Marx, Keynes and Schumpeter meet the city: a heterodox approach for Urban Economics

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Abstract: This essay synthesizes a theoretical approach to understand Urban Economics. Deviating from the conventional Walrasian-Thünenian synthesis or Neoclassical Spatial Synthesis, the approach here highlights the importance of the land as an asset, the interdependence of individual decisions, and the preeminence of the urban entrepreneurs to affect the dynamics of the city. The intellectual traditions that informs it are the Marxian land rent theory, the Post-Keynesian convention, fundamental uncertainty and liquidity concepts, and the Schumpeterian entrepreneur concept. This effort is heavily based on Abramo`s (2007) pioneering – and widely unrecognized - work on theoretical Urban Economics. This theoretical exercise leads to a model and brings about an empirical econometric model, which may be able to explain changes in real estate prices after significant events, such as large-scale urban projects or real estate bubbles.

JEL Classification: R2, R3, B5, E1.

1. Introduction

On contrary of other areas within Economics, such as Macroeconomics, the Urban Economics field has a less clear division between orthodox and heterodox approaches. On one hand, the Regional Science's attempt to insert the space into the neoclassical framework may be interpreted as an orthodox approach to the matter. It is easy to realize by checking the fundamental hypothesis behind Regional Science's works: the belief on an equilibrium point (a spatial equilibrium), the *homo economicus* dogma that informs the individual maximization, the homogeneity of the agents, and the non-consideration of historical and cultural aspects (Abramo, 2007; Almeida, 2016; Martin, 1999). The New Economic Geography (NEG) approach do not deviates in essence from Regional Science framework, despite the incorporation of increasing returns and imperfect competition (to a well detailed explanation of it, see Martin, 1999). On the other hand, critical perspectives in general lies 'outside' Economics, within Economic Geography and Urban Planning, or more broadly, within the highly heterogeneous field of Urban Studies. These perspectives generally emphasize the path dependence or inertial nature of cities, the role of cultural and

conventional behaviors in opposition to the parametric rationality, the asymmetric power relationships and the heterogeneity of agents (or, more often, actors).

In this panorama, this essay is an attempt to synthesize a heterodox approach to Urban Economics. In others words, it is possible to say that this synthesis deviates from the Regional Science tradition, but it lies "inside" economic theory - drawing on land rent theory, on the Post-Keynesian notion of convention and on the Schumpeterian explanation for innovation. It is argue that the land rent theory is crucial to understand the nature of capitalist cities, and more specifically, the real estate prices. In addition, Abramo's (2007) effort to provide a coherent heterodox framework to understand the cities dynamics makes the other two-third of the synthesis here. Abramo (2007) contributed to this challenge creating the concepts of urban convention and the urban entrepreneur. The first concept highlights the interdependence among individual decisions in the manner that they choose a place to live and to buy a real estate. The urban convention is a way to understand cities spatial configuration and its patterns. The second concept gives the dynamic dimension to that configuration, emphasizing how new frontiers of urban development are open in the city and how the psychologically depreciation of real estate agglomerations occurs. The action of the urban entrepreneurs, of the State and of the banks shapes new urban conventions, leading to change in the neighborhood's status - consequently, on the price and rent of the real estate located there (Abramo, 2007, 1994; Paixão and Abramo, 2008; Pontes et al., 2011).

With this theoretical approach on hands, the construction of a model clarifies and exemplifies it. Then, an econometric model is derived from it as a heuristic tool able to capture the dynamics of a city or its portions.

The rest of the essay is structured as follows. The next section provides the theoretical discussion. Drawing from the theoretical discussion, section 3 elaborates the theoretical and the empirical models. Section 4 concludes.

2. Critical appreciation of the conventional approach and the alternatives concepts

2.1. The standard view – the “urban invisible hand”

What I am calling in this paper as the conventional view of the Urban Economics is, essentially, the synthesis that Reginal Science tradition provided after its efforts throughout 20th Century. This synthesis has two keystones: on one hand, the equilibrium and self-maximization

algorithmic inherited from Walrasian microeconomics; on the other hand, the spatial view derived from the Von Thünen's concentric rings representation of the urban space. For this reason, Abramo (2007) calls the orthodox approach on Urban Economics as the "Walrasian-Thunenian synthesis" or the "Neoclassical Spatial Synthesis" (NSS). In his concatenations about the assumptions and roots of this synthesis, Abramo states:

> *"In spatial terms, the orthodox discourse proposes the idea of an 'urban invisible hand' – the market of residential localization – that manifests itself through a process of competitive equilibration of individual's will, a process which, echoing the Walrasian concept of market coordination would results in a certain social order: a spatial order disposed within concentric rings, unique, stable and efficient, from the point of view of resources allocation to the individuals – and, therefore, to the society".* (Abramo, 2007, p. 15).

Underlying the NSS, Abramo (2007) emphasizes that the two keystones in this approach are the belief in the freedom of choice – with its spatial representation through the tradeoff between accessibility and space – and the hypothesis of parametric rationality, it means, that individuals has no choice except the individual maximization. Regarding this later hypothesis, it is crucial to note that it is exactly the same hypothesis in which relies the orthodox belief on information and risk. Individuals would be able to establish a probability distribution that informs their choices – including their residential choices. In others words, it means that individuals are able to make probabilistic calculations regarding the future of the neighborhood and of the entire spatial structure of the city, when they make their decisions of buying a real estate – the most expansive and long run decision of their lives. Thereby, this view is not compatible with the concept of uncertainty, or fundamental uncertainty (Dequech, 2000) as I am going to explain later. A good example of the NSS is the so-called Alonso-Muth-Mills (AMM) models[1].

