Search strategies on the housing market and their implications on price dispersion

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ABSTRACT

When an household needs to change its home, two transactions have to be done: buy a new house and sell the preceding one. To do so, the household can either adopt a sequential search strategy or a simultaneous search strategy. In sequential strategies, it first buys (or sells) and only after tries to sell (or buy) to avoid being homeless (or holding two houses). In the simultaneous strategy, the household tries to buy and sell simultaneously on the market. This last strategy can diminish its search costs on the housing market, but exposes the household to the risk of becoming a homeless-renter or a two-houses owner. The literature generally considers only the sequential search strategy. However, we show in this article that the simultaneous strategy is (i) generally welfare improving for households, (ii) sometimes the sole equilibrium strategy, and (iii) at the origin of price dispersion on the housing market.

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1. Introduction

The existence of price dispersion is a widely recognized fact on real estate markets. This article advances a new explanation of this phenomenon based on the search strategies of households. This explanation does not rely on any form of heterogeneity, neither in dwellings nor in households, but considers the presence on the housing market of households, which simultaneously try to buy a new home and to sell their current one. This explanation is worthwhile given the puzzling existence of price dispersion on real estate markets.

Indeed, a significant part of price dispersion can be evidently attributed to the heterogeneous nature of real estate assets. Properties differ according to their structural attributes (size, building period, ...) and their location (submarkets, local amenities, ...). The large empirical hedonic price literature (see Rosen, 1974) provides evidence of the impact of each of these qualitative factors on the selling price and enables a quantitative assessment of the price gap between two almost similar dwellings differing only along one attribute or, more importantly, their location (i.e. different geographical submarkets)[1]. Recently, a significant strand of research has been devoted to the *remaining* part of real estate price dispersion: the amount of volatility that cannot be attributed to the heterogeneity of assets. Therefore, it appears that two similar dwellings (with the same attributes and close locations) can be valued differently at the same

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[1] For example, Gabriel et al. (1992) document how large is the regional house price dispersion in the U.S. and show that this spatial variability is linked to interregional migration of households. On the theoretical side, the role of housing supply regulation (Glaeser et al., 2005; Glaeser et al., 2006), income distribution (Gyourko et al., 2006) or differential in productivity gains across metropolitan areas (Glaeser et al., 1992, or Van Nieuwerburgh and Weill, 2010) in explaining spatial house price dispersion have been explored.

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time and that this *residual* heterogeneity is empirically non negligible. For example, Leung et al. (2006) trace the evolution of quality-controlled price dispersion on the Hong-Kong housing market over time and show that the amount of volatility differs from zero and is connected to macroeconomic factors.[2]

The question is: how does it come that two seemingly identical assets may be sold at different prices? The real estate market literature provides two typical answers relying either on unobserved (good or agent) heterogeneity, either on the liquidity dimension of housing markets. According to the first view, remaining price differentials are possibly caused by missing variables concerning good attributes (unobserved good heterogeneity) or by ex ante buyers' or sellers' heterogeneity. Such assumptions seem natural: some structural attributes are not observable, difficult to measure and consequently not included in hedonic estimates even if they might have an impact on selling prices. Moreover, households entering the housing market can differ across tastes, information (first-time buyers vs experienced buyers) or search costs. These factors affect their bargaining power and then the final price. For example, Read (1991) proposes a theoretical setup with search costs on the housing market in which agents have exogenously distributed preferences concerning location choice. This assumption induces equilibrium price dispersion as well as positive vacancy rates. Harding et al. (2003) adds some variables concerning the buyers' socio-economic profile in standard hedonic house price equations. They show that transaction prices may differ according to the buyer' age or marital status. Moreover, they build a theoretically founded proxy to evaluate the respective bargaining powers of both buyers and sellers. This proxy appears to have a significant effect on the dwelling valuation.

According to the second view, the concept of market liquidity – i.e. the time a dwelling has been on the market – provides an explanation for price dispersion. Merlo and Ortalo-Magné (2004) in an empirical setup not only show that the time on market and the final sale price are correlated (which is a largely documented empirical fact in the real estate literature), they also evidence that assets with higher listed prices will encounter longer time to sell, but finally higher sale price. The time to sell is negatively linked to the listed price to sale price ratio. This suggests that ex ante identical sellers putting similar goods on the market and adopting different listing price strategies may sell at a different price. This is the liquidity assumption: price dispersion does not solely come from the heterogeneous nature of assets or the ex ante heterogeneity of agents, but also from the uncertainty in time to sale inherent in a search process. *Ceteris paribus*, the longer the time spent on the market, the more likely the listed (and reservation) price will be revised downward and consequently the lower the sale price. From a theoretical point of view, Fisher et al. (2003) working in a search setup, suppose that (ex ante) identical agents are affected by an exogenous source of shocks causing a continuous distribution of reservation prices for both buyers and sellers on (commercial) real estate markets. Even if the purpose of their contribution is to propose a liquidity-adjusted price index, this distribution is also responsible of varying liquidity and finally of a part of the dispersion in sale prices. In a recent contribution with a matching model of the housing market, Albrecht et al. (2007) suppose that ex ante identical agents currently on the market are affected by an exogenous disturbance: they may move from a relaxed to a desperate state (with high costs of being unmatched) at a Poisson rate. This generates multiple price equilibria since each desperate or relaxed seller can meet a desperate or relaxed buyer. The authors show that the variance of price is affected by the time on market.

The main shortcoming with all the above mentioned literature is that price dispersion comes either from ex ante (deterministic) heterogeneity (i.e. different socio-economic profiles, tastes, search costs), either from an exogenous idiosyncratic disturbances (i.e. exogenous move from a relaxed to a desperate state). Price heterogeneity is not due to the sole endogenous functioning of the market. This contrasts with the theoretical literature on price dispersion on other markets, which has sought to provide endogenous explanation of this phenomenon. For example, Burdett and Judd (1983) propose a nonsequential search model with identical agents where price dispersion is purely endogenous. The noisy nature of the search process leads to *ex post* heterogeneity in agents information and consequently to price heterogeneity. Without relying on a search setup, Salop and Stiglitz (1982) prove that equilibrium price dispersion can be attained in a homogenous commodity market with *ex ante* identical agents and no exogenous disturbances. They show that a two price equilibrium exists in a competitive setup with no auctioneer and with costly information. More recently, on the labor market, Burdett and Mortensen (1998) provide a model where wage dispersion may exist in equilibrium with perfectly identical workers and firms. Single market wage equilibria are ruled out by strategic wage posting firms and strategic on-the-job-search workers.

In this line, the main goal of this paper is to propose an original model that explains housing price dispersion without relying on ex ante agents heterogeneity, nor on any source of exogenous idiosyncratic noise. We intend to present a search model where price dispersion is purely endogenous, i.e. due to the very specific nature of the search process *on the housing market*. A striking feature of the housing market is the existence of agents who are *simultaneously* on the two sides of the market. When a household wants to change its house for family or professional reasons, two transactions have to be done: buy a new house and sell the preceding one. To do this, it has several possibilities: (i) sell its home first and go to the rental market (and possibly lately buy another house), (ii) buy a new house (and transitory own two properties) and then try to sell the old one, (iii) enter the market as both a seller and a buyer and try to achieve both transactions (if possible at the same time). The third strategy is potentially optimal since it may avoid a transient state of renter (attributes of dwellings on the rental market are generally of a lesser quality than on the owner-occupied market) and also avoid owning

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[2] Their work complement preceeding contributions on the housing market (see Harding et al. (2003)) or on other durable goods markets (see for example Goldberg and Verboven (2001), on the car market).