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# Urban planning and the market of development rights in Italy: learning from Milan

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## Abstract

In recent years, the influence of neoliberal principles has led to an experimental application of new market-oriented approaches in the field of urban studies, in order to achieve different objectives of public interest, from the compensation of land use restrictions to the acquisition of areas for public services. Also in Italy, the use of equalization and non-financial compensation mechanisms has been influenced by internationally consolidated models, such as the Transfer of Development Rights programs (TDR). The key issue concerns the legal autonomy of development rights from land ownership, allowing their trade in the municipal market and thus, in theory, balancing private and public benefits. The scientific debate focuses on the several opportunities, in terms of planning effectiveness and flexibility, but also envisages the risk to generate unfairness, deregulation and other speculations. The paper aims to assess the positive and negative impacts of a generalized use of TDR in the urban governance and in the real estate market, adopting a case study research method. The experience of Milan has been investigated, analyzing the municipal registry of development rights. The results highlight strengths and weaknesses of the market of development rights application, in particular the risk of encouraging real estate speculation, in the same way as financial markets. Conclusions suggest the need of a more effective integration of market-based tools in the planning and regulatory framework, avoiding that their uncontrolled use could weaken the role of public authority in the local government.

**Keywords:** Development rights, Urban planning, Market-based tools, Real estate market

## Introduction

In the international context, the scientific debate has focused for a long time on the need to overcome the regulative and comprehensive approach to spatial planning, due to its limits in terms of operational ineffectiveness and unfairness in the treatment of private owners.

In the framework of neoliberal principles and austerity policies (Theodore 2020), market-based approaches provide greater effectiveness and flexibility to spatial planning, through negotiated and market driven mechanisms aimed at sharing benefits between public and private actors.

The economic theory has often expressed trust in the free market, considered able to ensure a higher efficiency in the allocation of resources compared to any kind of public regulation and to achieve conditions of balance that are more advantageous for the economic operators and for the community, even in the presence of externalities (Coase 1960). Such liberalist perspective is founded on the illusion of a perfectly competitive market, neglecting the presence of collusive monopolies and oligopolies (Salzano 2008).

The public intervention with regulation and planning activities is justified with the failure of the market economy and the need to remove some important anomalies of the capitalist system, linked to the presence of negative externalities due to the free expression of private actions and desires (Moore 1978; Camagni 2008). In accordance

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with Smithian theories, the market is a dynamic spontaneous order, conceived as a process of social discovery in an uncertain environment. The actors operate in the market with a strongly limited rationality, expression of heterogeneous and changing preferences that lead to possible unstable situations (Moroni 2007; Von Hayek 1948).

On one hand, even in a concept of minimal state, public intervention is essential to pursue objectives of collective interest and to protect property rights, regulating the market that is an exclusive expression of individual interests. On the other hand, the debate focuses on the rational-comprehensive paradigm, in which planning is oriented, prevalent and well-established in European urbanism. It aims at decision making in a rational way, according to the idea that actions are always predetermined by rational choices, based on a vision of the external world as a stable, static and not subject to change, in which every action is followed by a predictable reaction (Friedmann and Hudson 1974; Friedmann 1987; Balducci 1991).

Although the command and control and rational-comprehensive approach cannot be definitively overcome, international planning systems have been influenced by neoliberal principles. Overlooking the debate on the negative effects produced by neoliberalism on the economy and welfare, promoting social competition and supporting the private speculative interests, the market has a key role in the urban transformation.

The paper focuses on the results of the experimentation of market-oriented approaches, which aim to limit the unequal treatment of private rights and to achieve conditions of allocative efficiency, even in presence of unavoidable negative externalities.

In the international context, the traditional zoning and the comprehensive plan are supported or combined with forms of Transfer of Development Rights (TDR) that allow to redistribute, in a fair way, the surplus value generated by urban development (Levinson 1997; Pruetz 2012; Nelson et al. 2012).

TDR programs have a long tradition in the United States and their use is actually widespread across the world for a variety of public interest purposes. The operational mode of TDR programs is quite simple: the owners of the sending areas, subject to building restrictions, can transfer and use the granted development rights in the receiving areas, usually already equipped with services and infrastructure (Serra 2018). Development right (DR), definitively separated from land ownership, acquires juridical autonomy on the market and is subject to market exchange and trading (Mills 1980; Linkous 2017). In some cases, local authorities give up on the prediction of specific scenarios of urban design, leaving to the market

the task of managing efficiently urban transformation (Nelson et al. 2012).

Also some European countries have experimented TDR as a solution to the excessive arbitrariness and rigidity of the land use plan, overcoming the inequalities in the treatment of private properties resulting from the principle of non-compensation of the landowners for prohibition to build imposed by planning regulation. In Italy, TDR has become a substitute of the traditional expropriation in order to create a stock of areas for public use (Gibelli 2014). Internationally consolidated models inspire the Italian experimentations, although with substantial differences. For example, in the United States, TDR programs usually provide for the establishment of an agency or market exchange, never realized in Italy, to support the market management and the activity of DRs buying and selling (Walls 2012; Benn and Infranca 2013). With the "Development Decree" Law no. 70/2011, Italian legislation provides for the establishment of a municipal register for the annotation of transfers and constitution of DRs, publicly available to guarantee transparency of market trade.

In Italy TDR represents a new interpretation of the concept of equalization, traditionally used in a territorially well-defined manner and on limited and localized urban areas. A generalized use allows a homogeneous allocation of DRs over large urban districts and their commercialization in the whole urban area. This has many consequences from an urban and legal point of view, but also in the economy and public finance. The new economic asset can also be considered as credit guarantees in the local urban market. This process of financialization of the real estate sector is now at an advanced stage, although its economic and urban risks have not been adequately assessed (Camagni 2014).

This paper aims to investigate the potentialities and limits linked to the operation of a municipal market of DRs, in order to assess the role of TDR in the implementation of planning objectives and the risks associated with the financialization of the real estate sector and the resulting speculation. The first paragraph illustrates a literature review on the topic of the creation of a local market for DRs in Italy, describing the evolution from the experiences of limited equalization to the generalized forms of TDR. After a detailed description of the analytical methodology and the data sources, the paper focuses on the case study of Milan, which represents a relevant market oriented experience, in the national context, of a local plan supported by a TDR program. The case study of Milan is particularly interesting because of the opportunity offered by the plan to trade DRs even without a specific and determined development or construction project and for the existence of the largest and most

dynamic land and housing market in Italy (Falco and Chiodelli 2018). The results of the analysis of the trade activities highlight the critical issues, in particular on aspects related to the management of the new land-use system and the way in which DRs are managed. The discussion section underlines the risk that the Milan DRs market may foster real estate speculation, as well as the financial market. Moreover, it weakens the role of public authority in the territorial government, strongly limiting the power to amend plan provisions due to the need to guarantee DRs already registered. Conclusions suggest that future research should investigate the way to integrate market-oriented approaches in a framework of planning rules and regulations in order to guarantee the public control in the territorial governance.

### **Towards the creation of the market of development rights in Italy**

Urban rent is one of the main drivers of urban dynamics and human pressure on environmental and natural resources. It represents also an interesting source of income for the landowner, thanks to the public assignment of development opportunities. If the urban rent increases not thanks to the landowner but because of community-related work, the surplus value generated by urban development must return to the hands of the community (Bernoulli 2006). The theoretical debate on urban rent control is still a relevant issue in the field of urban studies, although every proposal for a full land rent taxation or land nationalization, based on a conception of soil as a common good, clashed with the law protection on private ownership (Dye and England 2010). Over time, the discussion has been reduced to a more moderate control of the real estate market, a partial recovery of the surplus value of buildable areas, a redistribution of rents and a reclaim of resources for the realization of collective facilities (Bernoulli 2006). Often influenced by the strong differences in the conception of the ownership rights, European countries have adopted several approaches and tools to capture the surplus value: fiscal measures, land use zoning, public–private partnerships, urban equalization, non-financial compensation and transferable DRs (Boca and Falco 2016; Renard 2009). Traditional regulation and zoning have highlighted a lack of efficiency and fairness in the allocation of unmerited land rents, introducing deep inequalities between properties and many imbalances in the real estate market (Camagni 2016; Clinch and O'Neill 2010). For this reason, in the international context, local authorities often use the so-called "non-financial compensation" to refund owners for the public acquisition of land, as an alternative to compulsory purchase, or for the loss of an opportunity or the imposition of a constraint, by granting an additional

development capacity, instead of a monetary compensation (Janssen-Jansen et al. 2008).