However, the NSS needed to face serious challenges. A first challenge is related with the very nature of the Von Thünenian model: it is essentially a desagglomerative model. Due to the ever-increasing land rent and transportation facilities, the cities would sprawl indefinitely, while the empirical evidence shows exactly the opposite pattern (Lemos, 1988). Although an intense urban sprawl happened during the 20th Century in many countries, the city still being the node of the

[1] One can find this kind of model explained in details on the classical handbook organized by Mills, especially in the chapter wrote by Brueckner (1987).

regional, national and global economy, and the place of living of the majority of the population. Therefore, the idea of a spatial equilibrium and a free mobility of factors is not adequate to cope with the conformation of the urban structure.

From the critic above, we may arrive on a second critic closely related: the immobility of factors are obvious traits of the cities. The most valuable individual asset, the real estate, has no mobility by definition[2] (Almeida, 2016, 2015). The physical capital, in general, and particularly the infrastructure, also has no mobility. The human capital, the human relations and the neighborhoods are suitable to have spatial mobility, although when the market tries to operates these movements strong conflicts emerges – as Polanyi (2001) wisely noted. More importantly, the assets within the city have property laws, in such a way that the cities tend to be more about the perpetuation of these assets on the hands of the same families than about assets mobility and free competition. Regarding free competition, the space itself represents a clear barrier on the free competition. Walking through the streets, we note the variation of commodities prices as we move from one neighborhood to another, and even a distance of one block is enough to change it.

The real estate market, a backbone trait of the spatial structure of any city, also represents a theoretical challenge to the NSS. A real estate is a commodity that has specific characteristics, such as the immobility, irreproducibility, heterogeneity, non-fungibility[3], durability, and limited divisibility (plots requires a minimum size) (Almeida, 2016, 2015; Furtado, 2009; Guigou, 1982). Furthermore, the real estate are a typical asset that is privileged in heritage transference through the generations (Piketty, 2014), a fact that makes the real estate operates far from the perfect competition (Almeida, 2015; Almeida et al., 2014). Moreover, the typical leap-frog pattern of urban development is hard to be explained by the perfect competition model. All these characteristics mentioned above invalid most of the conventional microeconomics description for the real estate market, although the NSS does not recognizes it.

Last, but not least, the mechanism of locational choice that the NSS offers has a disregard with the cultural, social, historical and psychological aspects of the locational choice within the urban space. Due to the hypothesis of parametric rationality, firms' decisions and families' decisions on location would ignore the collectively view on that specific sites. It also would ignore the decision

[2] The words for "real estate" in languages such as Portuguese, Spanish and French make it very clear: *imóveis, inmuebles* and *immobilier*, respectively.

[3] Non-fungibility means that real estate cannot be replace by another real estate with the same amount of material because of the location and the fact that the value is not mostly related with the construction material

of the others, being a strictly individual maximization process. We are going to turn to this point later as I introduce the concept of urban convention.

In the orthodox front, two exits were found to scape of these critics. Keeping committed with the NSS, authors have been developing models with higher levels of complexity and a number of ad hoc hypothesis, such as the polycentric model that Henderson (1974) developed. This model addresses the suburbanization process of the contemporary cities, which clearly departs from the Von Thünen's spatial representation[4].

In recognition of the failures of the Regional Science approach, Krugman started an attempt of reformulation in the 1980s. This effort led to the creation of the nowadays well-known NEG. According to Krugman (1995), Regional Science was incomplete because they were not able to model imperfect competition and increasing returns to scale – in his view, two obvious features to explain the existence of cities and economic activity agglomeration. This reformulation led to the famous text-book wrote by Fujita et al. (1999), as well as it made Krugman won the Nobel prize in 2008. Nonetheless, as Martin (1999) asseverated, the NEG is not new, neither geographic. NEG's spatial representation is essentially the same one formulated by the regional scientists, a view that disregards many key aspects of the space. It would have nothing entirely new since it can be seen as a more sophisticated technique over the same substance of Regional Science.

In this panorama, a theoretical approach able to understanding cities within Urban Economics and its many stylized facts still demanded without any satisfactory answer. The work of Martin (1999) certainly would repel the NEG approach, but he does not offer clearly a substitute for it. The way that Abramo (2007) proposed to substitute the two keystones of the orthodox view on Urban Economics – the Von Thünenian spatial representation and the parametric rationality – are presented in the next sections, as well as my own addition over it.

2.2. Urban Convention

Abramo substituted the Von Thünenian spatial representation by the space as a **"mosaic of externalities"**. In his intellectual path, Abramo started to study the decisions that the families make regarding the residential location within a Beckerian perspective.

[4] Curiously, the suburbanization process was intense in the US, at least, two decades before these models. While the Regional Science school was flourishing in the 1950s based on monocentric models, the American cities, where most of their theorists were located, were suffering an intense process of suburbanization – the called white flight (Almeida, 2016; Harvey, 2014).

> "*This Beckerian approach allowed me to undertake a critic towards the implicit naturalism of the neoclassical locational theory. Indeed, basing itself in the Thünenian spatial representation (...), the orthodox synthesis does not takes on account the social dimension neither, hence, the spatial effects of the interdependence of the locational choices*". (ABRAMO, 2007, p. 19). My own translation.

