



Bridging land value capture with land rent narratives

Eliška Vejchodská^{a,b,*}, Ana Paula Barreira^c, Armands Auziņš^d, Evelin Jürgenson^e, Steven Fowles^f, Vida Maliene^{f,g}

^a Jan Evangelista Purkyně University, Faculty of Social and Economic Studies, Institute for Economic and Environmental Policy, Moskevská 54, 400 96 Ústí nad Labem, Czech Republic

^b Charles University, Faculty of Humanities, 8, Pátkova 5, 182 00 Praha 8, Czech Republic

^c CEFAGE – Center for Advanced Studies in Management and Economics and Faculty of Economics, University of Algarve, Campus de Gambelas, Building 9, Faro, Portugal

^d Institute of Civil Engineering and Real Estate Economics, Riga Technical University, Kalnciema Street 6-210, LV-1048, Riga, Latvia

^e Chair of Geomatics, Institute of Forestry and Rural Engineering, Estonian University of Life Sciences, Kreutzwaldi 5, 51014, Tartu, Estonia

^f School of Civil Engineering and Built Environment, Faculty of Engineering and Technology, Liverpool John Moores University, Byrom Street, Liverpool L3 3AF, UK

^g Department of Land Management and Geomatics, Vytautas Magnus University Agriculture Academy, Studentu 11, Akademija, LT-53361 Kaunas distr, Lithuania

ARTICLE INFO

Keywords:

Land value
Land rent
Value capture
Taxation
Land

ABSTRACT

Urban land values have reached unprecedented levels in many parts of the world. Many scholars direct their research on their utilisation for public purposes. Two established research communities can be traced – the community referring to land value capture comprised mainly of urban planners and lawyers, and the community of economists discussing land rent. The relatively low level of interrelations between these communities prevents an effective sharing of their research outcomes. This contribution seeks to strengthen interconnections between these communities by characterising the narratives of both research communities, and synthesising their views.

The research is largely built on systematic literature review with content analysis undertaken using the NVivo software. The analysis focussed on the terminology used, the specific causes of land value increase, rationales and instruments used for land value capture, and the purpose of using the collected money to investigate the interconnections between both research communities.

1. Introduction

Interest in rising land values and the possible use of land values for public purposes has recently grown exponentially among scholars (see, e.g. Gerber et al., 2018 and Muñoz Gielen and Van der Krabben, 2019; within the economic community, e.g. Stiglitz, 2015) as well as practitioners (HCLGC, 2018). In this context, Muñoz Gielen and Lenferink (2018) speak of an overall societal trend of declining public sector responsibility for financing public infrastructure. According to them, public authorities are actively looking for innovative sources of financing. Many current scientists and practitioners perceive the rise in land values as a potentially significant source of public finance.

Alterman (2012) provided a valuable review of approaches to and rationales for land value capture, together with an overview of the terminology used in this area of interest. Her contribution describes the

situation among the research community of land value capture, which contains mainly urban planners and lawyers in planning law. However it is only a part of the story, as another narrative takes place from the perspective of economic theory and other related disciplines discussing land rent.¹ Land rent theory was sidelined within economics for almost the whole of the 20th century (Gaffney, 1994), but currently it is regaining importance amongst the academic community as respected scholars including William Vickrey, Robert Solow and Joseph Stiglitz help to resurrect broad interest in taxing land rents and discuss distinctive causes of land rent rise and rationales for land rent taxation. Economists and other social scientists start to consider land rent taxation not only as an efficient source of public finance and as a theoretically possible single tax to procure local public goods provision (e.g. Arnott and Stiglitz, 1979), but also as a remedy to current societal problems including the uneven distribution of wealth (Stiglitz, 2015).

* Correspondence to: Jan Evangelista Purkyně University, Faculty of Social and Economic Studies, Moskevská 54, 400 96 Ústí nad Labem, Czech Republic
E-mail address: eliska.vejchodska@ujep.cz (E. Vejchodská).

¹ A related branch of literature focuses on the economic analysis of the effects of value capture instruments using neither of these terms (e.g., for the area of impact fees analysis, see the works of Ihlanfeldt and Shaughnessy, 2004; Mathur et al., 2004).

<https://doi.org/10.1016/j.landusepol.2021.105956>

Received 22 October 2020; Received in revised form 26 March 2021; Accepted 20 December 2021

Available online 5 January 2022

0264-8377/© 2022 The Authors.

Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

The two communities of scholars; the community explicitly speaking about land value capture and scholars referring to land rent, do not interact often which prevents an effective sharing of their research outcomes. This article aims to highlight how the findings of the two communities interrelate to enable both of them to easily access the ideas of the other research community, and to benefit from this mutual exchange. Accordingly, the article intends to highlight the links between these two research communities.

The narratives of the two communities tend to be internally concise, although different authors stress other aspects of the topic. Some of these differences follow from the focus in interest of these research communities: the land value capture community focus predominantly on the increase in land value, whereas the land rent community focus on the full land value.

This article characterises the building blocks for both of these research communities, searches for the interconnections between them and synthesises their views. The results are informed by the systematic literature review utilising NVivo content analysis of the land value capture research agenda and a directed literature review of publications of the most respected and influential authors dealing with land rent, property taxation and housing prices within mainstream economic arena combined with the content analysis of their view.

2. Historical division of land value research communities and the return of land rent in economics

The principle purpose of this section is to highlight the work of key economists in the development of relevant theory underpinning land rent without providing a full historic overview. The significant contributions of key economists are highlighted adopting a chronological perspective concerning the emergence of land rent economic theory. The section will also summarise current progress within the land value capture research community.

The first scholars observing land rents were French physiocrats in the mid-18th century who associated the value of land primarily with its use for agricultural production. Also within classical economics of the 19th century, land played a significant role in the economic analysis. Rent was defined by Ricardo (1817, pp. 40) as the compensation paid to the landlord for its “original and indestructible powers”, or by von Thünen who stressed immobility of land and gave importance to transportation costs by characterising land rent as the payments to the landlord for a better location (see Samuelson, 1983). Over time, the importance of land rents had gradually shifted from agriculture to the urban environment, hand in hand with the declining importance of agriculture in the national economy (Stiglitz, 2015; Piketty, 2014), and classical economists also started to be interested in urban land rents. They also raised the issue of taxation of land rent, besides Ricardo for instance Mill (1848), who considered rents as unearned as they are accidental without any exertion or sacrifice. Henry George (1879) was the most significant propagator of urban land rent taxation in the time of classical economic theory.

With the transformation from classical to neoclassical economics, a significant withdrawal from the analyses of causes and consequences of high land rents can be observed within mainstream economics (for the critics of this trend, see, e.g., Brueckner, 1986; Gaffney, 1994). Land lost the glory of specificity and began to be considered a standard factor of production, similar to capital (machinery, factory halls), or human labour. Discussions about land rent largely shifted to urban economics as a specific economic discipline. The analysis of urban economics was rather positive, focusing on the description of the phenomenon of the origin of land rent without much ambition to normatively assess and suggest uses of those rents for public financing purposes.

The situation was different among urban planners and lawyers analysing the law of spatial planning or researchers dealing with public policy. These scholars discussed the consequences of high urban land prices continuously and sought for the introduction of legal instruments

to soften the impact of high land values on society and to use them for public purposes. Alterman (2012) summarised how these ideas penetrated into planning practise during the 20th century. Within these disciplines, a field dealing with land value capture has established in academia and is currently gaining in importance (e.g. Alterman, 2012; Van der Krabben and Needham, 2008; Kresse et al., 2020).

With the combination of ever-increasing real estate prices in cities, deteriorating housing affordability, and the widening gap between the rich and poor in society, the criticism of mainstream economists for largely ignoring land rents increased (e.g. Stiglitz, 2015). According to Ryan-Collins et al. (2017), land cannot be considered only as a standard factor of production. Land is incomparable to capital or labour as it is immobile, permanent, and land rent, contrary to excess returns on capital leading to increasing investments in capital, cannot lead to an increase investment into land. Although land rent is not a focal point of general economic discussions today, unlike the time of classical economics, it is slowly beginning to return to being a central issue. Thomas Piketty, one of the most widely read contemporary social scientist discussing inequality, launched an intense debate on the unfortunate consequences of high land rents. As he emphasised (2014, pp. 6): “*It would be a serious mistake to neglect the importance of the scarcity principle for understanding the global distribution of wealth in the twenty-first century. To convince oneself of this, it is enough to replace the price of farmland in Ricardo’s model by the price of urban real estate in major world capitals...*”. Leading representatives of economics have also become more seriously interested in land rents (e.g. Stiglitz, 2015). These personalities largely shape the discourse on the normative issues of the appropriate tax system within the scientific as well as politicians’ and practitioners’ community and can return land rent among the central themes of economic discipline. As Mattauch et al., (2018, pp. 2) put it: “*the rents are back as a potential source of public revenue*”.