Also several European countries (Germany, the Netherlands, Spain, France and Italy) has started to experiment innovative market-oriented mechanisms, for example TDR programs, in addition to the traditional command and control and regulative models. These innovative approaches are certainly influenced by the concept of property rights that differ in the various national contexts. In the USA, the concept of land ownership is constituted by a set of rights, "bundle of rights", with explicit separation of the right to build. On the contrary, in the countries of Western Europe (e.g. Germany, Spain, the Netherlands and France), the right of land ownership is commonly considered absolute and indivisible, according to the tradition of Roman law (Renard 2007). In a similar way, the capital gain, which is generated by urbanization, can be allocated to the community (e.g. in Sweden and the Netherlands), captured by landowners (e.g. in Southern Europe) or partially recovered by taxation (e.g. in Italy) (Gibelli 2014). Although DRs are usually assigned to a specific land directly by the general land-use plans, recently DRs are achieving more autonomy from the land ownership.

In Italy, since the 1980s, urban equalization has gradually been introduced in the local practices and in the regional laws, becoming a very common and often successful planning model, which has overcome the ineffectiveness of the traditional planning and the lack of resources for the realization of the public city (Gibelli 2014; Micelli 2011, 2014; Urbani 2011). In particular, the benefits offered by the equalization concern a fair treatment of the interests of private landowners within an urban sector, a strong urban design control with the predefinition of areas to be built or used for green and services, a partial plusvalue recapture through the free acquisition of areas for public utility and other financial obligations (Camagni 2014).

The equalization and compensatory mechanisms have been applied, at first, on limited spatial areas, up to extend their application to the whole municipal territory. In this direction, the proposal to create a municipal DRs market is emerging, thus limiting public intervention in urban development. The use of transferable DRs represents a form of private and public cooperation for the achievement of specific objectives (acquisition of areas for services, building recovery, urban redevelopment, etc.). Instead of a financial compensation, the landowners can benefit from an expectation of profit that can be realized with a building development or the sale of DRs. First of all, if the equalization aims to redistribute the surplus value generated by urban development, the generalized form of TDRs

cannot ensure fairness by allocating the same DRs on all lands designated for urban development (Camagni et al. 2014; Micelli 2011). Due to their real estate nature, DRs value is linked to the development locations, thus allowing for a highly spatially changing valorization.

Although the debate on the effectiveness and fairness of the DRs marketability is still open and controversial (Colavitti and Serra 2018; Serra 2018; Micelli 2016; Stanghellini 2013), in the national scene today there are several types of DRs, that can be certified, sale or used in a generic buildable land in the whole municipal area. In addition to the traditional development capacity, attributed to the land by a zoning plan, DRs can be assigned directly to a person, through a purchase or sale or a public assignment, such as energy efficiency or social housing purposes.

In 1977 the Bucalossi Law has attempted to separate the right to build from the land ownership, declaring that the DR belongs to the community and every activity of urban transformation and building construction is subjected to onerous concession. The law supposed that the right to build did not belong to the private owner but would be assigned by the public authority in exchange for a fee. However, the term "concession" is commonly used to identify a fully discretionary act while, in this case, it is commonly accepted that the permission is only a formal procedure and the right to build is part of the land ownership rights. In this way also the legitimacy of the transfer of DRs is justified (Meucci 2012).

The DR is defined as the right to make a construction, for which it will be necessary the ownership of a land (Bova 2012). Due to this status of "expectation", DR cannot be considered a "right in rem" to be protected, if a specific authorization for a construction project has not been granted by the local authority.

In consideration of the national government competence in the regulation of private property rights (Mastropietro 2013), the National Decree no. 70/2011, converted into Law no. 106/2011, has modified the Civil Code, requiring the transcription of "contracts for the transfer, constitution or modification of DRs, however denominated, provided by state or regional legislations or by spatial planning" (art.2643 n.2-bis C.C.). This expression refers to a range of practices and mechanisms, including TDR, land redistribution, urban equalization and non-financial compensation. It is not always a question of transferring DRs between well-defined funds, but there are important differences between these mechanisms, which are in no way considered in the new version of the Civil Code. For example, it does not clarify if building restrictions in the sending area can be permanent or the land use plan can provide a further attribution of DRs.

The transcription guarantees certainty in the circulation of the DRs and enforceability against third purchasers of rights related to a property covered by a DRs contract. It is a solution to possible conflicts between several buyers, giving priority to the contract transcribed at an earlier date and invalidating a previous assignment to a third part, if not regularly registered. The objective to ensure the protection of the legal positions involved in the trade of DRs has overcome the need to clarify the nature of these rights. In fact, with the term "development rights however defined", the government did not give any definition or qualification to the DRs (Uda 2015), validating a wide range of DRs sources which fall within the competence of the regional and local authorities. Not all the Regions have legally regulated the market-based instruments and, although case law has generally expressed a favorable opinion regarding their use, many practices have been applied without any legislative support. Few regions (Lombardy, Liguria, Veneto, Puglia, Umbria, Autonomous Province of Trento) have also provided for the establishment at municipal level of a register of DRs in which the deeds of DRs must be recorded in order to better monitor the several changes of ownership. In this new land management, three phases can be identified: the first "take-off" phase, in which DRs being separated from the sending area, through the annotation in the municipal register; the second "flight" phase, in which DRs are subject to further changes of ownership without any lot of reference; the third phase of "landing", in which DRs are applied to a construction project in a given receiving area. In brief, the Civil Code reform has legitimized the creation of a new protected real estate right and has defined the legal conditions for the creation of a market of DRs, even if several criticalities exist on its feasibility and effectiveness (Gibelli 2014).

## Materials and methods

The paper aims to assess, using a case study research method, if the DRs market represents an effective tool for the implementation of the urban plan and what critical issues emerge from the free movement of DRs in the municipal area. The analysis focuses on the case study of the City of Milan, which represents the largest Italian city, in terms of population, that have experienced a generalized TDR in the urban plan. It is also an interesting context for the high socio-economic growth, supported by policies to increase the international attractiveness of the city and reinforce the infrastructures and services system.

Appendix 1 provides a full list of the analysed documents and materials. The main source of data is the municipal register of DRs where, since 2013, potential DRs generated by the transfer of areas, by any real estate

deeds or by the application of incentives and compensations have been recorded. All data refer to the update of the register of August 05, 2020, available on the official website of Milan municipality.

The analytical framework investigates three fundamental issues of the DRs market: the impacts on the DRs supply and the financial speculation risks (transactions, actors involved, timing and market dynamics); the effects of the mobility of DRs on the dynamics of differential land rents (location, values and differential rents); the opportunities and risks for the land use planning and regulation.

The first step of the research concerned the analysis of the market operations and trends. Each sending area is identified in the registry with cadastral data so that it has been possible to link each certificate of DRs to the area that has generated them. Subsequently, the process of buying and selling and/or using the rights in construction projects has been reconstructed for each sending area, analyzing the single transactions of the DRs after the first registration, the actors involved and the timing. The analysis of DRs transactions in the market has focused on: the market trends over time, in terms of number of transactions and sending areas; the categories of operators in the market, in order to identify the possible presence of intermediaries with speculative purposes; the percentage distribution of DRs registered by companies in order to highlight any phenomena of speculative grabbing; the status of use of DRs in building development projects. The interpretation of the patterns and outcomes of the DRs market activities has allowed to provide a categorization of the common processes of purchase, sale and use of DRs.

The second part of the research focused on the spatial factors that influence the market, analysing the localisation of the areas that have originated the DRs and the related real estate values. According to the data reported in each certificate of the municipal registry, the sending areas have been identified on the cadastral map and spatially localized with the support of a Geographical Information System software. Then, for each sending area, the real estate quotations provided by the Revenue Agency (in Italian Agenzia delle Entrate) for homogeneous territorial areas have been identified in order to evaluate the chances to increase the differential land rent in relation to the area where DRs would be used.

Finally, in the third phase, TDR opportunities and risks for the land use planning and regulation have been investigated, in particular for the sending areas that have been acquired by the public authority with non-financial compensation. The analysis of land use planning focuses on the benefits in terms of public land acquisition for the improvement of the public service system but also on the

criticalities related to the changes, already occurred over time, in the planning regulation for the sending areas and the possible future revisions.

### The case study of the city of Milan

The City of Milan approved the first version of the Territorial Government Plan (in Italian Piano di Governo del Territorio) in February 2011. It has been revoked in the same year and subsequently re-approved in 2012, after some changes (Galluzzi 2014). A further revision led to the adoption, in March 2019, of the current plan, published in the official bulletin of the Lombardy Region in February 2020. It includes the Plan Document, the Plan of Services and the Plan of Rules. The latest plan is designed to support the ongoing city growth on a ten-year vision (Milan 2030). The main objective is the general improvement of the environmental conditions, the quality of life and the green spaces supply, extending the benefits to the entire population and social groups, and spatially to all city districts. The plan satisfies the strong demand for housing with a quantitative increase in social housing, rental housing and new building constructions.