Therefore, Abramo recognizes that he departed from an orthodox[5] perspective, Becker's view on individual choices as a wealth maximizing process, and arrived in a heterodox conclusion, the one which stands in favor of the interdependence of the individual choices. Once he recognized the interdependence of families' locational choice and its intertemporal nature, he realized that "the locational decision was one component of the strategies of the maximization of the family's production function" (op. cit., p. 20). He means that when the families make their locational choice, they may change their endowments. The intertemporal dimension of the locational choices would make the market equilibrium lost its neutrality, because would be possible wealth transference through the market spatial coordination.

All these constructions led him to represents the space as a "**mosaic of externalities**". In others words, once the families consider in their locational choice what the other families choose and the target of these choices is the positive externalities provided by a neighborhood, the spatial representation of the urban space relies on a **collective opinion** about the neighborhoods. These collective opinions form specific agglomerations of externalities all over the urban tissue. This justifies the term "mosaic". The idea of a mosaic of externalities provides a powerful tool to understand many stylized facts of Urban Economics, for instance, the abrupt change of land value within the urban space – where few blocks or meters can imply in a very different collective view about an area. It is also relevant to explain the dynamics of the city in a historical perspective, such as why some areas undergo fast urban decay while other areas undergo booming gentrification, as results of the changes on collectively formed opinions.

One trained economist might argue that we could keep using the neoclassical framework just adding the games theory rationale on it. However, we consider that the game theory still lacking of the consideration about the social and collective dimension of urban landscapes. Within the

[5] Abramo probably labeled Becker's approach as orthodox because of the utilitarian aspect of the decision-making process inherent to this approach.

game theory approach, the human being still represented as a maximization machine, while the Post-Keynesian discussion that Abramo brought allows a more realistic representation of individuals, families and neighborhoods. This encompass the questions of identities, cultural stigmas, and people's opinion.

Drawing from Keynes the advice of a market analysis through the lens of masses psychology, Abramo substituted the parametric rationality by the mimetic rationality. The mimetic rationality led him to arrive at the concept of **convention** and to absorb the Davidson's (1991, 1982) work on **uncertainty**. The criticism raised by Davidson on the rational expectations theory was a needed step due to the role of the people's opinion about the future in their locational choices. Another relevant Keynesian source for Abramo's synthesis was Shackle's (1961) distinction between chronological time and historical time. Due to the **path dependence** nature of the cities, the decisions that households, governments, banks and real estate entrepreneurs make have an impact that perpetuates along the time. This perception is also expressed in other urban theorists, such as Harvey's concepts of "urban palimpsest" and "spatial fix" (Harvey, 2006; Magalhães, 2009). Despite the diversity of concepts, the core idea is that the city is a structure, which is shaped in such a way that the past and duration of each process matters. In Post-Keynesian terms, **the short run affects the long run**. From a public policy view, it means that urban policy affects the city permanently. If a given area had a spatial arrangement in an era, the market cannot just erase immediately that arrangement – it requires deep changes of the urban convention on the area, the participation of many stakeholders, and the memory about the area may still for a long time. With all these elements, the city turn out to be a space of uncertainty, where families' most valuable asset, their real estate, may have deep changes in its values throughout the time.

After presenting this discussion, we now turn to definitions that are more precise. Once the families and firms do not know previously the dynamics of the city and of each singular neighborhood, their choice on location are done in an environment marked by the fundamental uncertainty. By fundamental uncertainty I mean "that some information does not exist at the decision time because the future is yet to be created" (Dequech, 2000, p. 41). Due to the fundamental uncertainty, agents behave as imitators, anchoring their decisions on the decisions of the ones who they believe that are better informed (Keynes, 1970 [1937]). This behavior leads to the convergence of the opinions to an average opinion in a certain time point. It is this opinion that Keynes and the Post-Keynesians authors call **convention**. According to Cardim de Carvalho (

2014, p. 248, my translation), "the definition of convention is relatively straightforward: it is a creed shared by a number of individuals. The convention, therefore, is a reducer of uncertainties as it makes predicable the behavior of those who we suppose to share the same creed".

Abramo derived the concept of **urban convention** from this Keynesian concept of convention. He wrote that the idea of a mimetic behavior appealed to him particularly interesting in the case of residential location because the agents wish the spatial convergence of the same kind of families and/or firms. Following the urban convention is a way to achieve the expected level and kind of agglomeration externalities that Urban and Regional Economics have rooted as the fundamental concept of these fields. As he defined, "the mimetic specular anticipations may spawn, in the residential market, convictions on the location of families, it means, **urban conventions**" (Abramo, 2007, p. 126. My translation. Emphasis added). Although the concept might sound very abstract, it is easy to realize that the inhabitants of a city have a set of urban conventions about the neighborhoods. If you walk through streets and ask for information about a neighborhood, or where you can find a specific urban environment, probability people's opinion will converge to an average. When a family decides to live in neighborhoods such as "Little Italy" or "Chinatown", they know what kind of externalities they are expected to find, as well as when they decide to live in a wealthy gated community in the suburbs. From Lapa in Rio de Janeiro to Maximilianplatz in Munich, from Santa Teresa in Belo Horizonte to Adams Morgan in D.C., people can easily identify bohemian-labeled neighborhoods. Citizens[6] and entrepreneurs know where they can find bohemia, agglomerations of restaurants, bars, low rents, hospitals, violence, motels, wealth, poverty, and a myriad of traits that composes the urban tissue. More importantly, they know these labels without checking the Census tracts, or the police' database, or checking on Google Maps before every step they take. The urban conventions inform collectively all these anticipations.

