labor literature (see Hosios, 1990, Pissarides, 2000, Cahuc and Zylberberg, 2004). In this chapter, the hold-up effect comes from the fact that the only agent who has to support the cost of the investment in human capital is the worker, while the future employer benefits from his increased productivity (capturing a share \((1 - \beta)\) generated by the match) without having to pay for the investment.
depends on their relationship in their ability to make the worker productive. Using two extreme cases, we show that if they are perfect substitutes, the likelihood for a worker to choose to invest in vocational human capital only increases with his life expectancy, but decreases with the life expectancy of the sectors in the economy. The same kind of relation appears if we assume that these two types of human capital are complementary (we model this relationship by a Cobb-Douglas function), but workers then choose to accumulate the two types of human capital.

Part 3: Urban Migrations and the Labor Market

Urban migrations are often associated with a deterioration of the living standards of citizens: as new urban migrants arrive, unemployment and congestion increase.

In this paper we model the urban labor market à la Pissarides, with frictions, and add spatial effects which are commuting costs and a job search intensity that decreases with the distance from the center business district. The city size is endogenously determined by the migrations of rural workers who decide to abandon their rural work to try to find a job in the city.

Our model allows to fit the effects described above quite well. Comparing the equilibrium city size to the optimal city size chosen by the social planner, we show that there are two sources of inefficiency: first the standard Hosios-Pissarides condition on the bargaining power of workers holds; second, we show that a holdup\(^3\) occurs, making the equilibrium city size always too small. Furthermore, if we allow commuting costs to differ from private costs, it is possible for the equilibrium city size to be smaller or higher than the optimal city size. Nevertheless, we show that it is always possible for the decentralized equilibrium to reach the optimum through the implementation of appropriate taxation policies.

Part 4: Local social capital and geographical mobility\(^4\)

In this paper, we attempt to understand the determinants of mobility through introducing the concept of local social capital. Investing in local ties is rational

\(^3\)As in the previous chapter of the thesis, we observe a kind of hold-up phenomenon, but its origin is more subtle. The basic idea is that an urban worker chooses to migrate to the city or not by comparing the surplus he would generate by remaining in the countryside with that he would be likely to capture should he decide to migrate. The origin of this possible hold-up phenomenon is related to the fact that rural worker’s estimation of the value of urban migration is lower than its social value: by migrating he only obtains a share ($\beta$) of the surplus while the social planner takes also the surplus captured by the firm ($1 - \beta$) into when estimating the value of urban migrations.

\(^4\)This part is cowritten with Alexandre Janiak (Universidad de Chile and IZA) and Etienne Wasmer (Sciences-Po Paris, OFCE, CEPR and IZA).
when workers do not expect to move to another region, and reciprocally, once local social capital is accumulated, incentives to move are reduced. We build a model to illustrate several types of complementarities: observationally close individuals may take different paths characterized by high local social capital and low mobility vs. low social capital and high propensity to move. Employment protection reinforces the accumulation of local social capital and thus reduces mobility. Externalities generate multiple equilibria in which mobility and social capital are negatively correlated across equilibria.

European data supports the theory: the South of Europe is characterized by both low mobility and local social capital, while the North of Europe has higher mobility and a more general type of social capital. Within a country and at the individual level, more social capital is associated with lower mobility.

Finally, we argue that part of the European unemployment puzzle can be better understood thanks to the concept of local social capital.

Part 5: Social Supervision and Electoral Stability on the Geographical Scale in Belgium

The Belgian electoral geography is characterized by high stability over time, both on the local and regional levels. The aim of this paper is to explore the mechanisms behind this spatial polarization process. We show that the social supervision set up by the parties at the end of the nineteenth century is one of the factors which may explain this geographical stability over time. Social supervision can take different forms but tends to favor the homogeneity of electoral behavior and to hand it down across generations. It could include all kinds of associations and networks within which individuals are embedded: trade unions, churches, schools, political parties... In Belgium, social supervision took the specific form of pillars which, at the peak of its development, covered all of the stages of the life of an individual.

Each pillar is associated with a specific ideological content: Catholic, Socialist or Liberal. The emergence of pillars locally is related to specific historical contexts but they may survive despite the disappearance of the factors which favored their emergence, thereby acquiring a sort of autonomy. For example, the coal mines on the Walloon industrial axis favored a powerful Socialist pillar, which still survives today despite the closure of mines and economic tertiarization.

This approach is not in contradiction with studies on the neighborhood effect, but allows to give it a content and a historical dimension by considering the presence of schools, parishes or associations in the environment. This type of analysis also refers to a French tradition of electoral geography which attempts to explain electoral behavior from a long term perspective by taking into account the social networks within one place.

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5This part is coauthored with Gilles Van Hamme (Université Libre de Bruxelles, IGEAT)
We show that social supervision may affect voting behavior through two different channels: a direct effect, coming from the family transmission of the pillars values (a sort of direct connection to the considered pillar) and through a contextual - or neighborhood - effect captured by a measure of the implementation of the pillar at the local scale.