The new plan redefines the size of settlements in accordance with the new social and economic perspectives, defining specific targets and quantitative objectives for the city. Instead of generate additional building capacity, it protects almost two million square meters of land from urbanization, through a resizing of the development provisions and a constraint to agricultural use of three million square meters.

According to the accessibility level, building developments are concentrated in the urban hubs, in order to reduce the dependency from private mobility. Regeneration policies involve existing open spaces by supporting, also with the TDR, re-naturalisation and restoration of ecological connections that are interrupted by existing infrastructure or built-up areas. Sustainability is also ensured by new urban and metropolitan parks, to reduce the expected land-take.

The Plan of Rules provides a unique development ratio, equal to 0.35 square meters/sqm, for all areas included in the so-called "Consolidated Urban Fabric" or designated by the Plan of Services for urban green areas, road mobility spaces, metropolitan transport storage and social housing of new planning (Chart S02 Plan of Services). This development ratio is assigned independently from the land use, excluding areas intended for agriculture and social housing (art.6 Plan of Rules), without defining specific receiving areas. TDR mechanism is based on the transfer of DRs from "indirect pertinences" (sending areas) to the "direct pertinences" (receiving areas), in which DRs can be used after the public acquisition of sending areas.

The size of the sending areas and the other incentives lead to the production of a large amount of DRs, without ensuring an adequate stock of receiving areas, suitable for the development of the building capacity. In the consolidated urban fabric, it is allowed to reach a maximum building density of 0.70 square meters/sq.m., except for areas characterized by high levels of accessibility where this development ratio is increased to 1 square meter/sqm. This change has been introduced in the latest version of the plan, in place of the development ratio of 1 square meters/sqm in the whole consolidated urban fabric. The allowable building density can be achieved with the use of DRs directly assigned by the plan to a specific land, acquired through purchase or assigned as a compensation for actions of public interest, for example for social housing purposes.

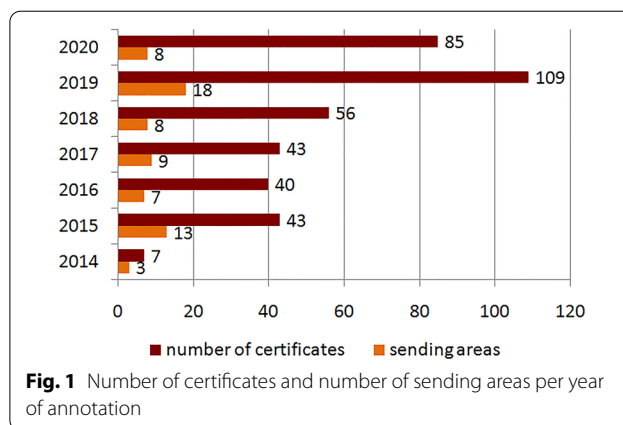
In 2012 the plan provided for 3,4 millions of square meters of indirect pertinences, of which about 11% have been acquired or are in phase of acquisition during the drafting of the plan variant (Plan Document 2019). The latest plan does not confirm several indirect pertinences, no longer suitable for public use or included in agricultural areas, according to the existing use. A reduction of more than 600,000 square meters of DRs has been achieved through the elimination of 462,274 square meters of indirect pertinence for green areas, the abolition of the development capacity on the areas included in the North Park and the identification of 941,966 square meters of agricultural areas, previously classified as indirect pertinence.

**Results**

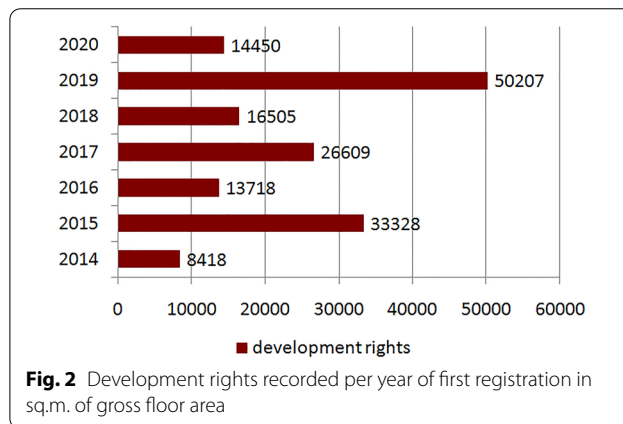
**The impact of market dynamics on the DRs supply and the financial speculation risks**

In the register have been noted, from 23 September 2014 to 05 August 2020, the DRs produced by 66 sending areas, for a total of 163,235 square meters of gross floor area. The same DRs has been the object of further market sales and purchase operations that have required additional records in the register. The total number of registered certificates amounts to 383, which is certainly limited if compared to the high dynamism of the real estate market in Milan. The temporal distribution of annotation requests on the registry shows a gradual increase over the years, while the number of new sending areas that generated DRs for each year appears to be almost stable over time (Fig. 1). It should be noted that the data related to the launch year 2014 and the last year 2020, are partial and do not include a 12-month period.

The analysis of the temporal distribution of DRs entry into the market shows a discontinuous trend over time, in terms of gross floor area firstly registered per year,



**Fig. 1** Number of certificates and number of sending areas per year of annotation



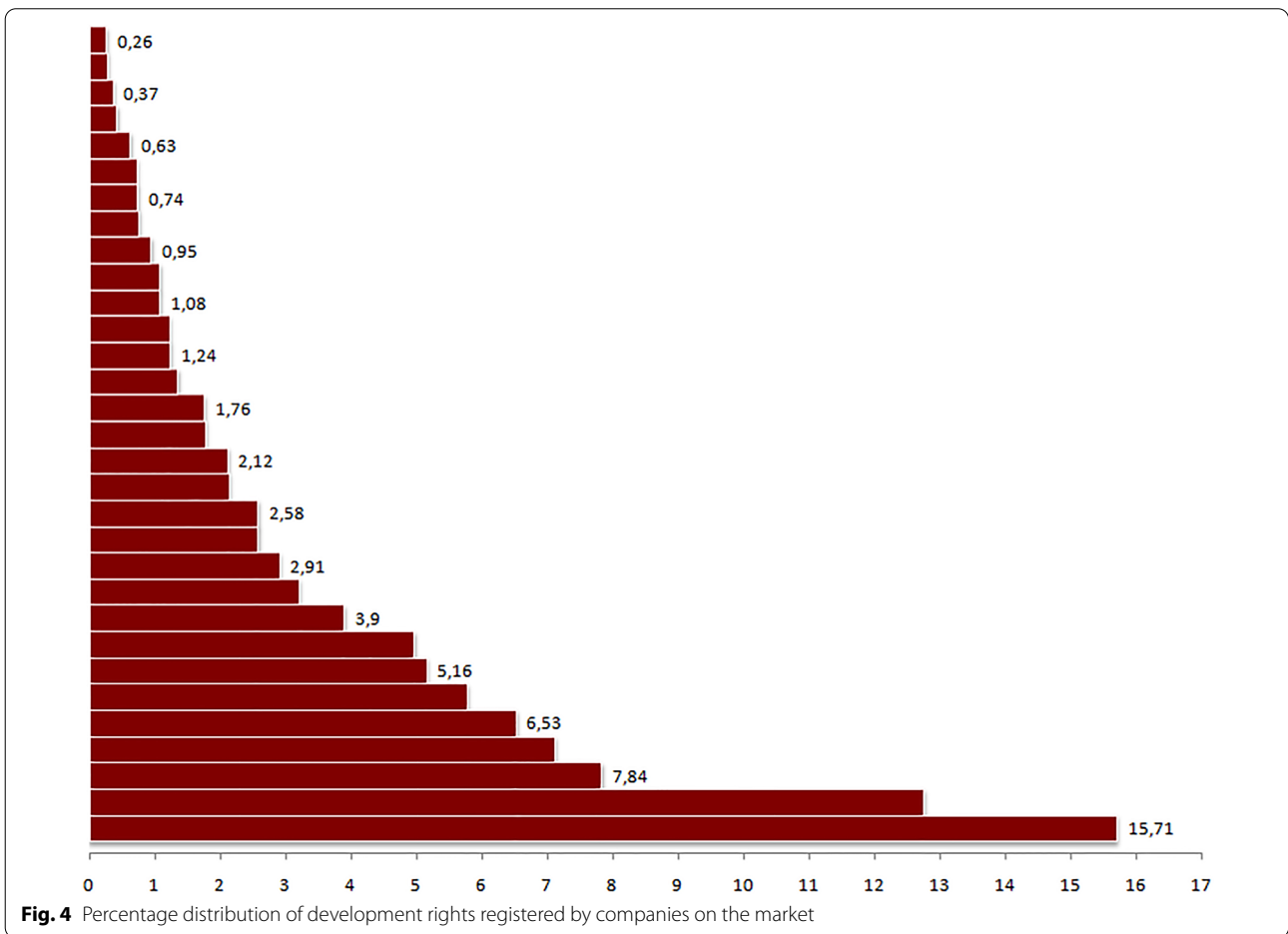
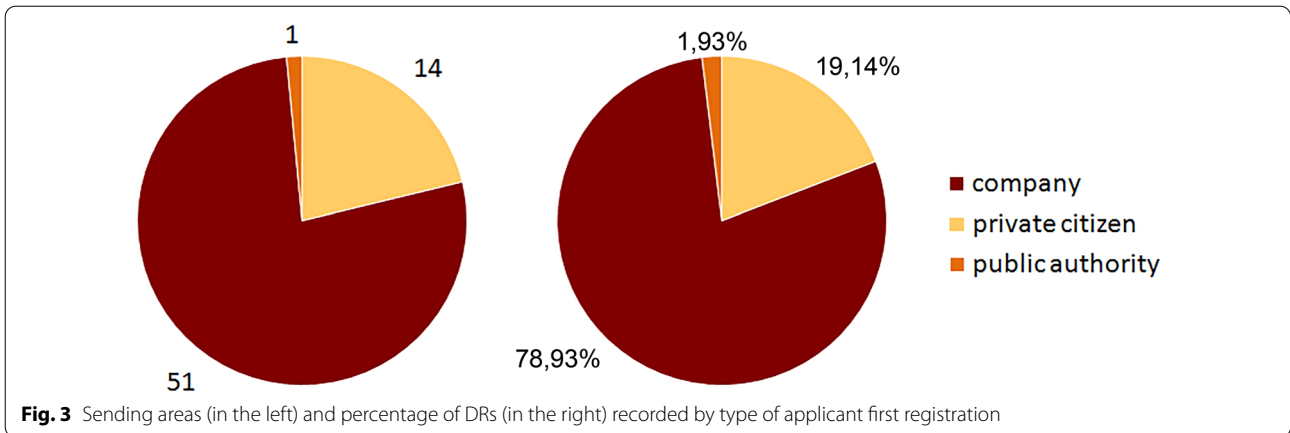
**Fig. 2** Development rights recorded per year of first registration in sq.m. of gross floor area