At this point of the discussion, we may argue two fundamental questions. First, who creates the urban convention? Secondly, as the conventions are unstable (Cardim de Carvalho, 2014; Keynes, 1970 [1937]), how is the process of collapse of the urban conventions? To answer these two questions, I introduce and explain in the next section the concept of "spatial innovation" and highlight the "urban entrepreneur's" behavior.

2.3. Spatial Innovation

[6]As the Greek origin of word "citizens" teach us, they are the ones who lives in the cities.

The concept of urban convention opens the possibility of a dynamic behavior to the city. Nonetheless, we shall dedicate attention to the non-homogeneity of the agents within the urban space. Any watchful analyst would realize that there is an asymmetry of power among the agents in the cities. The real estate developers, who I label here as **urban entrepreneurs** to be consistent with Schumpeter's and Abramo's works, has a special role in the cities' dynamic, as the name itself denounces – they are the ones with capacity to develop new urban frontiers.

If the urban entrepreneurs wait only for the population growth and the depreciation of the existing stock of real estate, the growth rate of their market would be very low compared with others markets in temporal and spatial contexts. A real estate easily takes more than 80 years to have a complete depreciation, and even so, there is always the possibility of refurbishing or retrofitting. Moreover, there is a considerable gap between the birth of a person and the moment of acquisition of a real estate, let us say, of at least thirty years. Some extraordinary situations requires fast growth rates of the physical stock of real estate, such as post-wars reconstructions, baby booms, intense processes of immigration or industrialization[7]; but these events are rare for a given city. For these reasons, urban entrepreneurs are motivated to promote the **fictitious** decay of neighborhoods and to open new frontiers for the urban expansion. Abramo captured this essential aspect of urban dynamics through the concept of "**spatial innovation**", seeing the urban entrepreneurs as a typology of Schumpeterian entrepreneur.

> "*The search for innovations (differentiation) involving real estate remits to the strategies of creative destruction of the residential stocks (parks) and the capability of the Schumpeterian entrepreneurs to impose an urban mark-up to the families"*. (Abramo, 2007, p. 22).

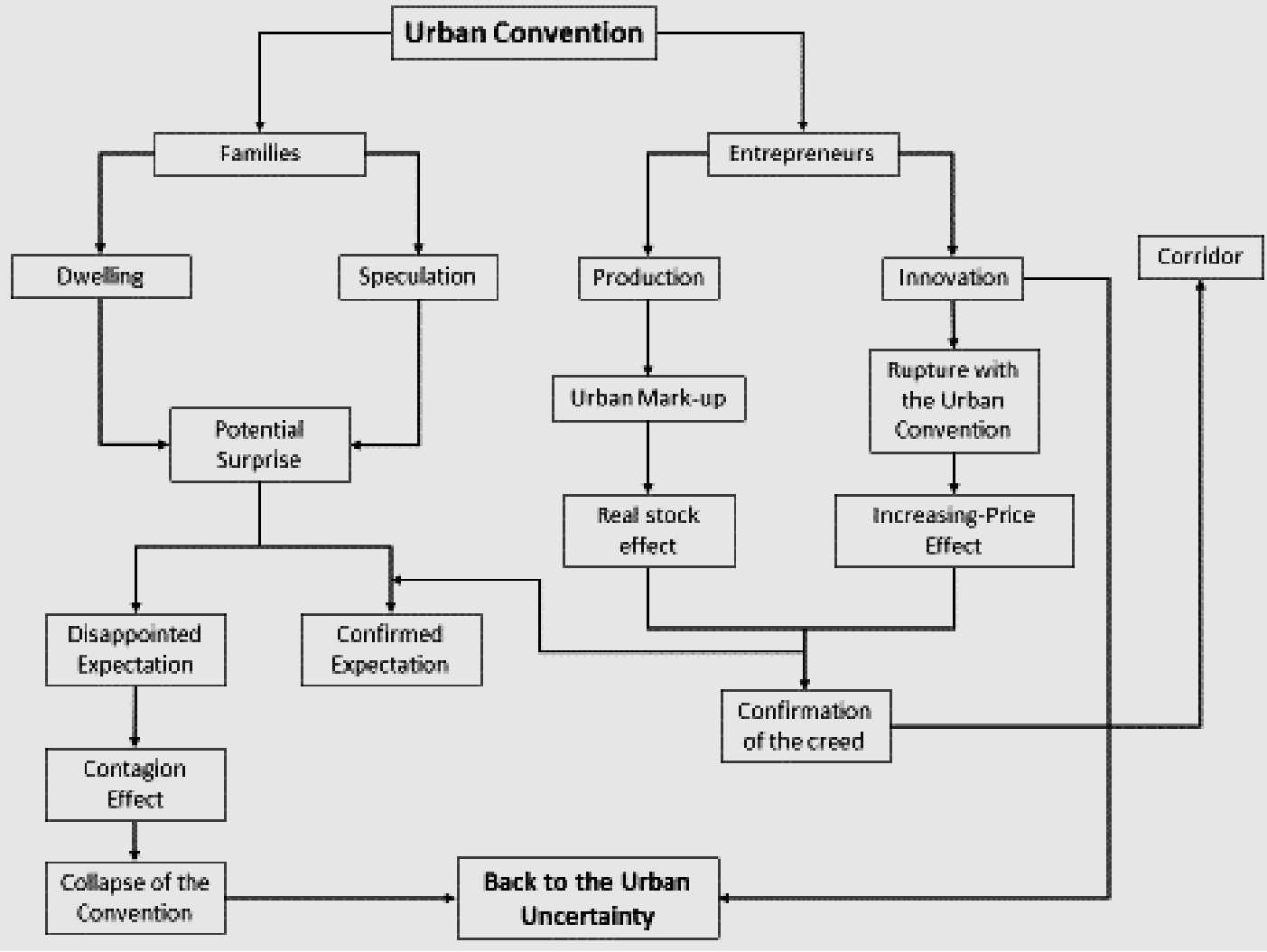
According to Abramo, the spatial innovations that these "urban entrepreneurs" introduces has the effect of a "fictitious bomb" over certain older neighborhoods (op. cit., p. 81). It is interesting to note that, as the Schumpeterian authors highlight, the innovation deviates the system from the