3. Methodology

Different methodologies were applied to study the narratives of the two research communities highlighted in this article. Land value capture literature is relatively extensive and already well established in academia. For this area of interest, a systematic literature review was undertaken followed by a content analysis using NVivo software. Another approach was used for identifying new trends within economic literature discussing land rent. The focus was on recent works with a normative aspect of the most respected economists dealing with rationales of land value taking and purposes of the use of collected money supplemented by the outcomes of positive analysis of urban economics on the causes of land value rise. Its content analysis did not necessitate to use any software with respect to a low number of publications analysed. Both approaches are described separately below.

3.1. Systematic literature review and NVivo content analysis for land value capture community

Systematic literature review summarises and efficiently integrates current knowledge (Mulrow, 1994). The consistency and transparency of the systematic review enabled the authors to identify, critically assess and synthesise the results of primary studies. The steps of the systematic literature review can be derived from the framework described by Cooper (1998) as firstly, research question definition stage followed by literature search stage, data evaluation stage, data analysis stage, and finally interpretation and presentation stage. Cooper (1998), mainly in connection to quantitative data analysis, suggests for the data analysis stage that only methodologically sound studies should be included. The variety of methodologies and topics within the land value capture research agenda made it difficult to apply a consistent quality appraisal for individual studies. As it is possible to appraise the overall journal quality based on the international respect of the editorial board and the respect of the journal gained within scholar community, only articles

published in high-quality academic journals were included into analysis (impact factor did not play a crucial role, as studies from selected journals without impact factor were included and similarly some studies were excluded from the analysis despite being published in a journal with an impact factor). Further, only highly reputed book publishers were included in the search.

The systematic literature review focused on the term ‘value capture’ and how this term is used within the land development and land policy literature field. The gathering of the literature proceeded in the steps described in Appendix in detail. Altogether, 770 literature sources were gathered. The PRISMA (Preferred Reporting Items for Systematic Reviews) approach was adopted for inclusion and exclusion criteria

(Moher et al., 2009) – see Fig. 1. The final set for content analysis comprised 232 sources, including 215 peer reviewed published articles, 3 books and 14 book chapters.

The content analysis of the text conceptualising land value capture within the original articles was undertaken. The structure of the content analysis was developed during the coding process and resulted in the following five defined building blocks describing the narrative: (i) the terms used; (ii) causes of land value rise considered; (iii) rationales for capturing the land value claimed; (iv) instruments for capturing the land value analysed; and (v) purposes of the use of collected money suggested.

As the literature of land value capture community is extensive, its

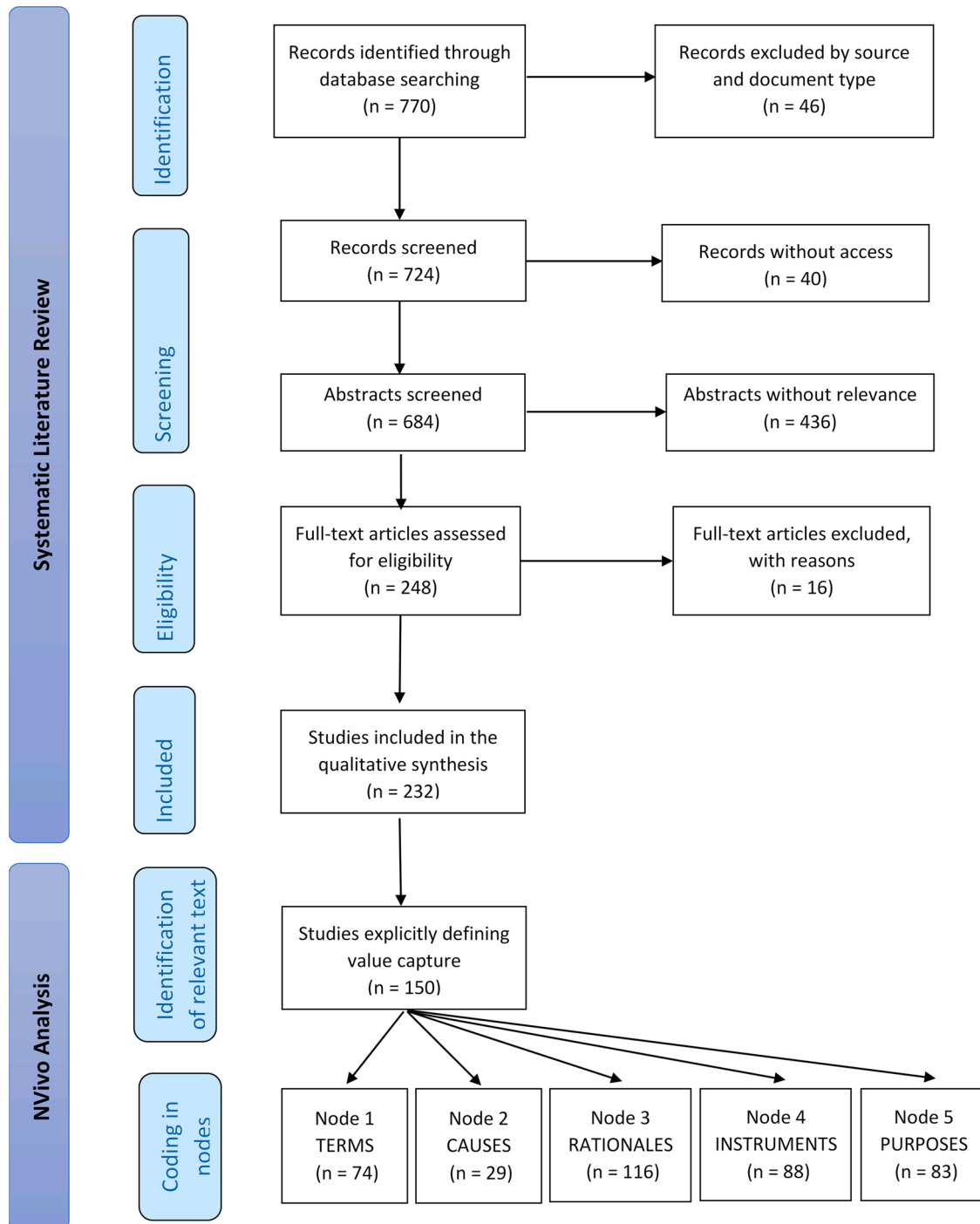


Fig. 1. The methodological approach used for analysing the land value capture stream.

content analysis was performed using the NVivo 12 software. After importing the 232 documents into NVivo, relevant fragments of the text were searched for in the connection of value capture theme. The text fragments were coded in nodes according to the building blocks defined. Each node was divided into several subnodes characterising different subfields discussed within each node. Fig. 1 brings the number of hints found within the text for each node. The literature review of the land value capture community stream was undertaken in March 2019. Also more recent studies are discussed where appropriate.

3.2. Literature review and content analysis for land rent community

For the purpose of land rent community analysis, a separate literature review was undertaken. The review of the literature discussing land rent tackled positive analysis of land value increase as well as normative questions of rationales for taking the value from landowners and purposes of the use of collected money. For relevant literature search within economic literature, the terms 'land rent', and additionally also 'hous* prices', 'land tax*' and 'property tax*' were used. For the positive aspects, also monographs of urban and regional economics were included into the set of analysed literature. For the normative questions, a focused review was appropriate as transferring land rent to serve public purposes is not a generally accepted topic within economic literature. The review was first limited to laureates of the Prize in Economic Sciences in Memory of Alfred Nobel, to grasp new ideas with the potential to shape the overall discourse about land rents within the economic analysis. This set of sources was extended by several other respected scholars who have gained considerable attention in the area of normative aspects of land rent discussion, based on the number of citations of their work. 51 articles and 6 books entered the final set for analysis. See Fig. 2 for the quick insight into the methods used for analysing the land rent stream.

4. Results

This chapter presents the narratives of both streams of thoughts in detail – of land value capture community as well as land rent community. The subchapters are organised according to the building blocks of the narratives identified. Table 1 provides a summary of the main views of both research communities. Further below, each point is detailed.

4.1. Land value capture community

4.1.1. Terms used

The key terms and definitions associated with an increase in land value or property value (e.g. Heeres et al., 2016 refer to property values while speaking about value capture) include 'betterment', 'plus value' and 'windfall' but these variations provide potential weaknesses for international application. For example 'betterment' is more of a British term associated with UK and its former colonies (originating in the UK following the emergence of the planning system in 1947), 'plus value' more of a term with roots in Spanish-speaking countries, whilst 'windfall' is not considered to be a professional or legal term (Alterman, 2012, pp. 6). Mcallister (2019) or Higgins (2019) refer to 'land value uplift', whilst Agyemang and Morrison (2018), Cuenya (2019) or Smolka and Amborski (2000) refer to 'land value increments'. Different ways of expressing the land value rise is common to this group of scholars. Some authors also speak about 'property value premium' (Dziauddin et al., 2015), 'added value' (Vadali et al., 2009), or 'development value' (Crook and Whitehead, 2019). Smith and Gihring (2006) also use the term 'unearned increment' in relation to value capture and this notion that the value to be captured is unearned or indeed undeserved features in the work of Smolka (2012). Using the term 'unearned' helps to justify the process and provides a rationale for the introduction of land value capture instruments as discussed further below.