with a maximum of more than 50,000 sq.m. and an average of 23,300 sq. m. in 2019 (Fig. 2).

In order to identify speculative practices in the market, the research examines the type of operators who requested the first registration of DRs. In particular, the number of sending areas and the amount of DRs have been differentiated, according to the first owner, into private individuals, companies (VAT holders) and public bodies (Fig. 3). The first registration of 79% of DRs comes from real estate companies or brokers.

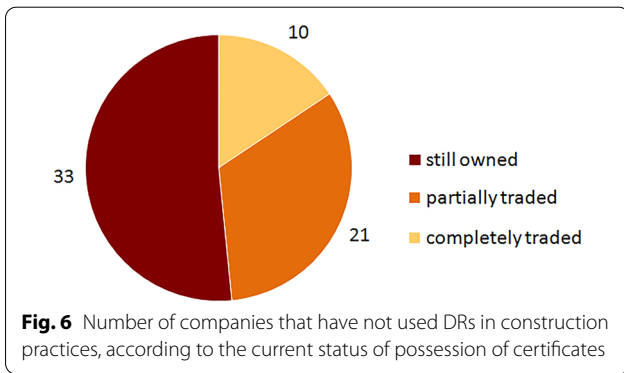
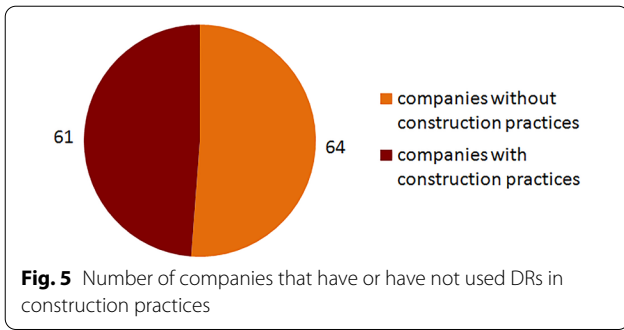
The DRs registered by 31 companies, as a percentage of the total 128,849 sq.m. of gross floor area, show a highly unequal distribution (Fig. 4). Few operators own a consistent part of the registered development capacity, an important evidence of the tendency to speculative accumulation of DRs: 10 companies have registered about 73% of these rights.

It is especially significant the data on companies that operate in the DRs market and has never used this development capacity: for 51.2% of the 125 companies that appear in the register there is no use of DRs in certificated development projects (Fig. 5).



A further investigation on the current condition of possession of the certificates, excluding companies that have employed them in construction practices, reinforces the hypothesis of the presence of operators who carry out intermediation activities on the market, without having any interest in the realization of constructions

transformations. About 15% of companies have completely sold the DRs, while a further 33% have partially sold them (Fig. 6). More than half of the companies, on the other hand, still own all registered DRs. It is not possible to verify the exact reasons for this choice, but some hypotheses can be made: in some cases the first

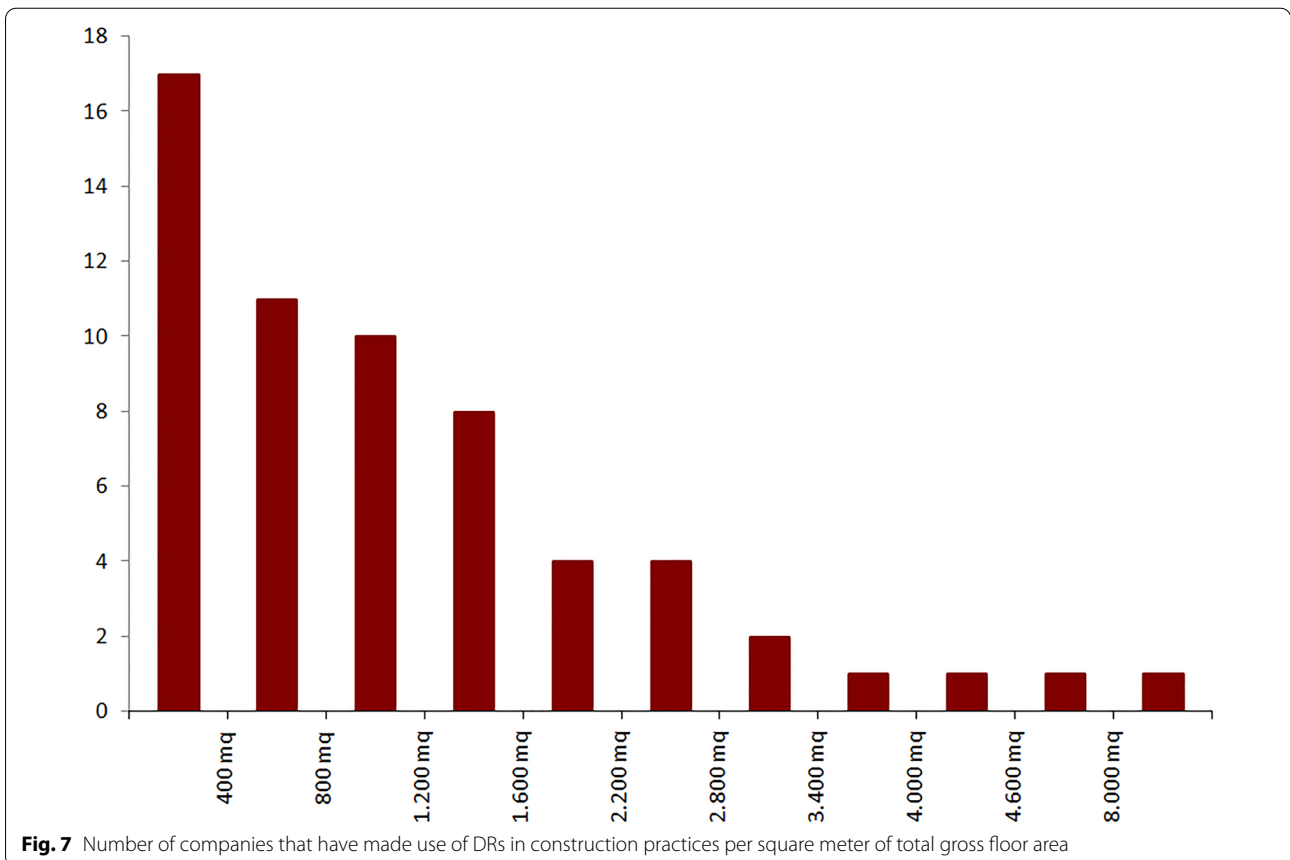


registration is quite recent, so it is possible that these rights will be involved in future operations of sale and/or building construction. Moreover, it is not excluded that, behind the purchase of the rights, there is the willful intention to wait for the moment in which the sale of the rights will guarantee the maximum value on the market. In general, more than 50% of the DRs generated by the sending areas has been used in construction practices at present.