[7] It is interesting to note how the production of space is highly correlated with rapid economic growth along history.

equilibrium. This challenges the NSS approach which is generally based on the assumption of a spatial equilibrium.

Abramo conceptualize two types of innovations. The horizontal innovations occurs when the entrepreneurs introduce modifications on the existing real estate typology, and the vertical innovations means the creation of new typologies of real estate. In both cases, the former stock is no more a close substitute to the new stock. We may think on the gourmet balcony, the playground, the gym floor and the sauna as horizontal innovations; and we may see the suburban-gated villages, the lofts and the apart-hotels as vertical innovations. Adding to the Abramo`s work, we might also understand the concept of spatial innovation as the promotion of new urban conventions over former neighborhoods, and not only as the innovation on the real estate itself. Some neighborhoods may start to be seen as a "fashion" or a "hipster" area due to *city marketing* promoted by the entrepreneurs; while others fancy neighborhoods are subjected to a fictitious decay, as it has happened in many inner city areas across the world. All these possibilities of changes lead the city to be a space of radical uncertainty. The most expensive asset that many families have may be the target of a fictitious depreciation. To sum, Abramo (op. cit.) offer us the Figure 1, which connects the crucial decisions of the entrepreneurs and the urban uncertainty.

Figure 1 – Urban Convention



Source: Adapted from Abramo (2007)

Figure 1 depicts a scheme for the dynamics of the urban convention. A given urban convention informs the behavior of both families and urban entrepreneurs. On the side of the families, they act within the real estate market to have a dwelling place and as speculators. If they select a property in a booming neighborhood, for instance, it is possible to increase their total wealth through the real estate market. On the side of the urban entrepreneurs, they act on the production of new units according to the current urban convention, and in some occasions, they may innovate. Families` choice are subject to potential degrees of surprise, because they do not know the future of their neighborhood. When the urban entrepreneurs act in the conventional production, they earn the urban mark-up. When they promote the spatial innovation, they rupture the current urban

convention and generate an increasing-price effect on the new urban frontier. Then, some families have their expectations confirmed by the conventional production, while others have a disappointed expectation due to the spatial innovation. The families who had a disappointment will transmit signals to other families, leading to a contagious effect throughout the city. These families tend to move after some time, confirming the collapse of the urban convention and heading back to the urban uncertainty. On the side of the urban entrepreneurs, the expectations converge after a while, confirming their creed both in the act of production and in the act of innovation. This convergence leads to **corridor** of the new urban convention. Abramo derived this concept from Leijonhufvud (1981). The corridor may be understood as the limits to an urban convention in a given time period. Due to the nature of the urban convention, these limits are fragile, but they guarantee the minimum stability and consistency of the behaviors for a while. Until a new rupture with the established new convention, families and urban entrepreneurs will behave according to the corridor.

The theoretical framework depicted on the Figure 1 also implies that the **liquidity preference** has a relevant role in the cities and in the real estate dynamic. Because of the radical uncertainty and the characteristics of monetary economy of production, the agents have differentiated access to money. Specifically, the urban entrepreneurs not only are able to break an urban convention through a spatial innovation, but they also have more access to money to do it than an ordinary agent. It is this availability of **finance** that enables them to innovate and create new urban frontiers and new real estate typologies.

This discussion naturally guide us to the circuit of production of the real estate, in which a particular kind of **finance – investment – saving – funding circuit (F-I-S-F)** operates (see Resende (2008) about the F-I-S-F in open economies). A detailed discussion of it exceeds by far the scope of this paper; but it worth to note that the precedence of the finance over the investment and the precedence of investment over saving imply in special roles for the banks and the urban entrepreneurs. The role of the urban entrepreneurs was already discussed; the role of the banks on the circuits of production of real estate deserves more attention on future works. I would like just to mention here that the banks are also crucial to promote and change urban conventions, therefore, crucial to shape the cities.

In this vein, it is also important to mention that the State also are able to intervene on the urban conventions. One of the reasons why it is true is due to the capability of the State to produce money. Through the Central Bank and the bonds market, the State is able to initiate F-I-S-F circuits, affecting urban conventions with its decisions of investments. This is especially relevant because of the nature of urban infrastructure investments, such as large-scale urban projects, which are backbones of urban centers and are able to change cities structure. In his work, Abramo (2007, chapter 2 and 3) addressed the role of the banks and the State in the urban circuit of production. I am skipping these topics in order to go more directly to the models.