In the UK and elsewhere, the singular term 'betterment' has evolved

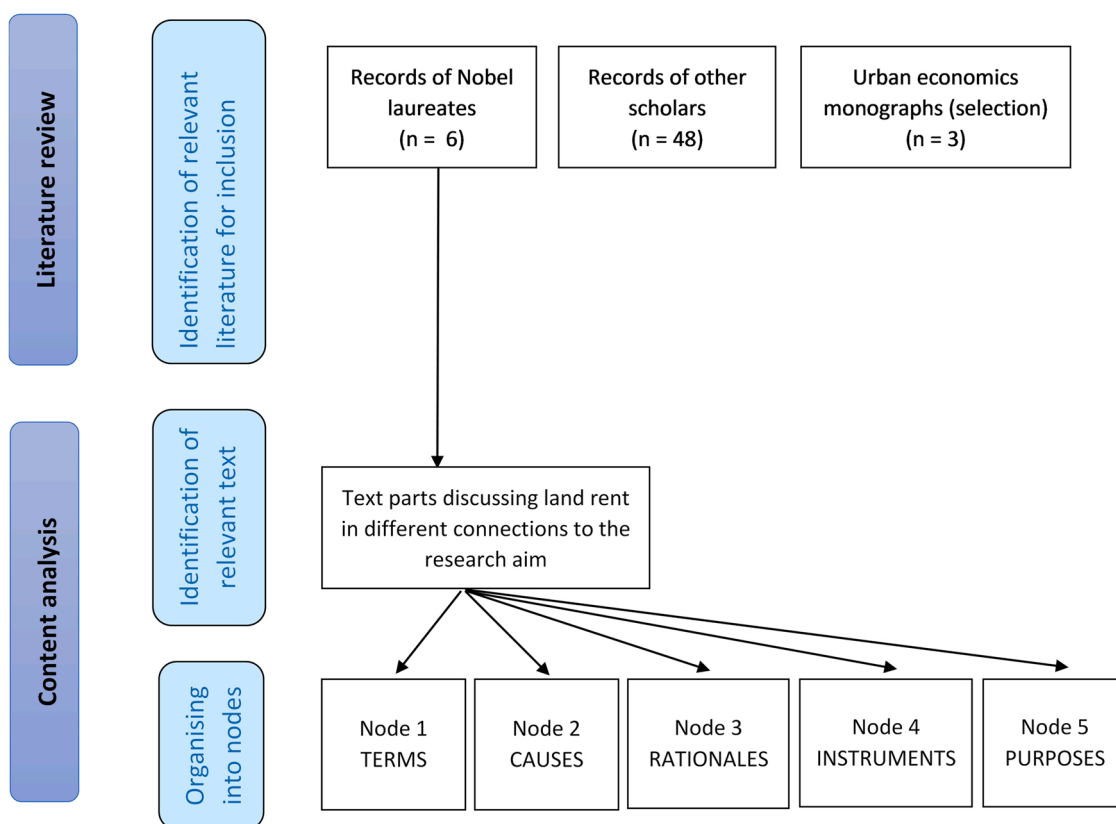


Fig. 2. The approach used for analysing the land rent stream.

Table 1
Summary of the main views of land value capture and land rent community.

	Land value capture community	Land rent community
Terms	Land value Land value, property value Land value rise Land value increment Land value uplift Unearned increment Value added to land Value premium Plus value Windfall Development value Betterment	Land value Land rent / land value Site rent / site value
Causes of land value rise	Provision of public infrastructure Development control decisions General economic and community trends (rarely)	Land specifics Asset with fixed supply Immovability - monopoly power of landowners Supply side Urban planning setting limits on developable land Demand side Growing demand of people for space The success of urbanised environment Local amenities Public subsidies related to land Monetary policy Expectations of investors
Rationale for land value taking	Fairness Unearned income / windfall Moral obligation of landowners Practical reasons Finance local governments Make viable public investments Equity (rarely) Redistribution Efficiency (rarely) In taxation (land tax neutrality) In land use Optimal amount of public infrastructure Decrease in land speculation	Efficiency In taxation (land tax neutrality) Land tax financing public services with economies of scale In land use Stronger economy thanks to decrease of rent-seeking Optimizing the rate of construction Equity Progressivity of land tax under some assumptions Legitimacy: stabilisation of democracy (rarely)
Instruments	Recurrent taxes and other taxes Single rate property tax Pure land value tax Split rate property tax Tax increment financing Transaction taxes Non-recurrent obligations Developer contributions, developer obligations, planning obligations, developer charges, impact fees Inclusionary zoning Levies connected to added land value by planning Government ownership of land or development rights Other instruments	Land value tax Impact fees

Table 1 (continued)

	Land value capture community	Land rent community
Purposes of the use of collected money	Joint development mechanisms Land readjustment User payment mechanisms Financing public infrastructure Pay-back previous public investment Finance planned public investments Cover the costs of social needs Provide social / affordable housing Provide specific public services Local community needs in general	Financing public infrastructure (impact fees) Source of public finance (land taxes) Public services with economies of scale Local government needs General needs of public finance

to become associated also with land value capture instruments by referring to ‘betterment levies’ or ‘betterment taxes’ (Fensham and Gleeson, 2003; Medda, 2012; Walters, 2013).

4.1.2. Causes of land value rise

Scholars within the land value capture research community emphasise the enhancement of land value as resulting from actions other than the landowner, most notably actions by the public sector. The provision of public infrastructure in general as a cause of land value rise appears in many literature sources, often with the emphasis on local authorities as the providers of public infrastructure (Nguyen et al., 2017). Some authors focus on the transport related infrastructure (Enoch et al., 2005; Medda, 2012; Mittal and Kashyap, 2015; Zhao and Larson, 2011). In this connection, rail development gains much attention (Chang and Phang, 2017; Sun et al., 2017).

Development control decisions by planning authorities also affect land values. More specifically, these are zoning modifications derived from land use regulations and arrangements in land use patterns (e.g. Garza and Lizieri, 2016; Rebelo, 2017; Viallon, 2018; Wu et al., 2019). Some authors speak about changes in development rights or land use rights in relation to planning highly affecting land values (Havel, 2017; Mcallister et al., 2018; Van der Krabben and Jacobs, 2013).

General economic development and overall community trends are also mentioned as land value increase causes by some authors (e.g. Rebelo, 2017). However, the scholars within land value capture community do not clarify the substance of these phenomena in detail. Other authors stress that urban land values rise as a result of community efforts or market forces (Smolka and Amborski, 2000) which makes good interconnections to how land values are perceived within economic literature.

4.1.3. Rationale for land value taking

The rationale, or justification for land value capture, can partly be explained with reference to the terms associated with it. The analysis of terms highlighted a tendency to link the term ‘unearned’ with the increase in land value. This suggests there is some sense of moral judgement to consider the value increase as ‘unearned’ (obtained without merit), and as such it is justifiable for governments to capture this value. For example, Garza and Lizieri (2016, pp. 449) state that the intention of the imposition of a land value capture tool is to ‘reduce unearned landowner gains’, and similarly for Higgins and Kanaroglou (2016, pp. 611) the public sector should recapture the ‘unearned increment’ from land value uplift following public sector investment in rapid transit systems. The rationale for land value capture is also provided with reference to ‘windfall’. For example, according to Jillella et al. (2015, pp. 8092), value capture “opposes the windfall gains derived out of public

infrastructure creation accrued to a privileged few as unearned income" which brings together the unexpected nature of a windfall, together with the sense this is undeserved to help provide the rationale for land value capture. Alterman (2012) stresses also the moral obligation of landowners to give a part of the value back to community and she calls instruments built on this rationale as direct instruments of land value capture.

The other most commonly discussed rationale, land value capture as a practical way for public bodies to raise revenue, is considered by Alterman (2012) as more pragmatic. This rationale builds the basis for what Alterman calls indirect instruments for value capture and is used by many authors to justify value capture (e.g. Muñoz Gielen and Lenferink, 2018).

Some authors of land value capture stream adopt thoughts which base their argument on economic theory and use as reasoning of value capture also efficiency of land value taxation (e.g. Crook and Whitehead, 2019; Rebelo, 2017; Hughes et al., 2020). In this respect, also taxing the added value caused by gaining planning permission does not bring any distortions on land market provided the tax levied is lower than the land value added (Crook and Whitehead, 2019). Other authors argue for land value capture instruments by efficiency in land use, for instance via discouraging the overconsumption of infrastructure and land (Batt, 2001), or decrease in sprawl and land speculation (Farris, 2016). Also reasoning for land value capture based on fighting inequalities within society can be found (Sharma and Newman, 2018), or as a tool for steering land uses by imposing differentiated tax rates or charges (discussed among other possible rationales by Smolka and Amborski, 2000).