The results on the distribution of companies, by the total amount of DRs used in construction practices, have evidenced that most of them have carried out limited size real estate operations (max 1000 sq. m gross floor area) and only 3 companies have recorded more than 4000 sq. m. of building construction (Fig. 7).

Based on the data of the register of DRs, it has been possible to classify the processes of buying, selling and using DRs on the market, starting from the first annotation in the register, in a list of common cases. In particular, three macro-categories have been identified, according to the current condition of the DRs:

- DRs that are registered and still unused (case A);





- DRs used in whole or in part in construction projects (cases B);
- DRs subject to one or more buying and selling transactions on the market, suggesting a possible speculative activity (cases C).

The categories have been further detailed and defined in order to provide a simplified and representative interpretation of the modes and outcomes of the application of DRs market in the City of Milan (Table 1).

In the category A belong the DRs that are still owned by the operator who applied for the first registration and have not been used in construction projects. This case includes about 11% of the total DRs recorded in the municipal register, which can be referred to a single certificate. Regardless of the kind of owner, whether a private citizen or a company, DRs have not been involved in construction practice or in trade activities, after the first registration. It is interesting to underline that these certificates have often been recently registered: in particular 9 of the 12 certificates date back to the two-year period 2019–2020, i.e. more than 68% of the building capacity, while the other 3 certificates is related to the period 2017–18. This justifies the lack of DRs use and the hypothesis that, even in a short term, they may be sold or used in construction projects.

A larger percentage of the DRs on the market, around 15%, has been used in construction practices (cases B). Only 3 private certificates of DRs have been re-sold, after few months, to a company for a construction project (case B.1). When the company directly requested the first registration of DRs, it might be supposed that it already owned the area or had acquired it to obtain the associated DRs (case B.2). This case represents the theoretical

and desired function of the DRs register, as a support for the implementation of the urban plan with alternative ways of allocating housing developments according to market preferences.

However, in the real market, the ownership of the DRs certificates is mainly due to real estate companies that often work as intermediary in the market, without any interest in the urban transformation. To this category C is attributable the 76% of the DRs recorded in the municipal register. Although no information is available on the receiving areas, this trend is documented by the numerous changes of ownership for DRs that can be linked to the same sending area, suggesting a possible speculative trend. Often the registration of a certain amount of DRs is followed, in just few weeks or months, by several transactions involving the same development capacity. Many transfers of DRs ownership, in a short period of time, highlight a clear tendency, from the beginning, to operate a financial speculation rather than a real estate investment.

For this reason, some kinds of common practices on the market can be certainly attributable, for the most part, to speculative attitudes aimed at the grabbing of DRs and the subsequent sale with fractionated quotas.

The first case C.1 concerns the DRs registered by a private citizens who carries out a partial sale. However, it is uncommon for a private owner to start, independently, the process of speculation in the market with a fractional and progressive sale of the DRs, waiting for a favorable opportunity to obtain an adequate value on the market. The absence of an agency, to support the meeting between demand and supply, does not allow the private citizen to easily operate in the market. This category includes only 5 sending areas, for a total of 6335 sq. m. of gross floor area registered. DRs

**Table 1** Summary of the main cases highlighted on the Milan DRs market

	Category	Number of sending areas	Amount of DRs (sq.m.)
A	DRs registered by private citizen or company, still owner, not used for construction projects	12	17.934
B.1	DRs registered by a private citizen and then totally sold to a company for construction projects	3	5.669
B.2	DRs registered by a company that directly use them totally or partially for construction projects	9	19.303
C.1	DRs registered by a private citizen and then partially sold through a progressive splitting of the owned quotas	5	6.335
C.2	DRs registered by a private citizen and then totally sold to to brokerage companies that operate a progressive sale of them	4	14.130
C.3	DRs registered by a company and then partially sold through a progressive splitting of the owned quotas	8	32.701
C.4	DRs registered by a company and then totally sold through a progressive splitting of the owned quotas	25	67.163

have been traded on the market for an average period of 19–20 months, in some cases up to 43 months, involving one or two companies. On average, there are 5.8 certificates per sending area, result of a number of transactions ranging from three to ten. Until now, only over 20% of these DRs have been used in building practices, suggesting that buying and selling activities are possible in the future. Often the registration of DRs is carried out by several operators, which in this way also overcome problems of property management due to a partition of a succession.

Another relevant case, for about 8.7% of the total amount of DRs, concerns the DRs registered by a private operator and sold entirely to a brokerage company that will operate on the market with the fractionation and sale by shares of development capacity (case C.2). It is featured by a high number of transactions for each sending area (from 7 to 32) and by a number of operators ranging from 4 to 9 companies, in addition to at least a private one. The speculative purpose is also clear for a low percentage of DRs used in construction practice, since over 70% of DRs is still available on the market.

The most speculative approach concerns DRs registered by a company, which implements their sale through a progressive splitting of the owned shares, resulting until now partially (case C.3) or totally sold (case C.4).

In the category C.3, there are 8 sending areas, which are owned by 11 companies, considering the first registration. Most of the DRs has been registered for the first time in 2019 and more than 50% still belong to the first owner. The recent coming into the market is probably due to the partial sale of the DRs and the limited use in construction projects (only 17.54%). In any case DRs are the object of buying and selling on the market for periods varying from 6 to 58 months (on average 17.5 months), involving up to 6 companies and a number of transactions ranging from 3 to 13 for each sending area (about 8 certificates on average).

Finally, in the most common situation, DRs registered by a company have been completely transfers to a third part through a speculative trade activity. This case C.4 concerns 25 sending areas and 67,163 sq. m. of gross floor area, in a large part used for construction practices (72% of total DRs). The process of buying and selling transactions often continues for more than 5 years (up to 65 months). On average, 20 months of transactions are detectable, with DRs trading still ongoing in many cases. The number of certificates for each sending area ranges from 2 to 27 (average 7.8), involving up to 14 companies (average 4.5).

#### **The impacts on the dynamics of differential land rents**

Market speculation aims to optimize the value of DRs, acting on the several factors that could increase the land rent values, from the absolute ones, generated by the shortage

of supply, to the differential ones that are driven by specific characteristics of the receiving areas, firstly the location.

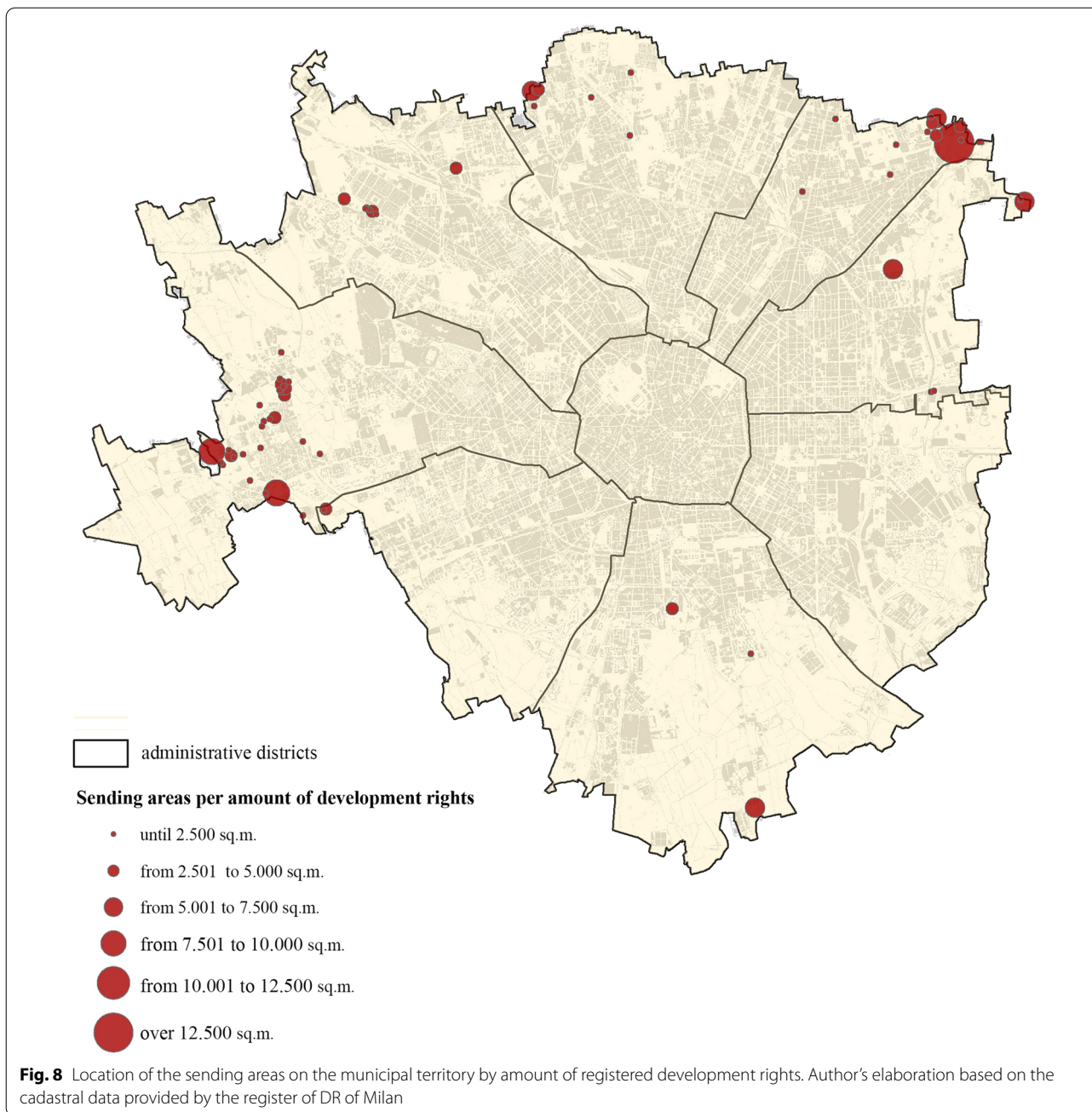
The spatial distribution of the sending areas on the municipal territory aims to evaluate the impact of the differential rent on the DRs market (Fig. 8). The research focused only on the sending areas, as there are not available informations about the receiving areas that would allow to trace the path of the DRs. In any case, as clearly highlighted in the map, DRs have been generated mainly by sending areas located near the municipal administrative borders, peripheral areas where the differential land rent is lower. Some operators probably acquire DRs from private peripheral areas, at very competitive prices, waiting for the best opportunity to put them on the market in presence of a demand for development in more central areas. In this way, a greater valorization of DRs is achieved through the plus value generated by the different location.