Nonetheless, from my studies, I considered that there is a piece missing the Abramo's framework. It is the concept of land rent. In my view, this is an essential concept, once it is the one that enables us to write an equation to the land price, as well as it gives an understanding of the social relationships involving the land property. Namely, the land rent concept provides the comprehension of the land as an asset and the rent as a payment due to the property right. These ideas are explained in the next sub-section.

2.4. Land Rent

According the Marxian land rent theory, the land is a natural resource and does not has value, once all the value comes from the work in this tradition. The land, such as the air and the water, is seen as a natural condition. Thereby, all the problems related with the land are not due to the relationship between nature and man, but due to the relationship between the social classes. The land rent is not understood as the payment for a production factor, as the neoclassical theory states, but as the payment for a property right. From this relationship, emerges a crucial struggle between the capitalists and the rentiers. The land rent has a residual nature in terms of remuneration, which implies that it is an extraction on the profit: in general, the higher the land rent, the lower the profit, for a given wage. All these discussions exceed by far the scope of this work; I recommend to see the specific pieces for the ones who would like to go through it (Almeida, 2015; Guigou, 1982; Jaramillo et al., 2011; Lefebvre, 2001; Topalov, 1984, 1979)

From the land rent literature, I derive a price equation through the capitalization of the land rent along the time. To do this, I need first to definite the typologies of the land rent.

i) Differential land rent I (DLR I). Differential rent I refers to the rent that arises owing to differences in fertility of land. Because some plots of land are better located according to criteria

of fertility or productivity, it makes to emerge a payment to the landowner. One can think about the DLR I in a context of extensive urbanization or agricultural production, as Ricardo and Marx did.

ii) Differential land rent II (DLR II). This kind of rent emerges from the intensification of the capital use over a given portion of the land. Different amounts of capital, when applied to the homogeneous plots in terms of fertility, lead to different productivities. The DLR II comes from these differentials of productivity due to different levels of capital. As an example, one can imagine an area of the city where the State provides a huge amount of infrastructure (physical capital) compared with a poorly serviced area.

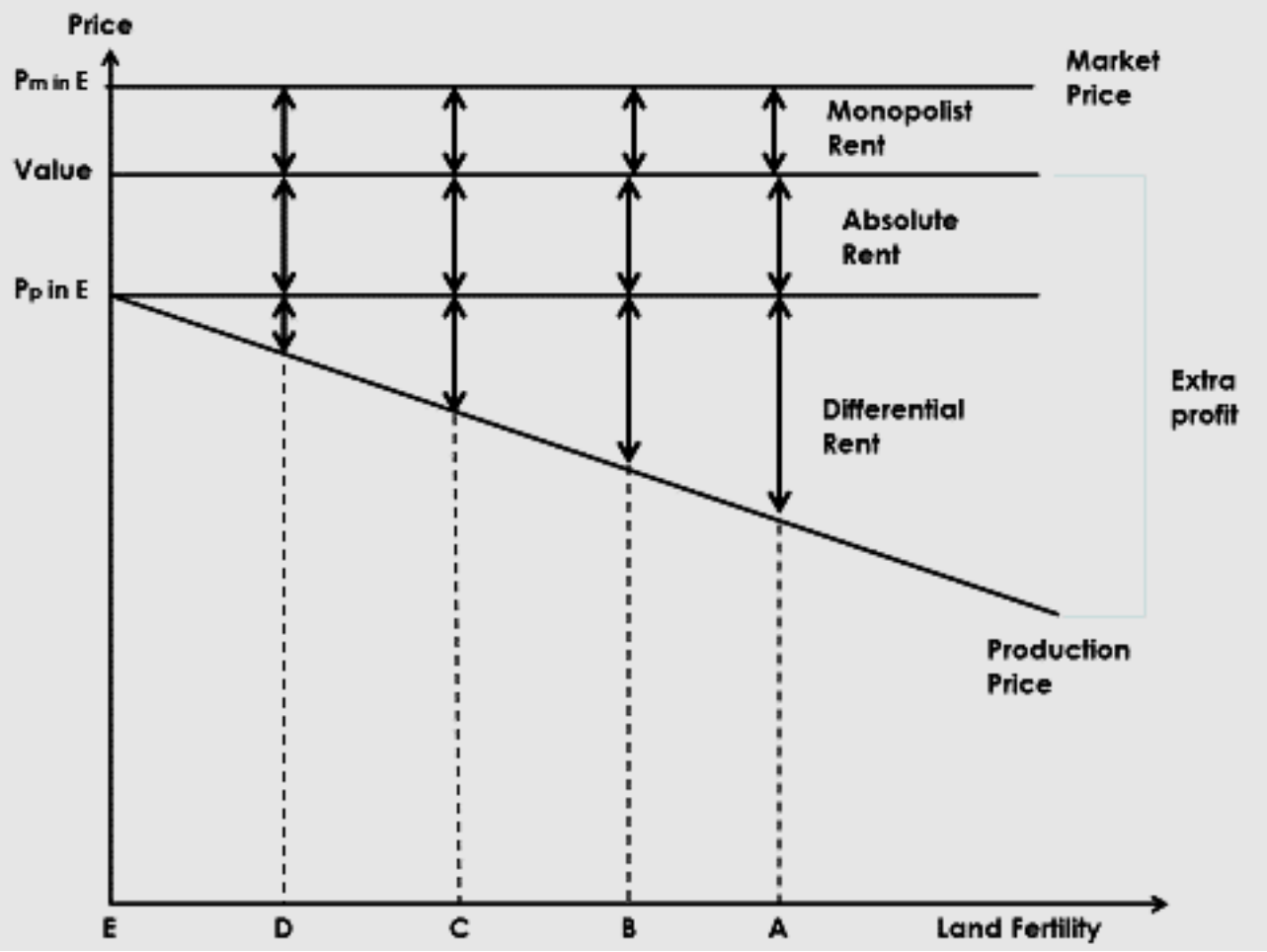
iii) Absolute rent (AR). The absolute rent exists because of the property rights itself. This concept was a development that Marx made, in comparison with the Ricardo's work. The AR is the concept that enables a solution for the paradox: how the land have no value but it has a price? Moreover, the last incorporated marginal land in Ricardo's model would have no price, which is obviously not true. With the AR concept, Marx set a basic price for the land. When a capitalist pays the AR, he is paying for this basic price, which corresponds to the property right of the landowner[8].