4.1.4. Instruments used

The variety of instruments that are used for land value capture is wide. Alterman (2012) makes a distinction between instruments limiting private property and managing land in public hands, and those leaving land in private hands but capturing partly or totally the increased land value via direct or indirect instruments. For the purposes of this article, the instruments are sorted into the following groups: (i) recurrent taxes and other taxes, (ii) non-recurrent obligations connected to land development; (iii) levies connected to added land value by planning; (iv) government ownership of land or of development rights, and (v) other instruments. This article covers possible value capture instruments in a broad sense. Not all the instruments systematized herein are necessarily agreed as value capture instruments among researchers.

Recurrent taxes include single-rate property tax, pure land value tax, split-rate property tax (land value tax in a broader sense), tax increment financing and transaction taxes. These taxes are either annual duties or apply repeatedly to the same land plot when changing ownership. Single-rate property tax applies the same tax rate to land and its improvements, i.e. buildings (Chapman, 2017; Gihring, 2001); pure land value tax imposes a tax rate only to land (Wenner, 2018); split-rate property tax imposes higher rates for land and lower for its improvements (Gihring, 2001; Rybeck, 2004). Tax increment financing captures the expected future property tax value increment generated from local area investment, its taxing aim is to finance infrastructure, services and debts (Chapman, 2017; Root et al., 2015). Transaction taxes are taxes on income generated from the sale of real estate (Crook and Whitehead, 2019; Hendricks et al., 2017; Muñoz Gielen et al., 2017) and cover capital gains tax and tax upon the transfer of title, also called as stamp duty.

Obligations connected to land development and deriving their magnitude from the costs of the provision of required infrastructure and other investments, such as affordable or social housing provision, are usually called developer contributions (McAllister et al., 2018), developer obligations (Alterman, 2012; Muñoz Gielen and Van der Krabben, 2019), planning obligations (Crook and Whitehead, 2019), or particularly in the US context developer charges and impact fees (Murray, 2018; Smolka and Amborski, 2000). Inclusionary zoning is the US policy

placing requirements on developers relating to affordable housing (e.g. Kim, 2020). Developer obligations can be in cash or in kind, negotiable or non-negotiable.

Payments derived from the added land value are sometimes called betterment taxes (Cervero and Duncan, 2002; Fensham and Gleeson, 2003), and in the Swiss context taxes are imposed on added land value created by zoning (Viallon, 2018).

Government ownership of land or of development rights result in the utilisation of instruments capturing the whole land value uplift by planning or at least seeking to recoup the cost of infrastructure and services established (Muñoz Gielen and Van der Krabben, 2019; Van der Krabben and Needham, 2008). These are the sale of development rights (Mathur, 2015), the sale of developable land or land leasing (Hu et al., 2019) by the public authority. Governments acquire land for development through voluntary transactions (Chapman, 2017; Crook and Whitehead, 2019), use compulsory purchase, e.g. expropriation (Hendricks et al., 2017), or nationalise all land (Alterman, 2012).

Rarely discussed land value capture instruments include joint development mechanisms as partnerships between a public body and a private entity to develop an area (Chapman, 2017; Nguyen et al., 2017). Some authors (e.g. Alterman, 2012) consider land readjustment as a value capture tool either. Due to the increasing price of readjusted land, some plots may go over to the public body as in German scheme capturing a part of the rising value (Hendricks et al., 2017). Some authors (e.g. Hendricks et al., 2017) consider also user payments as a mechanism for land value capture by which users must pay directly to the service provider of technical infrastructure (electric power, water supply and sewerage, gas, telecommunication).

4.1.5. Purposes of the use of collected money

The land value capture community explicitly discuss the purposes of the use of collected money as an important element of the value capture approach. The most often referred purpose of collected money is financing public infrastructure. Muñoz Gielen and Van der Krabben (2019, pp. 8) claim: "...landowners and developers should ... pay for the maintenance and improvement of existing public infrastructure, or to pay the new public infrastructure directly or indirectly needed to support the new developed (or redeveloped) areas". Scholars stress the importance of the covering the costs of necessary infrastructure for the new development (e.g. Havel, 2017; Kresse et al., 2020) and connect to this need the instrument of developer obligations. Some authors also discuss the need for pay-back of previous public investment, such as new rail. The tool frequently connected to the pay-back of public investments is tax increment financing (e.g. Zhao et al., 2010).

Another frequently stressed purpose of the use of collected money is covering the costs of particular social needs, such as the cost recovery of the provision of social and affordable housing (McAllister et al., 2016; Muñoz Gielen et al., 2017; Rebelo, 2017). A less frequently discussed purpose is cost covering of the needs of local community in general; this view is supported by Agyemang and Morrison (2018) or Gozalvo Zamorano and Muñoz Gielen (2017).

4.2. Land rent community

4.2.1. Terms used

Economists and other social scientists connect 'land value' or 'site value' to the market value of land prior its improvements by cultivating or developing it. If land prices are discussed within economic literature, they are often synonyms of 'land value' (Muellbauer and Murphy, 2008; Needham, 1981). These scholars often use the term 'land rent' (Alonso, 1964; Cheshire and Sheppard, 2002; Clark, 1995; Haila, 2015; Hammel, 1999) or 'site rent' (Vickrey, 2001) for the returns paid to the landlord above the return which results from improvements of land. The term 'economic rent' is also used for the same purpose (e.g. Brown, 1941; Samuelson and Nordhaus, 1992), stressing the exclusion of any payments for improvements of land (contrary to term 'rent' which is often

used more broadly) and relating also to other factors of production with fixed (totally inelastic) supply.²

4.2.2. Causes of land value rise

The fixed amount of land provides landowners with monopoly power (Ryan-Collins et al., 2017). Land immobility leads to spillover effects from one plot to another, in economic terminology to positive or negative externalities. The prices of real estate thereby reflect the investments on other plots in their vicinity (Cheshire, 2018; Muellbauer, 2017).

Land values are subject to market forces. Economists stress the price determination as the interaction of supply and demand. The determinants of rising land prices either work as drivers of the demand side or barriers on the supply side. Many scholars address this issue primarily discussing housing prices (Muellbauer and Murphy, 2008; Quigley, 2007; Gyourko and Molloy, 2015; Albouy and Ehrlich, 2018; Glaeser and Gyourko, 2018). The most significant limits on the supply side pointed out are land-use planning controls. These are sometimes criticised of being too restrictive leading to an increase in costs of housing exceeding the value of amenities brought by these restrictions, and therefore net welfare losses. Cheshire (2018) raises this issue for the context of South East England, opposed by Adams and Watkins (2018) who see planning interventions as being more complex than only placing limits to development, rather as a stimulus of the demand side.

A more complex picture of land value drivers can be found on the demand side. One such driver is the growing demand of people for space associated with demographic changes resulting in rising number of households due to population increase and the decrease in the average household size (Muellbauer, 2017). The demand for housing also increases as a consequence of rising incomes, which in turn leads to increasing individual aspirations for living space (Brueckner, 2000).

Agglomeration economies, the cornerstone of firm localization theory, are another cause of land value rise (Dekle and Eaton, 1999). Marshall (1890) defined following sources of agglomeration economies: knowledge spillovers among companies, the possibility of sharing the costs of specialised inputs like legal services, and the availability of a professional workforce, which reduces companies' costs of recruiting new employees. The success of urbanized environment is further enhanced by the investments in local public goods bringing economies of scale (Vickrey, 2001). These include public services and other activities associated with high fixed costs and low costs for providing services to an additional user. Thanks to these goods and services, people are willing to bear higher housing prices.

Local amenities also belong to drivers of land values. As Albouy (2016) shows on the US case study, the most valuable urban land occurs in areas close to the coast, with a lot of sunshine and mild climate. Residential land prices are affected by various local environmental amenities, including water quality of nearby water bodies (Leggett and Bockstael, 2000).

Public subsidies related to land also affect the demand side of land market. A considerable amount of literature focuses on the capitalisation of agricultural subsidies into agricultural land rents (for a review, see, Latruffe and Le Mouél, 2009). Hilber (2017) synthesises the current knowledge about the capitalisation of private and public investments into local housing prices which is more appreciable in areas of stricter housing supply constraints. He stresses possible adverse effects of public subsidies aiming to help the poor, often rather helping the landlords thanks to rising housing prices at the expense of renters. Empirical

² Some economists started to use the term 'economic rent' also in another meaning for describing any payments to a factor of production in excess of the minimum amount necessary to keep it in the present use. This largely complicated clear communication within economic community, as this new usage is not relevant for land rent and land value capture areas of interest. See Brown (1941) for the clarifying commentary of this communication mismatch.

results of the capitalisation effect are brought by Gibbons and Machin (2008), or Gonzalez-Navarro and Quintana-Domeque (2016). Other type of public subsidies related to urban land stem from the failure to account for the total costs of new development, as highlighted by Brueckner (2000), such as infrastructure costs or the costs of building new schools and parks. If these costs are not fully reflected in the property tax against these new buildings, buyers are willing to pay a higher price for the property. The value of infrastructure provided by municipality is thereby capitalised into land value.