This activity takes place exclusively on a financial level, without any charge and risk related to the implementation of a real estate project. The variation in land rent between different municipal locations has been investigated through the study of real estate market values that are listed in the database of the Revenue Agency. Table 2 contains the different homogeneous territorial zones (OMI zones) of the municipality of Milan, where the sending areas are located (Figs. 9 and 10). For each OMI zone, the agency provides a minimum/maximum range of market values and rentals, in euro per square meter of surface area, detailed by property category and state of conservation.

This paper refers to the values of the residential sector, in particular civil housing in very good state of conservation, resulting in an average price in euro per square meter (Fig. 11). The lack of data about the receiving area does not allow us to reconstruct the path of the DRs in the space and to estimate the variations of value in the transition towards the receiving area, where the building development actually takes place. However, the location of the sending areas clearly shows that DRs are generated mainly in peripheral areas, with low average real estate prices, compared to central and semi-central locations. There are consequently many chances to obtain a higher valorization of the certified DRs on the market. For example, the hypothetical transfer of DRs from zone E8 to zone D10 benefits of a difference in the real estate quotation around 45%. The sale of the DRs could guarantee the operator to capture such a surplus value exclusively through the transfer of the ownership of this new asset, without any economic risk. This is a form of financialisation of the real estate market, in which DRs become exchange goods, similar to shares on financial markets.

#### **The opportunities and risks for the land use planning**

The DRs listed in the municipal register are mainly generated by the transfer of the so-called "indirect



pertinences", areas for new services provisions (urban green areas, social housing, road mobility areas, areas for metropolitan transport depots). There is no accurate information on the amount of areas for public services acquired by the municipality through the TDR program. However, assuming that most of the registered DRs come from the transfer of private areas, it is possible to assess the total area at approximately 466,000 sq.m., based on the development ratio of 0.35 sq.m./sq.m. The municipality would certainly benefit from a significant economic

resource savings in the land acquisition. However, the areas have been freely acquired by the municipal administration, usually in peripheral areas and without any coordination with the timing of the related development project. The public authority is weakening its role in the urban governance, with the acquisition of areas for services in a disorganized way and according to the schedule imposed by private actors, which are often not compatible with the availability of public resources for the realization of an efficient urban welfare system.

**Table 2** OMI zones, Municipality of Milan. Revenue Agency data 1° semester 2020

Cod	Area	Zone
D10	Peripheral zone	PARCO LAMBRO, FELTRE, UDINE
D15	Peripheral zone	FORLANINI, MECENATE, ORTOMERCATO, SANTA GIULIA
D18	Peripheral zone	MAROCCHETTI, VIGENTINO, CHIESA ROSSA
D25	Peripheral zone	LORENTEGGIO, INGANNI, BISCEGLIE, SAN CARLO B.
D30	Peripheral zone	MUSOCCO, CERTOSA, EXPO, C.NA MERLATA
D32	Peripheral zone	BOVISASCA, AFFORI, P. ROSSI, COMASINA
D35	Peripheral zone	MONZA, CRESCENZAGO, GORLA, QUARTIERE ADRIANO
E5	Suburban zone	BAGGIO, Q. ROMANO, MUGGIANO
E8	Suburban zone	QUARTO OGGIARO, SACCO
R2	Non-urban zone	RONCHETTO, CHIARAVALLE, RIPAMONTI

From the city planning perspective, it is interesting the distribution of sending areas according to the land use regulations of the current plan, into force since February 2020 (Fig. 12).

The new city plan has led to the redefinition of the use of some sending areas, which have been assigned to the municipal authority because of the voluntary transfer of private areas in exchange for compensatory DRs. In particular, some areas that currently belong to the category of existing urban green areas, areas for agriculture and the urban renewal sectors have previously been private and usually classified as new urban green areas (indirect pertinences).

It seems particularly questionable in the case of the agricultural areas, which have probably benefit of the DRs compensation, thanks to the previous land use regulation. In this case, DRs have been already assigned and registered by private owners. Today the municipality can be the owner of an agricultural area for which an adequate compensation must be guaranteed. This results in a strong inequality in the treatment of private property that, in some cases, has benefited from the possibility to give up the area after compensation while in other cases the opportunity has been lost due to the entry into force of the new plan.

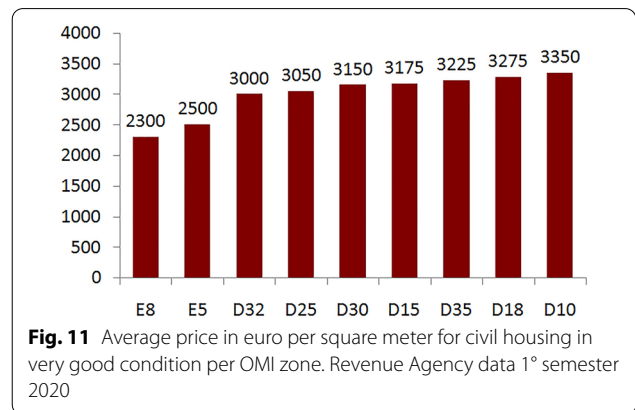
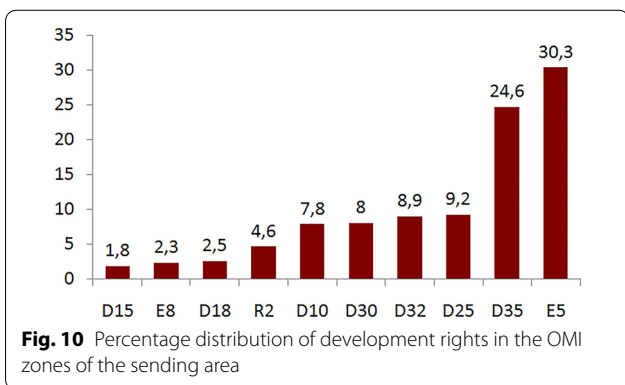
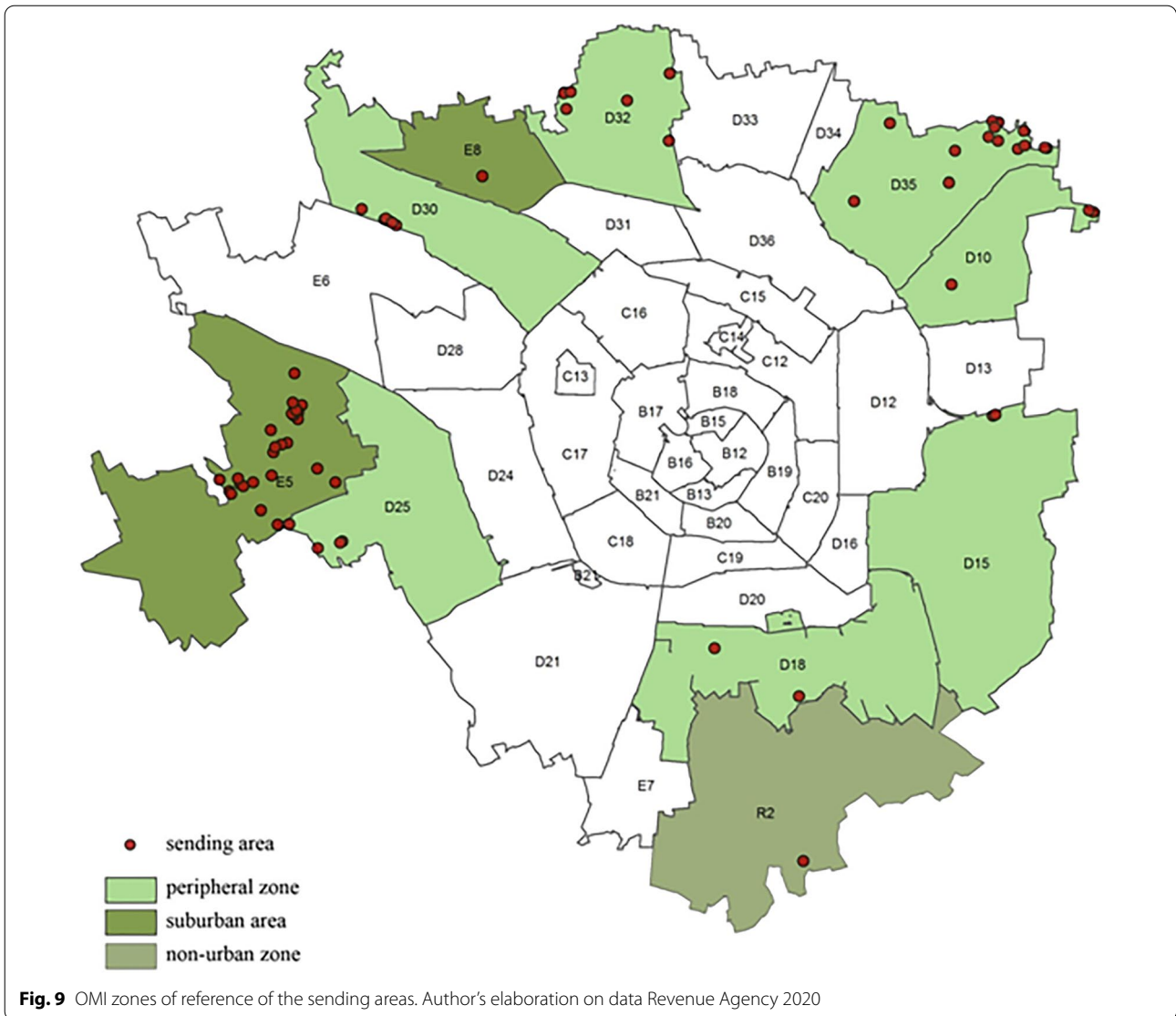
## Discussion