iii) Monopolist rent (MR). The demand and supply forces generate this rent. When a landowner has a specific portion of land which has a particular scarcity, he may receive this kind of rent. As an example, Harvey (2006, p. 350) mentions the case of locations with high social status. We can also think of places with a special point of view of the city.

The graph below summarizes the relationship between the typologies of land rent in a spatial order. Land A would be the one with the best location while land E would be the one with the worst location. The line that represents MR does not need to be linear.

[8] The AR requires a condition: the organic composition of capital (OCC) in the agricultural and/or on the construction sector needs to be lower than the average OCC within the economy. In the agricultural sector it may occurs due to a lower level of mechanization, which implies on a higher proportion of labor relatively to others sectors. In the case of the construction sector, even nowadays it still being well known as a great absorber of labor force.

Chart 1 – Land Rent in a spatial order



Sources: Adapted from Guigou (1984) and Almeida (2015)

After presenting these concepts, we are ready to introduce the land rent equation and the land price equation, according to the land rent theory. Equation 1 just summarizes what we discussed so far regarding the land rent composition.

$$R = DLRI + DLRII + AR + MR \qquad (1).$$

More importantly, equation 2 clarifies the expectation nature of the land rent and its effects on land price. Since the land is an asset that contains the right to receive an amount of money, I define the land price as:

$$P_{l,j=} \frac{R_1}{(1+i)} + \frac{R_2}{(1+i)^2} + \frac{R_3}{(1+i)^3} + \cdots + \frac{R_n}{(1+i)^n} = \sum_{j=0}^{n} \frac{R_j}{(1+i)^j} \qquad (2),$$

Where $P_{l,j}$ is the price of the land *l* in the time period *j*; R_j is the expected land rent in the j-th time period; and *i* is the real interest rate of the economy, and *n* stands for the number of time periods.

The interest rate may varies according to the future expectations, but I kept as a constant just in the name of parsimony at this moment.

The equation (2) makes clear the asset nature of the land. More than just a good that provides a certain level of utility, the theoretical approach used here recognizes the speculation nature of the land – for both firms and families. This equation is simply a net present value. It is worth to note that Keynes used essentially the same equation to describe the marginal efficiency of the capital and to explain the rationality of the investors when they decide to buy machinery.

Using the Napierian logarithm on the equation (2), we can write:

$$\ln P_{l,j} = \ln R_1 + \ln R_2 + \cdots + \ln R_n - [\ln(1+i) + 2\ln(1+i) + 3\ln(1+i) + \cdots + n\ln(1+i)] \quad (3)$$

Thinking on a specific real estate, we can make the simplification that the expected real interest rate in the economy for this asset will not vary in comparison with others real estates. It implies that we can assume that the interest rates are constant in the equation (3). Therefore, we have:

$$\ln P_{l,j} = \ln R_1 + \ln R_2 + \cdots + \ln R_n - K, \quad (4).$$

$$\ln P_{l,j} = \sum_{t=0}^{n} R_t - K \quad (5),$$

$$\sum_{t=0}^{n} R_t - K = LandRent \quad (6).$$

K∈R is a constant that substitutes the interest rates because they do not vary.

Despite the enlightening insights that the land rent theory provides, which are summarized on the equations above, we have to recognize that it still missing some essential elements to the framework developed in this paper. Namely, I need to introduce into these equations the notion of urban convention and some others key aspects of the real estate market. I take this step in the next section.

3. Models

3.1.Theoretical model

Based on the theoretical discussion brought by the Marxian land rent theorists, we wrote the equations (2) and (3). However, it is obvious that we need more than just the land rent and the interest rate to explain the price of a specific plot of urban land. As the famous real estate broker's saying[9] affirms, the location plays a key role in the explanation of the price of a specific real estate. According to the theoretical discussion made in this paper, this is true due to the search for

[9] The saying is that "location, location and location" determines the price.

externalities that families make – it means, because of the representation of the city as a mosaic of externalities, as Abramo (2007) highlighted. Furthermore, given a location, the physical characteristics of the real estate are relevant to explain its price. By physical characteristics, I mean the quality of the construction material, the type of architecture project, the number of rooms, the parking space, the age of the real estate and so on. This is the variable that may capture the spatial innovations that urban entrepreneurs may introduce in the real estate market. It is also relevant to include on the theoretical model a macroeconomic variable, such as the income of the families of that neighborhood, which is closely related with the economic cycles (although some neighborhoods may not suffer with economic crisis or grow with economic booms).