Another land value driver is monetary policy. If central bank increases the supply of money by quantitative easing, investing in land prevents losses from expected higher inflation rate (Stiglitz, 2015). The role of land is a store of value thanks to its non-degradability in this respect. Also higher availability of loans raises land prices (Aron et al., 2012), as it makes real estate more accessible to a broader spectrum of potential buyers.

Expectations of investors leading to housing market bubbles are another cause of changes in land prices. Expectations have an extrapolative element which can lead to an overvaluation on housing market after observing a time period of a quick price rise (Abraham and Hendershott, 1996). Investor's expectations hold true also for land price decreases, which can lead to undervaluation of real estates (Muellbauer, 2008).

4.2.3. Rationale for land value taking

Most economists agree that tax on land value is an efficient source of public revenues (Oates and Schwaab, 2009). If land value is taxed, it does not affect the amount of available land and therefore has no distorting effects on the economy (Dye and England, 2009; Mattauch et al., 2018). The crucial conditions for price neutrality of land tax is its taxing independently from the current use, and fully informed pure profit maximizing landowners who utilize land according to its best use (Oates and Schwaab, 2009).

Despite the discussions on land tax neutrality, economists also discuss the effect of land tax on land use, as not all the assumptions for neutrality of the tax hold in reality (see, for instance, Bourassa, 2009). Some economists see the potential of land tax in curbing sprawl by raising the capital to land ratio on land for housing (Banzhaf and Lavery, 2010), or even as a forest protection tool with a high money-raising potential for the context of developing countries if primary forests stay untaxed (Kalkuhl and Edenhofer, 2017). A specific rationale of land taxation according to Cocconcelli and Medda (2013) is to act as a stabiliser against fluctuations in the real estate market.

Economic literature also discusses thoroughly equity issues of taxes. For example Plummer (2009) considers the land value tax as fair, as land value does not result from any efforts of its owner. She summarizes the research evidence concerning the distributional effects of the land tax. If land tax brings more progressivity into the tax system (a higher share of the income would be taxed away from the affluent people than the poor), more equitable distribution of the tax burden would be achieved. Such questions on the distributional effects were asked traditionally. Currently, unequal distribution of wealth in society, particularly in connection to rents, became highly important within economic literature. According to Stiglitz (2012), an unequal distribution of wealth in society can destabilise the whole democratic society and its shared values. A current key topic of interest is the increasing gap between the rich and poor (Piketty, 2014), and how wealth is transferred to a narrow group of the richest at the expense of the rest of society (Solow, 2014; Stiglitz, 2019). According to the new perspective formulated by Stiglitz (2015), an even stronger and more stable economy and higher levels of economic efficiency can be achieved by reducing inequalities in society thanks to the decrease of rent-seeking incentives. And as Stiglitz adds (2015, pp. 439): "Much of the growth in inequality and the increase in the wealth-income ratio are related to an increase in rents and land values." The introduction of land rent taxation is a remedy for unequal distribution.

4.2.4. Instruments used

Scholars discussing economic rent often suggest a single instrument – land rent taxation, also referred to as land value taxation (e.g. [Dye and England, 2009](#); [Stiglitz, 2015](#)). [Piketty \(2014\)](#) considers a progressive global wealth tax, including land rent taxation, which is supported also by [Solow \(2014\)](#). Other scholars discuss property tax as an alternative to land tax for practical reasons of complicated land values assessment, although property tax brings distortions by taxing also land improvements ([Glaeser, 2013](#)). [Arnott and Petrova \(2006\)](#) speak in this context about the necessary trade-off between the efficiency and ease of tax collection. On the other hand, under the benefit perspective, property taxes work as fees for local public services, if public services need to be increased with the intensity of development ([Oates and Fischel, 2016](#); [Glaeser, 2013](#)) and may incentivise local governments to provide an adequate amount and quality of amenities ([Glaeser, 1996](#)).

Other scholars discuss taxation from the welfare economics point of view of the optimal land allocation among competing uses. [Brueckner \(2000\)](#) or [Cheshire \(2013\)](#) perceive impact fees as a remedy of an excessive development caused by the failure to fully account for infrastructure costs. The consistent financing of public infrastructure necessary for the creation of new development from land values would reduce excessive development at places where it would not occur without these public subsidies ([Foldvary and Minola, 2017](#)).

4.2.5. Purposes of the use of collected money

[Vickrey \(2001\)](#) supported taxing land rents if these taxes were used to finance public services with economies of scale instead of too high user fees. He envisioned that these public services would be charged only up to the marginal costs of an additional user, and the rest would be covered by the land rent tax.

According to some economists (e.g. [Dye and England, 2009](#)), land rent tax could replace property taxes (in the US context these taxes build a considerable source of local government revenues). These scholars stress the inefficiency of property taxation, which taxes not only land, but also its improvements. These authors connect revenues of land taxation to local finances.

Other authors, such as [Stiglitz \(2015\)](#), perceive land rent taxation as a source of public finance in general without claiming for which purposes the money should be allocated. He is concerned with common questions of how to raise money for public needs in the most efficient way under distributional concerns.

5. Discussion of results

Given that many countries, as well as municipalities within countries, are looking for innovative resources for public spending, the utilisation of high land value for this purpose, mainly within urban areas, became an appealing topic for debate across researchers and practitioners. The initial literature review on land value capture, undertaken by the authors, identified two research communities comprising firstly economists and other social scientists, referred to as the ‘land rent’ community, and secondly urban planners, civil engineers, lawyers, referred to as the ‘land value capture’ community in this article. Whilst both groups are debating the same topic, the literature review and content analysis make clear that, although explicit interrelations between these two communities can be found (e.g. in [Smolka and Amborski, 2000](#); [Gihring, 2001](#); [Garza and Lizieri, 2016](#); [Crook and Whitehead, 2019](#)), a lot remains as separate thoughts.

This study critically reflects on existing theories in order to map typical narratives of these two communities, highlight interconnections between them and explicitly bridge existing knowledge between them. The literature review outputs were coded according to the following building blocks of the narratives within both of the communities: (i) the terms used; (ii) causes of land value rise perceived; (iii) the rationale for capturing the land value perceived; (iv) instruments for capturing the land value analysed; and (v) purposes for which collected money should

be used for.

The narratives are coherent within each research community and are highly complementary to each other. They can even form a more complex united theory of land value capture, when combining their aspects together. The differences in narratives largely follow from particular interest of these research communities - the type of land and the type of land value in focus. Land value capture community focuses on land undergoing large increases in land value and is interested solely in land value increments resulting from the new assignment of development rights to certain areas under development constraints of planning regulation, or from investments in large public infrastructure projects. Land rent community is interested in the full value of all land with the emphasis on urban land. Below, the synthesis of the key stones of both narratives is presented. [Table 2](#) provides the overview of their mutual relations.

The type of land in focus together with the subject of social debate which scholars tackle, are reflected in rationales formulated by both research communities to justify the capturing of created value, as well as in purposes of the use of collected money proposed. The land value capture community aims at finding resources for cost recovery of existing infrastructure (e.g. [Higgins and Kanaroglou, 2016](#)), for the provision of infrastructure related to new development (e.g. [Muñoz Gielen and Van der Krabben, 2019](#)), and for financing related social programmes, such as affordable housing (e.g. [McAllister et al., 2016](#)). These scholars justify land value capture either based on these pragmatic reasons, or on the grounds of fairness issues characterising increasing land values as unearned ([Alterman, 2012](#)). Captured land values can build a considerable financial resource for the needs explicated, if a sudden increase in land values is high enough to cover all these costs. Although the land value capture community focuses on relatively small portions of land in relation to the overall amount of urban land, it is because land values in these areas can increase significantly thereby deserving such attentiveness.

The land rent community builds the rationale of land taxation on the opportunity for enhancing efficiency of general taxation system (e.g. [Dye and England, 2009](#)). Another rationale formulated by them is the necessity to remedy the uneven distribution of wealth among population, to stabilise democracy, and even to enhance economy ([Stiglitz, 2015](#)). Proposed land taxes can in their view build a considerable continuous financial resource for general public needs used either on the local or national level.

Both research communities propose solutions which are tailor made to their areas of interest. The land value capture community developed a broad set of instruments which aim at capturing all or a portion of the land value created either due to newly assigned development rights to land, or to the provision of large public infrastructural projects. The land rent community focuses on the debate of the inclusion of land rent

Table 2
Mutual relations of the land value capture and land rent community.

	Land value capture community	Land rent community
Type of land in focus	Land undergoing large increases in land value	All land with emphasis on urban land
Part of land value in focus	Land value increment resulting from assignment new development rights to it or from investments in large public infrastructure projects	Full land value
Subject of social debate in focus	Acquiring resources for new infrastructure related to development and for cost covering of social programmes, such as affordable housing	Increasing efficiency and equity of general taxation; stabilisation of democracy
Proposed solutions	Various instruments directed for taking all or a part of the value increment of land undergoing large increases in value	General taxation of land rent; wealth taxation

taxation, particularly urban land, into the general tax system.