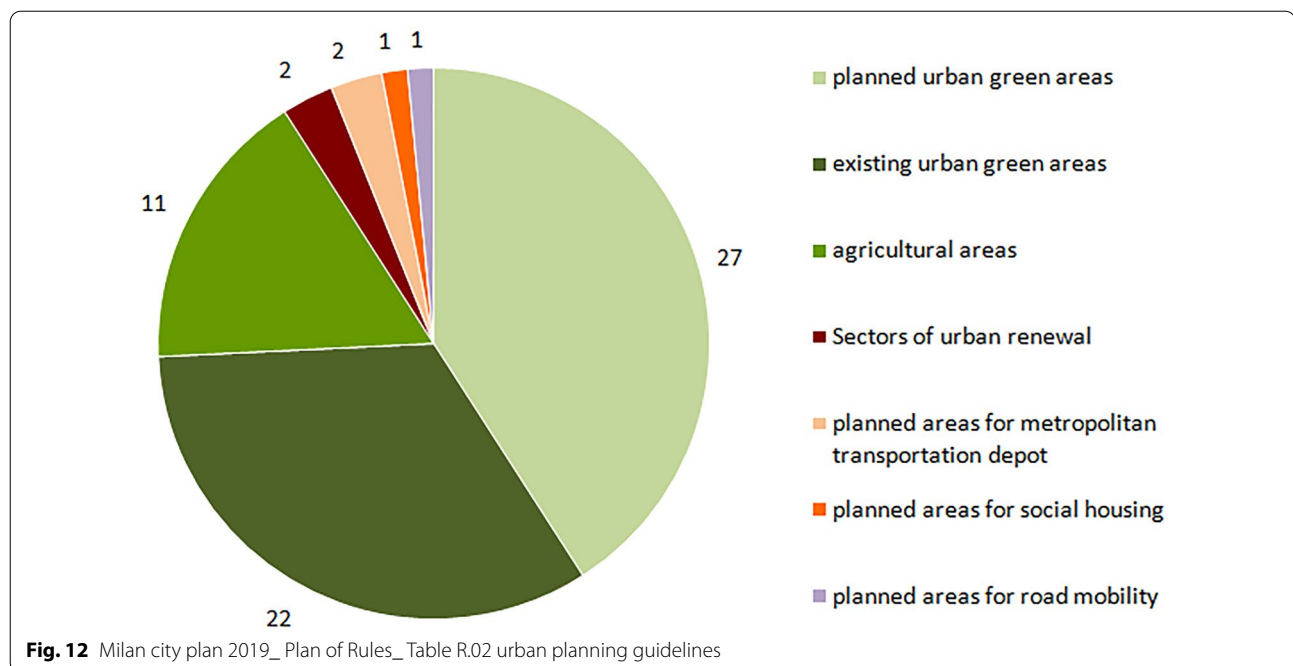
The hypothesis of creating a DRs market is strongly hindered by the uncertainties of the legislative framework that does not even provide an explicit definition of the nature of these rights, making difficult to recognize them as a new credit asset (Micelli 2016). However, we cannot overlook the innovations in land use management and in the concept of development right. In the new perspective

outlined by recent legislative reforms, DRs have acquired full autonomy and undefined character, without a reference to a receiving area suitable for building construction that could undermine the efficiency of the market (Meucci 2012). The analysis of the register of DRs in Milan testifies a still limited use of the generalized TDR mechanism, which, in this specific case, is probably due to an inadequate profitability and a lack of trust in the trading process, especially in a first experimental phase. The economic crisis has significantly reduced the income guaranteed by the real estate market and sometimes made ineffective the mechanisms based on the exchange of DRs, also requiring an inevitable downsizing of the planned urban developments.

In addition, the problem of transaction costs, which landowners and real estate entrepreneurs have to pay for communication, publicity, information exchange and transfer of the rights ownership, negatively affects the efficiency of the market (Chiodelli and Moroni 2016; Shahab et al. 2018). When transaction costs are too expensive and discourage the transfer of DRs, the public authority could intervene in the market by tax relief of transaction acts. However, the TDR program will be effective if the DRs, assigned as compensation for the acquisition of the area, cover the costs of the operation and guarantee an adequate capital gain. For this reason, the registered DRs always come from suburban areas, where compensation is the most advantageous. On the other hand, the program proves ineffective in acquiring areas for services in central locations, where the provided compensation is not considered adequate or sufficient. The effectiveness of the TDR program is therefore closely linked to the allocation of a building ratio that is adequate but, at the same time, not excessive, to not create other inequalities.

In the case of the equalization model, the building ratio is linked to the classification of land according to objective characteristics and the state of fact and law. Then, the establishment of building ratios can only result from the city project that the local government promotes. However, different building ratios can be considered the result of discretionary choices of questionable validity. In the case of TDRs, equity is pursued by granting the same initial amount of DRs to all landowners (Moroni 2014). Planning choices are anticipated by the definition of a single building ratio, regardless of the urban transformation provisions, only excluding agricultural areas and areas already urbanized. DRs that can be used anywhere in the city, in different locations from where they are allocated, makes it possible to realize extremely different valorizations. The standardization of different parts of the city, by allocating the same amount of DRs, means not recognizing the different factual and legal situations





that have been structured over time with the urban development, thus resulting in further inequalities and market speculations (Camagni 2014; Micelli 2014). The owner of DRs generated by a peripheral area will tend to market or develop these rights in a central area, thus achieving a higher valorisation. The market of DRs would not have characteristics of certainty, reliability and transparency. The value of this new asset cannot be defined independently of the receiving area where DRs will actually be developed, at the end of a chain of transactions that sometimes could be long. The negotiation of DRs in the market is based on an intermediate value between the different values that the DRs would assume in the possible final locations, through the interaction between demand and overall supply. TDR allows speculative activities concerning the accumulation of peripheral lands, waiting for a chance to transfer the assigned DRs to a central areas. In this speculative process other intermediaries can be involved in market trade with the aim to gain a share of the plusvalue. In the example of Milan, TDR does not capture rent in any way but allocates DRs in order to obtain, in return, areas for the public city, providing "generous" rather than fair compensation (Camagni 2014). The choice of a unique development ratio does not necessarily lead to a fair valorisation of the property, but undermines the equal distribution of land rent and confirms the need for appropriate forms of market regulation (Micelli 2011, 2014).