From a theoretical point of view, all these elements together are useful to explain the land price in a given portion of space. Therefore, I dare to write the following equation:

$$P = Physical\ Characteristics + Location + Land\ Rent + Urban\ Convention + Income \quad (7),$$

And just making some abbreviations, we have:

$$P = PC + L + R + C + I \quad (8).$$

Equation (5) is the theoretical synthesis proposed here. In the next section, I derive a spatial econometric model from this equation, in order to construct a heuristic tool able to be tested with a sample.

3.2.Empirical Model

Drawing from equation (8), we can translate that theoretical model to the following empirical model:

$$P = X\beta + \rho WP + \alpha LandRent + \gamma Dummy + \delta I + \varepsilon \quad (9),$$

where P is a matrix for the real estate's price, X is a matrix of the real estate's physical characteristics, W is the neighbor matrix, dummy is a binary variable, I is the families' average income of a given neighborhood and ε is the error term. β , ρ , α, γ and δ are parameters to be estimated. *Land Rent* is defined according to equations from (1) to (6). The dummy is a proxy variable to the urban convention. This tool may be useful to capture some dynamic aspect of a city or neighborhood. If a massive investment in a certain area occurs, such as a large-scale urban project, one can try to measure whether this exogenous shock had a significant impact on the average land price of that area. Following the idea of urban convention, for instance, the same logic is valid for the case of the redevelopment of a decayed area; or the removal of a penitentiary

from a neighborhood; or the construction of a new metro line or stadium. Obviously, one can argue that the dummy variable would capture anything and that we cannot suppose that the change is due to changes in the urban convention. A straightforward answer to this doubt is given by the nature of the regression model, which controls for others sources of variation.

Using equations (6) into equation (9), we find:

$$\ln P = X\beta + \rho WP + \sum_{t=0}^{n} \alpha R_t - K + \gamma Dummy + \delta I + \varepsilon \quad (10).$$

Since K is a constant, we can make K=-β_0:

$$\ln P = \beta_0 + X\beta + \rho WP + \sum_{t=0}^{n} \alpha R_t + \gamma Dummy + \delta I + \varepsilon \quad (11).$$

Therefore, the equation 11 may be tested using a panel data to identify the significant variables to explain the land price in a given spatial scale. One needs just of a dataset with physical characteristics of real estates, the location of these real estates to construct the neighborhood matrix, the land rent of each spatial unit (the average rent can be used as a proxy), the average income of the residents of that area, and to define the year of an intervention to select when the binary variable assumes 1 or 0. It can also be interpreted as a strategy to identify changes in the urban convention of a specific area.

4. Concluding Remarks

Deviating from the conventional Walrasian-Thuninean synthesis or Neoclassical Spatial Synthesis (NSS), this paper presents a different synthesis for the Urban Economics. This new synthesis is grounded on the concepts of urban convention, of spatial innovation and of land rent. Having its roots on Keynes, Schumpeter and Marx, it is possible to say that Pedro Abramo's pioneering work was the bridge to bring about the theoretical framework proposed here.

From the theoretical efforts that I developed here, it is conceivable to insert on the discussion of the urban land price's determinants variables such as the average land rent of a neighborhood, the physical characteristics of the real estate provided by the urban entrepreneurs and the neighborhood externalities measured in terms of a spatial lag effect on the average real estate price of a neighborhood. Moreover, if a panel dataset is available, one may test the effects of changes on the urban convention of a neighborhood. These kind of changes may have been generated by large-scale urban projects, triggered gentrification, urban decay and a number of others socio-economic phenomena. It very relevant to note that the conventional approach to Urban Economics,

which usually leads to a hedonic price model, hardly can capture these phenomena. The hedonic price model is essentially based on the assumption of individual's will to pay for the amenities of a neighborhood. In empirical terms, these amenities are measured by physical assets of a neighborhood, such as public parks, number of art and entertainment places, urban infrastructure, etc. However, phenomena such as the announcement of a new public investment are hard to conciliate with the theoretical framework of the willingness to pay, since its effect on prices have an expectation nature. The land rent theory and the urban convention concept, on the other hand, places this expectation aspect of investments on the center of the analysis. Furthermore, a phenomenon like gentrification, which is not necessarily shown in the amenities' dataset, may be captured by the model proposed here. The literature of gentrification often highlights that the "gentrifiers" seek for decayed areas, willing to pay more for areas with a low level of physical amenities.

More deeply, it is worth to note that the empirical possibilities raised by the model proposed in this paper have a lot do with the essence of the heterodoxies approaches in comparison with assumptions of the orthodoxies ones. The orthodox Economics has a great difficulty to create a multidisciplinary dialogue, generally disdaining disciplines such as Anthropology, Sociology, Psychology, History, Human Geography, Urban Planning and Urban Studies. One of the reasons of this isolation is the methodological individualism of the orthodoxy. On the other hand, the heterodox approach drafted here addresses as crucial the collective behavior of families and entrepreneurs, through the concepts of urban convention and spatial innovation. Finally, the Political Economy root presented through the concept of land rent demonstrates how issues of property and rights are essential to a more complete economic analysis. Nevertheless, we have to recognize that many improvements still to be done on these theoretical and empirical models. The reactions and the possibilities of acceptance of the academic community will guide the development of this (daring) new Urban Economics.

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