6. Conclusion

Both research communities, the land value capture and land rent community, have largely inspiring thoughts. As different terminology is used by them, a relatively low level of interrelation between these communities preventing an effective sharing of their research outcomes can be observed. The aim of this contribution was to strengthen interconnections between these communities by defining their narratives and synthesising their views. Many of their characteristics allow building bridges between them establishing a more complex view of utilising land values to public purposes with the opportunity to mutually benefit from the research insights.

The approaches of both communities can operate in practice parallel to each other tackling land rents in their complexity, as each community has a different interest in focus. Land value capture community focuses on land undergoing large increases in land values and seeks acquiring resources for the needs of new development. Land rent community does not distinguish between new and earlier development and seeks to tax land rent of all land, mainly urban land. For land rent community, increasing efficiency and equity together with other general social needs such as stabilisation democracy thanks to land rent taxation is the subject of social debate which they seek to solve.

Both communities can also be mutually supportive. The land rent community can be supportive to the land value capture scholars in terms of the analysis of the causes of land value increase. Whereas land value capture scholars do not analyse in detail, why in some cities land values increase more than in others, the complex insights of causes of land value rise provided by land rent community can allow to make this explicit. The land rent community can also contribute with its wider understanding of land value capture rationale. On the other hand, land value capture community may be supportive to the land rent community with its immense number of different instruments proposed for capturing land values of land undergoing sudden increases in land value.

Building bridges between these two scholar communities enables them to come across each other's work and insights more often, and contribute to the best approaches of land value capture in theory and practice.

Declaration of Interest statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

This article is based upon work from COST Action CA17125 Public Value Capture of Increasing Property Values, supported by COST (European Cooperation in Science and Technology), www.cost.eu. One of the authors is grateful for the funding by the "Smart City – Smart Region – Smart Community" project (CZ.02.1.01/0.0/0.0/17_048/0007435) financed by the Operational Programme for Research, Development and Education of the Czech Ministry of Education, Youth and Sports, supported by EU funds.

Appendix. : Searching steps within systematic literature review of value capture literature

1. The review of the Web of Science database was undertaken with the help of these terms: "value captur*" as well as "captur* value" in connection with either "real estate", "real property", or "land". The time period of publishing was not restricted. The review was limited to articles and book chapters only. Web of Science database search tool searches the terms within titles, keywords and abstracts of

publications. Altogether 129 hints for articles were received by this method, none for a book chapter.

2. The terms used within Web of Science for the review were widened for being able to capture all possible articles in connection with value capture in land development and land policy area as follows: instead of the word *value*, following terms were used: "windfall", "betterment", "unearned increment", "unearned gain", "value increment", "rent". The word "recaptur*" as well as "captur*" was left to stand on its own without the term "value". And again the words "real estate", "real property", or "land" were included for being able to limit the review to the literature oriented on the area of interest. With this approach, additional 226 articles were received.
3. The same procedure was undertaken within Google Scholar database not to omit (i) articles and electronic books which use the terms captur* solely within the body of the publication except of title, abstract and keywords; (ii) publications which were not included in the Web of Science database, but thanks to their high relevance or high citation level appeared at the front positions. Different combinations of words were used in the previous reviewing steps. Because Google Scholar search tools are very extensive, reviewing the list of each terms combination was stopped after not finding any relevant article or book within ten consecutive hints ordered by their relevance. For marking all possibly relevant hints, Google Scholar library tool was used and afterwards the list obtained by Google Scholar was compared with the list from step 1 and 2 gained from the Web of Science search. Thereby 212 additional materials were obtained.
4. Based on the first wave of review, other relevant terms for the search were selected – "value increase", "givings", "value chang*" as terms characterising the value increase of land, and "hous*", "urban", "area" as the terms characterising the area of interest for value capture literature. With these new terms, the previous steps were undertaken again. Within Web of Science, 190 additional resources were found, within Google Scholar 13 additional.

References

- Abraham, J.M., Hendershott, P.H., 1996. Bubbles in metropolitan housing markets. *J. Hous. Res.* 7 (2), 191–207. <https://doi.org/10.3386/w4774>.
- Adams, D., Watkins, C., 2018. Making the economic case for planning. *Town Plan. Rev.* 89 (5), 437–442.
- Agyemang, F.S.K., Morrison, N., 2018. Recognising the barriers to securing affordable housing through the land use planning system in Sub-Saharan Africa: a perspective from Ghana. *Urban Stud.* 55 (12), 2640–2659. <https://doi.org/10.1177/0042098017724092>.
- Albouy, D., 2016. What are cities worth? Land rents, local productivity, and the total value of amenities. *Rev. Econ. Stat.* 98 (3), 477–487. <https://doi.org/10.3386/w14981>.
- Albouy, D., Ehrlich, G., 2018. Housing productivity and the social cost of land-use restrictions. *J. Urban Econ.* 107, 101–120. <https://doi.org/10.1016/j.jue.2018.06.002>.
- Alonso, W., 1964. *Location and Land Use. Toward a General Theory of Land Rent.* Harvard University Press.
- Alterman, R., 2012. Land use regulations and property values: the 'Windfalls Capture' idea revisited. In: Brooks, N., Donaghy, K., Knaap, G.J. (Eds.), *The Oxford Handbook of Urban Economics and Planning.* Oxford University Press, Oxford, pp. 755–786.
- Arnott, R., Petrova, P., 2006. The property tax as a tax on value: deadweight loss. *Int. Tax Public Financ.* 13 (2), 241–266.
- Arnott, R.J., Stiglitz, J.E., 1979. Aggregate land rents, expenditure on public goods, and optimal city size. *Q. J. Econ.* 93 (4), 471–500.
- Aron, J., Duca, J.V., Muellbauer, J., Murata, K., Murphy, A., 2012. Credit, housing collateral, and consumption: evidence from Japan, the UK, and the US. *Rev. Income Wealth* 58 (3), 397–423. <https://doi.org/10.1111/j.1475-4991.2011.00466.x>.
- Banzhaf, H.S., Lavery, N., 2010. Can the land tax help curb urban sprawl? Evidence from growth patterns in Pennsylvania. *J. Urban Econ.* 67 (2), 169–179.
- Batt, H.W., 2001. Value capture as a policy tool in transportation economics: an exploration in public finance in the tradition of Henry George. *Am. J. Econ. Sociol.* 60 (1), 195–228. <https://doi.org/10.1111/1536-7150.0006110.1111/1536-7150.00061>.
- Bourassa, S.C., 2009. The U.S. experience. In: Dye, R.F., England, R.W. (Eds.), *Land Value Taxation: Theory, Evidence, and Practice.* Lincoln Institute of Land Policy, Cambridge, MA, pp. 11–26.
- Brown, H.G., 1941. Economic rent: in what sense a surplus? *Am. Econ. Rev.* 31 (4), 833–835.