The limits of the research are related to the lack of complete and updated informations, in the registry of Milan, concerning DRs ownership, use and receiving areas. It also leads to non-transparent market practices, where the matching of supply and demand is based on informal contact with technical offices (Goggi 2014; Falco and Chiodelli 2018). In the Lombardy region there are also other experiences of TDR programs that have adopted a register of DRs, sometimes with more details about the origin of the right (by an easement, a reduction of urban density, etc.), the ownership, the transferring act (including the informations on deed registration) and the possible areas for development (Falco and Chiodelli 2018). If receiving areas are pre-defined, the faculty to register the DRs without the availability of an area suitable for building development still remains. These experiences can be considered limited, for the short period of validity and the amount of DRs, compared to the case of Milan, where the financialization of the real estate sector already exists.

The future of theoretical DRs, although certified in the registry, is rather uncertain and controversial in the event of a planning revision involving a downsizing of development provisions, as confirmed by the case of Milan that has recently modified the plan with the objective of regenerating the existing built-up area. This is critical because it would place the public authority in a position of weakness with respect to private interest, limiting the power to review land use choices or constraining to provide expensive financial compensations to landowners for their economic losses. The plan expected the market to promote

densification of central areas, increasing differential rents by moving DRs from suburban locations to more central ones, thus limiting the sprawl of urbanization. The real risk is that the municipality would be forced to acquire areas for services in the suburban areas, guaranteeing DRs as compensation, with additional costs for the community to maintain the stock of public areas.

The success of equalization practices has always been linked to the possibility for the public administration to control, through the plan, the intended land uses in a certain and non-negotiable way. A coherent and transparent definition of sending and receiving areas, as well as criteria for transfers of DRs, represents also a mandatory condition in the United States TDR experiences, which use a market-based approach to make the plan more flexible and to protect suburban agricultural land. The TDR program operates within a framework of detailed and mandatory rules defined by the Comprehensive plan at a local and supra-local level (Gibelli 2014). The role of the urban plan cannot be limited to regulating the use of DRs for the compensation of landowners, leaving the real estate market to establish how DRs should be allocated according to the values, accessibility and quality of local resources, through the meeting of supply and demand in the market (Micelli 2014). The market cannot replace land use zoning, leading to radical urban deregulation if spatial impacts are not adequately assessed in advance.

Another critical issue concerns the tax charges that, even in the case of Milan, also involve the virtual DRs granted to areas subject to compensatory transfer, which cannot be developed on site. The taxation of DRs, without adequate guarantee on their value and on the real chances to use or sale them, does not respect the principle of a fair treatment of properties. However, in Italy this inequality already exists, with the taxation of the development opportunities attributed by the general plan, even in the absence of an executive plan that can convert this expectation into a real right. The lack of a legal qualification of DRs, subjected to the transfer contracts provided for by Legislative Decree no.70/2011, emerges also in relation to the fiscal treatment of DRs. The direct and indirect taxes, applied to the contract of assignment or transfer of DRs, vary according to their qualification as a real right, development chance or intangible good. From a fiscal point of view, TDR can be considered similar to a transfer of real estate rights and the relative transaction contracts can be subject to the same fees. In case of DRs that are independent from a land ownership, the rights would be subject to the same taxes as the buildable areas. In the same way, the sale contract would be taxed, for VAT and registration tax purposes, based on the value declared at the stipulation of the deed (Rana 2012). However, the ownership of certified DRs is not

exempt from direct taxes (such as the Unique Municipal Tax), calculated because of the market value. If DRs are not linked to a plot of land, the tax charges for their ownership are not easy to apply because it is not possible to assess their economic value. For this reason the city of Milan, being unable to tax the virtual DRs, has requested the payment of the property tax for areas that cannot be built on site but which benefit from negotiable DRs (indirect pertinences).

Also the publicity of the transfers of DRs is an essential condition to ensure market transparency and to guarantee the certainty of the procedures, which could become legally relevant in case of a double transfer of the same DRs. If the DRs transcription has no public evidence, the administration cannot verify the prevalence between two deeds, dealing to the risk of grant the construction permit to the last purchaser and undermine the previous assignment (Uda 2015).

## Conclusions

The research findings reinforce the awareness that some changes have already occurred in the field and practice of urban planning, with the adaptation of public regulation to market mechanisms and the principles of neoliberal economics. Despite the unquestionable market inefficiencies and risks of speculative activities, it is not appropriate to contrast the evolution of the planning model, denying the need to overcome the rigid command and control approach. Instead, the paper highlighted some current trends and processes, with critical points that are not immediately recognizable, in order to stimulate the search for solutions that can support the redesign of urban planning forms while allowing public authority to recapture skills and powers that are essential for the territorial government. The case of Milan makes evident the risks connected to the recognition of autonomous DRs, when the urban planning system cannot exercise a joint control. An uncontrolled use of TDR mechanisms could implement dangerous speculative exchanges, as well as financial trading. At the same time, they allow municipalities to produce "planning money", although indirectly, useful to fill the lack of public funds. The possibilities to obtain different appreciation of DRs in the market, depending on the area of effective use, lead to strong inequalities in the distribution of the urban rent, undermining the original goal of a fair urban equalization (Camagni 2014). Equalization should adopt a same treatment for similar interests *de jure* and *de facto*, avoiding the attempt to equalize different interests (Micelli 2014). The unique building ratio artificially equals the values of the areas, for example central and peripheral zones, even with different historical and real estate values, leading to another disparity (Camagni 2015; Trapani 2014).

The hypothesis of managing the market with a Development Rights Exchange Agency does not represent an effective solution, already studied during the drafting of the plan of Milan (De Carli 2012). However, it could help to ensure transparency in the trade of DRs, facilitate the matching of supply and demand, stabilize prices in the market and partially overcome problems related to the taxation. The creation of an agency would generate additional expenses that would increase transaction costs and thus negatively influence the market, especially if limited in size.

Future research should focus on the integration of the market-oriented tools into the traditional planning and regulatory system, thus rejecting any idea that markets can replace the use of zoning. The market-based approach can contribute to improve the effectiveness of urban policies, but it requires a close coordination with spatial and urban planning, which must consequently return to a significant role in the management of urban transformation. The modalities for the application of market-oriented tools to several strategies for urban regeneration must be explored in the framework of a broad revision of the urban planning, in the direction of a bipartition between structural and operative components.

In particular, the plan must control the path of DRs transferring, from the origin in sending areas to the final use in receiving ones, and the total development capacity produced, in order to ensure adequate opportunities of development. The hypothesis of introducing a system of conversion factors for the transfer of volumes, based for example on the distribution of real estate quotations, can offer a partial solution to the speculation based on the increase of differential land rent in the transfer from the periphery to the city center.

In order to guarantee the certainty of procedures and to support fiscal policies, it would be necessary to study new modalities of identification of the involved properties and DRs within the database of the Land and Building Cadastre, for example introducing a new category of virtual rights in the Cadastre. It would also collect the data contained in the municipal registry of DRs and would be eliminated after the construction and registration of the new building in the Cadastre (Brambilla 2012).

## Appendix 1

Data	Documents	Online access
Development Rights certificates	Registro dei diritti edificatori del Comune di Milano, latest update 05/08/2020	<a href="https://www.comune.milano.it/documents/20126/2052221/Registro+dei+Diritti+Edificatori+--+Aggiornamento+al+5_agosto_2020.pdf/b134eb33-6a15-1c40-d139-d0a887a4bc68?t=1596712938439">https://www.comune.milano.it/documents/20126/2052221/Registro+dei+Diritti+Edificatori+--+Aggiornamento+al+5_agosto_2020.pdf/b134eb33-6a15-1c40-d139-d0a887a4bc68?t=1596712938439</a> (last access on 21 November 2020)
Land use zoning	Piano di Governo del Territorio Milano 2030, latest update February 2020	<a href="https://www.pgt.comune.milano.it/">https://www.pgt.comune.milano.it/</a> (last access on 21 November 2020)
Real estate market quotations of the City of Milan	Banca dati delle quotazioni immobiliari, Agenzia delle Entrate, Destinazione d'uso Residenziale, 1° semestre 2020	<a href="https://www.agenziaentrate.gov.it/servizi/Consultazione/ricerca.htm">https://www.agenziaentrate.gov.it/servizi/Consultazione/ricerca.htm</a> (last access on 21 November 2020)

### Abbreviations

US: United States; DR: Development right; TDR: Transfer of Development Rights.

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### Authors' contributions

The author read and approved the final manuscript.

### Availability of data and materials

All the data used in the study are publicly available.

### Declarations

#### Competing interests

The author declare that he has no competing interests.

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