- Bruce, J.K., 2000. Urban sprawl: diagnosis and remedies. *Int. Reg. Sci. Rev.* 23 (2), 160–171. <https://doi.org/10.1177/016001700761012710>.
- Bruce, J.K., 1986. A modern analysis of the effects of site value taxation. *Natl. Tax J.* 49–58.
- Cervero, R., Duncan, M., 2002. Transit's value-added effects: light and commuter rail services and commercial land values. *Transp. Res. Rec.* 1805 (1), 8–15. <https://doi.org/10.3141/1805-02>.
- Chang, Z., Phang, S.Y., 2017. Urban rail transit PPPs: lessons from East Asian cities. *Transp. Res. Part A Policy Pract.* 105, 106–122. <https://doi.org/10.1016/j.tra.2017.08.015>.
- Chapman, J., 2017. Value capture taxation as an infrastructure funding technique. *Public Works Manag. Policy* 22 (1), 31–37. <https://doi.org/10.1177/1087724x16670395>.
- Cheshire, P., 2018. Broken market or broken policy? The unintended consequences of restrictive planning. *Natl. Inst. Econ. Rev.* 245 (1), R9–R19. <https://doi.org/10.1177/002795011824500111>.
- Cheshire, P.C., 2013. Land market regulation: market versus policy failures. *J. Prop. Res.* 30 (3), 170–188. <https://doi.org/10.1080/09599916.2013.791339>.
- Cheshire, P., Sheppard, S., 2002. The welfare economics of land use planning. *J. Urban Econ.* 52 (2), 242–269. [https://doi.org/10.1016/S0094-1190\(02\)00003-7](https://doi.org/10.1016/S0094-1190(02)00003-7).
- Clark, E., 1995. The rent gap re-examined. *Urban Stud.* 32 (9), 1489–1503. <https://doi.org/10.1080/00420989550012366>.
- Cocconelli, L., Medda, F.R., 2013. Boom and bust in the Estonian real estate market and the role of land tax as a buffer. *Land Use Policy* 30 (1), 392–400.
- Cooper, H.M., 1998. *Synthesizing Research: A Guide for Literature Reviews*. Sage.
- Crook, A.D.H., Whitehead, C., 2019. Capturing development value, principles and practice: why is it so difficult? *Town Plan. Rev.* 90 (4), 359–381. <https://doi.org/10.3828/tp.2019.25>.
- Cuenya, B., 2019. Planning approaches to the management of land value increments in Argentina. *Plan. Pract. Res.* 34 (4), 406–418.
- Dekle, R., Eaton, J., 1999. Agglomeration and land rents: evidence from the prefectures. *J. Urban Econ.* 46 (2), 200–214. <https://doi.org/10.1006/juec.1998.2118>.
- Dye, R., England, R.W. (Eds.), 2009. *Land value taxation: theory, evidence, and practice*. Lincoln Institute of Land Policy, Cambridge, MA.
- Dziauddin, M.F., Powe, N., Alvanides, S., 2015. Estimating the effects of light rail transit (LRT) system on residential property values using geographically weighted regression (GWR). *Appl. Spat. Anal. Policy* 8 (1), 1–25. <https://doi.org/10.1007/s12061-014-9117-z>.
- Enoch, M., Potter, S., Ison, S., 2005. A strategic approach to financing public transport through property values. *Public Money Manag.* 25 (3), 147–154. <https://doi.org/10.1111/j.1467-9302.2005.00467.x>.
- Farris, N., 2016. What to do when main street is legal again: Regional land value taxation as a new urbanist tool. *Univ. Pa. Law Rev.* 164 (3), 755–777.
- Fensham, P., Gleeson, B., 2003. Capturing value for urban management: a new agenda for betterment. *Urban Policy Res.* 21 (1), 93–112. <https://doi.org/10.1080/081114032000062164>.
- Foldvary, F.E., Minola, L.A., 2017. The taxation of land value as the means towards optimal urban development and the extirpation of excessive economic inequality. *Land Use Policy* 69, 331–337. <https://doi.org/10.1016/j.landusepol.2017.09.022>.
- Gaffney, M., 1994. Neo-classical economics as a stratagem against Henry George. *Corrupt. Econ.* 29–163.
- Garza, N., Lizieri, C., 2016. A spatial-temporal assessment of the Land Value Development Tax. *Land Use Policy* 50, 449–460. <https://doi.org/10.1016/j.landusepol.2015.09.026>.
- George, H., 1879. In: Paul, K. (Ed.), *Progress and Poverty*. Trench & Company.
- Gerber, J.D., Hartmann, T., Hengstermann, A. (Eds.), 2018. *Instruments of land policy: Dealing with scarcity of land*. Routledge.
- Gibbons, S., Machin, S., 2008. Valuing school quality, better transport, and lower crime: evidence from house prices. *Oxf. Rev. Econ. Policy* 24 (1), 99–119. <https://doi.org/10.1093/oxrep/grn008>.
- Gihring, T.A., 2001. Applying value capture in the Seattle region. *Plan. Pract. Res.* 16 (3–4), 307–320. <https://doi.org/10.1080/02697450120107916>.
- Glaeser, E.L., 1996. The incentive effects of property taxes on local governments. *Public Choice* 89 (1–2), 93–111.
- Glaeser, E.L., 2013. *Urban public finance*. *Handb. Public Econ.* 5, 195–256.
- Glaeser, E., Gyourko, J., 2018. The economic implications of housing supply. *J. Econ. Perspect.* 32 (1), 3–30. <https://doi.org/10.1257/jep.32.1.3>.
- Gonzalez-Navarro, M., Quintana-Domeque, C., 2016. Paving streets for the poor: experimental analysis of infrastructure effects. *Rev. Econ. Stat.* 98 (2), 254–267. https://doi.org/10.1162/REST_a_00553.
- Gozalvo Zamorano, M.J., Muñoz Gielen, D., 2017. Non-negotiable developer obligations in the Spanish land readjustment: an effective passive governance approach that 'de facto' taxes development value. *Plan. Pract. Res.* 32 (3), 274–296. <https://doi.org/10.1080/02697459.2017.1374669>.
- Gyourko, J., Molloy, R., 2015. Regulation and housing supply. *Handbook of Regional and Urban Economics*. Elsevier, pp. 1289–1337.
- Haila, A., 2015. *Urban Land Rent: Singapore as a Property State*. John Wiley & Sons.
- Hammel, D.J., 1999. Re-establishing the rent gap: an alternative view of capitalised land rent. *Urban Stud.* 36 (8), 1283–1293. <https://doi.org/10.1080/0042098992999>.
- Havel, M.B., 2017. How the distribution of rights and liabilities in relation to betterment and compensation links with planning and the nature of property rights: reflections on the Polish experience. *Land Use Policy* 67, 508–516. <https://doi.org/10.1016/j.landusepol.2017.06.032>.
- HCLGC, 2018. *Land Value Capture. Tenth Report of Session 2017–19*, Housing, Communities and Local Government Committee, House of Commons.
- Heeres, N., Lenferink, S., Tillema, T., Arts, J., 2016. Beyond financial value capturing? Interactions between value capturing and cooperation at the interface of road infrastructure and land use planning. *Town Plan. Rev.* 87 (2), 179–204. <https://doi.org/10.3828/tp.2016.14>.
- Hendricks, A., Kalbro, T., Llorente, M., Vilmin, T., Weitkamp, A., 2017. Public value capture of increasing property values—what are “unearned increments”? In: Dixon-Gough, R., Mansberger, R., Paulsson, J., Hernik, J., Kalbro, T. (Eds.), *Land Ownership and Land Use Development*. vdf Hochschulverlag, Zürich, pp. 257–281.
- Higgins, C.D., Kanaroglou, P.S., 2016. Forty years of modelling rapid transit's land value uplift in North America: moving beyond the tip of the iceberg. *Transp. Res.* 36 (5), 610–634. <https://doi.org/10.1080/01441647.2016.1174748>.
- Higgins, C.D., 2019. A 4D spatio-temporal approach to modelling land value uplift from rapid transit in high density and topographically-rich cities. *Landscape Urban Plan.* 185, 68–82. <https://doi.org/10.1016/j.landurbplan.2018.12.011>.
- Hilber, C.A., 2017. The economic implications of house price capitalization: a synthesis. *Real Estate Econ.* 45 (2), 301–339.
- Hu, Y., Lu, B., Wu, J., 2019. Value capture in industrial land renewal under the public leasehold system: a policy comparison in China. *Land Use Policy* 84, 59–69.
- Hughes, C., Sayce, S., Shepherd, E., Wyatt, P., 2020. Implementing a land value tax: considerations on moving from theory to practice. *Land Use Policy* 94, 104494.
- Ihlanfeldt, K.R., Shaughnessy, T.M., 2004. An empirical investigation of the effects of impact fees on housing and land markets. *Reg. Sci. Urban Econ.* 34 (6), 639–661. <https://doi.org/10.1016/j.regsciurbeco.2003.11.002>.
- Jillella, S.S.K., Matan, A., Newman, P., 2015. Participatory sustainability approach to value capture-based urban rail financing in India through deliberated stakeholder engagement. *Sustainability* 7 (7), 8091–8115.
- Kalkuhl, M., Edenhofer, O., 2017. Ramsey meets Thünen: the impact of land taxes on economic development and land conservation. *Int. Tax Public Financ.* 24 (2), 350–380.
- Kresse, K., Kang, M., Kim, S., Van der Krabben, E., 2020. Value capture ideals and practice-development stages and the evolution of value capture policies. *Cities* 106, 102861. <https://doi.org/10.1016/j.cities.2020.102861>.
- Latruffe, L., Le Mouél, C., 2009. Capitalization of government support in agricultural land prices: what do we know? *J. Econ. Surv.* 23 (4), 659–691. <https://doi.org/10.1111/j.1467-6419.2009.00575.x>.
- Leggett, C.G., Bockstael, N.E., 2000. Evidence of the effects of water quality on residential land prices. *J. Environ. Econ. Manag.* 39 (2), 121–144. <https://doi.org/10.1006/jeem.1999.1096>.
- Marshall, A., 1890. *Principles of Economics*. Macmillan, London.
- Mathur, S., Waddell, P., Blanco, H., 2004. The effect of impact fees on the price of new single-family housing. *Urban Stud.* 41 (7), 1303–1312. <https://doi.org/10.1080/0042098042000214806>.
- Mathur, S., 2015. Sale of development rights to fund public transportation projects: insights from Rajkot, India, BRTS project. *Habitat Int.* 50, 234–239.
- Mattauch, L., Siegmeyer, J., Edenhofer, O., Creutzig, F., 2018. Financing public capital when rents are back: a macroeconomic Henry George Theorem. *FinanzArchiv Public Financ. Anal.* 74 (3), 340–360. <https://doi.org/10.1628/fa-2018-0011>.
- McAllister, P., Street, E., Wyatt, P., 2016. Governing calculative practices: an investigation of development viability modelling in the English planning system. *Urban Stud.* 53 (11), 2363–2379. <https://doi.org/10.1177/0042098015589722>.
- McAllister, P., 2019. The taxing problems of land value capture, planning obligations and viability tests: some reasonable models. *Town Plan. Rev.* 90 (4), 429–451. <https://doi.org/10.3828/tp.2019.28>.
- McAllister, P., Shepherd, E., Wyatt, P., 2018. Policy shifts, developer contributions and land value capture in London 2005–2017. *Land Use Policy* 78, 316–326. <https://doi.org/10.1016/j.landusepol.2018.06.047>.
- Medda, F., 2012. Land value capture finance for transport accessibility: a review. *J. Transp. Geogr.* 25, 154–161. <https://doi.org/10.1016/j.jtrangeo.2012.07.013>.
- Mill, J.S., 1848. *Principles of Political Economy with Some of their Applications to Social Philosophy*. John W. Parker, London.
- Mittal, J., Kashyap, A., 2015. Real estate market led land development strategies for regional economic corridors—a tale of two mega projects. *Habitat Int.* 47, 205–217. <https://doi.org/10.1016/j.habitatint.2015.01.026>.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., the PRISMA Group, 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann. Intern. Med.* 151 (4), 264–269. <https://doi.org/10.7326/0003-4819-151-4-200908180-00135>.
- Muellbauer, J., Murphy, A., 2008. Housing markets and the economy: the assessment. *Oxf. Rev. Econ. Policy* 24 (1), 1–33. <https://doi.org/10.1093/oxrep/grn011>.
- Muellbauer, J., 2017. Foreword. In: Ryan-Collins, J., Lloyd, T., Macfarlane, L. (Eds.), *Rethinking the Economics of Land and Housing*. Zed Books Ltd.
- Mulrow, C.D., 1994. Systematic reviews: rationale for systematic reviews. *BMJ* 309 (6954), 597–599.
- Muñoz Gielen, D., Van der Krabben, E. (Eds.), 2019. *Public Infrastructure, Private Finance: Developer Obligations and Responsibilities*. Routledge.
- Muñoz Gielen, D., Lenferink, S., 2018. The role of negotiated developer obligations in financing large public infrastructure after the economic crisis in the Netherlands. *Eur. Plan. Stud.* 26 (4), 768–791. <https://doi.org/10.1080/09654313.2018.1425376>.
- Muñoz Gielen, D., Salas, I.M., Cuadrado, J.B., 2017. International comparison of the changing dynamics of governance approaches to land development and their results for public value capture. *Cities* 71, 123–134. <https://doi.org/10.1016/j.cities.2017.05.012>.
- Murray, C.K., 2018. Developers pay developer charges. *Cities* 74, 1–6.
- Needham, B., 1981. A neo-classical supply-based approach to land prices. *Urban Stud.* 18 (1), 91–104. <https://doi.org/10.1080/00420988120080071>.
- Nguyen, T.B., Van der Krabben, E., Spencer, J.H., Truong, K.T., 2017. Collaborative development: capturing the public value in private real estate development projects

- in Ho Chi Minh City, Vietnam. *Cities* 68, 104–118. <https://doi.org/10.1016/j.cities.2017.06.006>.
- Oates, W., Schwaab, R.M., 2009. The simple analytics of land value taxation. In: Dye, R. F., England, R.W. (Eds.), *Land Value Taxation: Theory, Evidence, and Practice*. Lincoln Institute of Land Policy, Cambridge, MA, pp. 51–72.
- Oates, W.E., Fische, W.A., 2016. Are local property taxes regressive, progressive, or what? *Natl. Tax J.* 69 (2), 415.
- Piketty, T., 2014. *Capital in the 21st Century*. Harvard University Press.
- Plummer, E., 2009. Fairness and distributional issues. In: Dye, R.F., England, R.W. (Eds.), *Land Value Taxation: Theory, Evidence, and Practice*. Lincoln Institute of Land Policy, Cambridge, MA, pp. 73–98.
- Quigley, J.M., 2007. Regulation and property values in the United States: the high cost of monopoly. In: Ingram, G.K., Yu-Hung, H. (Eds.), *Land Policies and Their Outcomes*. Lincoln Institute of Land Policy, Cambridge, MA, pp. 46–66.
- Rebelo, E.M., 2017. Land betterment capture revisited: a methodology for territorial plans. *Land Use Policy* 69, 392–407. <https://doi.org/10.1016/j.landusepol.2017.08.015>.
- Ricardo, D., 1817. *Principles of Political Economy and Taxation*. Batoche Books.
- Root, L., Van der Krabben, E., Spit, T., 2015. Between structures and norms: assessing tax increment financing for the Dutch spatial planning toolkit. *Town Plan. Rev.* 86 (3), 325–349. <https://doi.org/10.3828/tpr.2015.20>.
- Ryan-Collins, J., Lloyd, T., Macfarlane, L., 2017. *Rethinking the Economics of Land and Housing*. Zed Books Ltd.
- Rybeck, R., 2004. Using value capture to finance infrastructure and encourage compact development. *Public Works Manag. Policy* 8 (4), 249–260. <https://doi.org/10.1177/1087724x03262828>.
- Samuelson, P.A., 1983. Thünen at two hundred. *J. Econ. Lit.* 21 (4), 1468–1488.
- Samuelson, P.A., Nordhaus, W.D., 1992. *Economics*, 14th ed. McGraw-Hill.
- Sharma, R., Newman, P., 2018. Can land value capture make PPP's competitive in fares? A Mumbai case study. *Transp. Policy* 64, 123–131. <https://doi.org/10.1016/j.tranpol.2018.02.002>.
- Smith, J.J., Gihring, T.A., 2006. Financing transit systems through value capture: an annotated bibliography. *Am. J. Econ. Sociol.* 65 (3), 751–786. <https://doi.org/10.1111/j.1536-7150.2006.00474.x>.
- Smolka, M.O., 2012. A new look at value capture in Latin America. *Land Lines* 24 (3), 10–15.
- Smolka, M.O., Amborski, D., 2000. Value capture for urban development: an inter-American comparison. Lincoln Institute of Land Policy.
- Solow, R., 2014. Thomas Piketty Is Right: everything you need to know about 'Capital in the Twenty-First Century'. New Reup. 22.
- Stiglitz, J.E., 2012. *The Price of Inequality: How Today's Divided Society Endangers our Future*. WW Norton & Company.
- Stiglitz, J.E., 2015. The origins of inequality, and policies to contain it. *Natl. Tax J.* 68 (2), 425–448. <https://doi.org/10.17310/njt.2015.2.09>.
- Stiglitz, J.E., 2019. *People, Power, and Profits: Progressive Capitalism for an Age of Discontent*. Penguin, UK.
- Sun, J., Chen, T., Cheng, Z., Wang, C.C., Ning, X., 2017. A financing mode of Urban Rail transit based on land value capture: a case study in Wuhan City. *Transp. Policy* 57, 59–67. <https://doi.org/10.1016/j.tranpol.2017.03.014>.
- Vadali, S.R., Aldrete, R.M., Bujanda, A., 2009. Financial model to assess value capture potential of a roadway project. *Transp. Res. Rec.* 2115 (1), 1–11. <https://doi.org/10.3141/2115-01>.
- Van der Krabben, E., Jacobs, H.M., 2013. Public land development as a strategic tool for redevelopment: reflections on the Dutch experience. *Land Use Policy* 30 (1), 774–783. <https://doi.org/10.1016/j.landusepol.2012.06.002>.
- Van der Krabben, E., Needham, B., 2008. Land readjustment for value capturing: a new planning tool for urban redevelopment. *Town Plan. Rev.* 79 (6), 651–672. <https://doi.org/10.3828/tpr.79.6.4>.
- Viallon, F.X., 2018. Added value capturing in Switzerland: How much is enough? In: Gerber, J.D., Hartmann, T., Hengstermann, A. (Eds.), *Instruments of Land Policy. Dealing with Scarcity of Land*. Routledge, pp. 69–89.
- Vickrey, W.S., 2001. Site value taxes and the optimal pricing of public services. *Am. J. Econ. Sociol.* 60 (5), 85–96. <https://doi.org/10.1111/1536-7150.00138>.
- Walters, L.C., 2013. Land value capture in policy and practice. *J. Prop. Tax Assess. Adm.* 10 (2), 5–21.
- Wenner, F., 2018. Sustainable urban development and land value taxation: the case of Estonia. *Land Use Policy* 77, 790–800.
- Wu, J., Hu, Y., Wang, Q., Chen, Y., He, Q., Ta, N., 2019. Exploring value capture mechanisms for heritage protection under public leasehold systems: a case study of West Lake Cultural Landscape. *Cities* 86, 198–209. <https://doi.org/10.1016/j.cities.2018.09.014>.
- Zhao, Z.J., Larson, K., 2011. Special assessments as a value capture strategy for public transit finance. *Public Works Manag. Policy* 16 (4), 320–340. <https://doi.org/10.1177/1087724x11408923>.
- Zhao, Z.J., Das, K.V., Larson, K., 2010. Tax increment financing as a value capture strategy in funding transportation. *Transp. Res. Rec.* 2187 (1), 1–7.