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Abstract

This paper examines developer contributions as a planning policy instrument for capturing land value for communities. Drawing on existing literature, it synthesises theory and develops analytical frameworks to classify land value capture mechanisms, ranging from incidental to explicitly designed. Developer contributions are categorised by their effects on land values and provision of public or merit goods, as enabling, commercial, compensatory, supplementary, redistributive, or subsidised. The analysis highlights challenges in determining who ultimately bears the cost - site owners, nearby landowners, developers, end users, or through unrealised economic rent, subsidies, or combinations thereof - making assessment of value capture complex.

Key words

Land value capture. Developer contributions. Planning. Density Bonus. Tax.

Introduction

Largely since the publication of Henry George's *Progress and Poverty* in 1879, there has been an enduring debate about the taxation of socially produced, but often privately captured, increases in land values. Although numerous taxes and quasi-taxes generate revenues linked, often indirectly, to increases in land values, this paper examines a particular mechanism commonly used in many planning jurisdictions to capture land value – developer contributions. Even within national planning jurisdictions, there can be an array of charges, levies, contributions, fees etc. payable by developers that may or may not be discretionary, hypothecated, *ad valorem* etc. A common attribute is that they are typically contingent upon permission from land use regulators to develop a specific site. Given that the ostensible purposes of developer contributions can be variable – cost recovery of public investment, internalisation of negative externalities, provision of public goods and redistribution, it is argued that some developer contributions can create, conserve and capture land value on development sites and on proximate sites. In some cases, developer contributions consist of the provision of goods that the developer or landowner would have voluntarily provided in the absence of a developer contribution. Other developer contributions may capture land values on a potential development site in order to conserve the land values of proximate properties. Closely linked to their different purposes and impacts on land values, the paper presents a taxonomy of developer contributions according to whether they are enabling, commercial, compensatory, supplementary, redistributive or subsidised. Whilst the categories are not necessarily mutually exclusive, it is argued that land value capture tends to mainly occur where developer contributions are supplementary and/or redistributive.

Alterman (2012) demonstrated that developer contributions had become a common mechanism for land value capture across numerous national planning jurisdictions (see also Germán and Bernstein, 2018 for some international examples). As documented by Kim (2020), the growing number of permutations of upzoning, inclusionary zoning, incentive zoning etc. in US state and municipal planning jurisdictions provides just one indication of the level of policy innovation among land use regulators in land value

capture instruments. For the last two decades, the UK[1] government has commissioned regular studies of the value and incidence of planning obligations in England[2]. They provide a good example of the wide range of benefits that are secured. In the most recent study, it was estimated that planning obligations worth £7 billion had been agreed[3] in 2018/19 in England (see Lord *et al*., 2020). Affordable housing was easily the most important source of developer contributions accounting for around two thirds the total. With the Community Infrastructure Levy accounting for nearly 12% of the total, the remainder was largely split between developer contributions for education, transport, community works and open space[4]. However, it is not necessarily the case that benefits secured through planning obligations display additionality and involve land value capture[5]. If we accept that "[W]ithout the right categories, the right data can't be collected.", then it is worthwhile considering whether, when and how much land value capture is occurring (D'Ignazio and Klein, 2018, para. 3).

In a British and US contexts particularly, planning professionals increasingly find themselves spending time negotiating financial contributions and assessing development viability, tasks that require financial expertise often beyond their traditional training (Ferm and Raco, 2020). In a Chinese context, Li *et al*., (2023) frame the process in terms of a dilemma of having to deliver planning objectives through private investment. In the Great Britain, the implementation of planning policies has been further complicated by the increasing complexity of viability assessments, which have become a central feature of planning

[1] Devolution has meant that there has been variable but sometimes significant divergence in planning policies between England, Northern Ireland, Scotland and Wales in the last two decades. Where used as an example, references to the UK government's planning policies in the paper mainly refer to their application in England and Wales.

[2] In Great Britain, a planning obligation is the term used to describe a developer contribution. Referring to the relevant legislative clause, planning obligations are normally secured through 'Section 106 agreements' between the developer and the local planning authority. In Scotland, Section 75 agreements under the Town and Country Planning (Scotland) Act 1997 are the equivalent to English and Welsh s106 agreements. Other terms are used to describe developer contributions in other planning jurisdictions. These can include impact fees, developer obligations, developer charges, infrastructure levies etc.

[3] There will be a lag between agreement and delivery of development contributions. In practice, some permitted projects will not be implemented, and others will be delivered over a number of years.

[4] Various estimates of the monetary value of land value capture mechanisms in Sao Paulo, San Francisco and Vancouver are cited in Germán and Bernstein, 2020 and Shih and Shieh, 2020).

[5] Lord *et al.* (2020) do not claim that the estimated £7 billion value of planning obligations secured represents land value capture. Indeed, their discussion of the Amount of Community Infrastructure raised is based on the proportion of Gross Development Value 'captured' (their quotation marks).

negotiations on developer contributions (Foye, 2022). Whilst this fundamental tension between planning as a spatial discipline and planning as a means of capturing development value remains fluid, in its latest consultation on a National Planning Policy Framework, the UK government explicitly concretised the trade-offs involved in policy formation on developer contributions. For instance, in the context of setting out an approach to viability negotiations, it was stated that

> "the developer should not be seeking higher contributions (e.g. 60 per cent affordable housing), but equally the developer should not be seeking lower contributions (e.g. 40 per cent affordable housing), as this would represent a transfer of value from the public to private landholders." (MHCLG, 2024)

The approach adopted in this paper draws on inference from existing literature to construct a theoretical synthesis and to generate an original analytical framework. Drawing upon Nascimento Neto *et al*'s (2024) taxonomy of the academic literature on land value capture, the paper is grounded in rational choice, neo-pragmatic and/or instrumentalist approaches which implicitly position land value capture broadly, and developer contributions more specifically, as technical policy instruments. Although a lot of the literature on land value capture has followed this type of approach, Nascimento Neto *et al.* (2024) identify two other clusters of related research. The first cluster tends to focus on the political economy of land value capture (see Shepherd, 2025 and Wolf-Powers, 2024 for good examples). The third cluster is based on econometric analysis and land price modelling as a function of transport infrastructure. This paper also draws upon this literature where it has been applied to the land price effects of developer contributions.

Specifically, the paper proposes a taxonomy to provide an heuristic device going further than descriptive categorisations of developer contribution instruments. Instead, a set of conceptual distinctions are proposed that are anchored in their different effects on land value. This taxonomy can function as an analytical tool for interpreting policy instruments and as a diagnostic framework through which practitioners and policymakers might evaluate the design and effectives of developer

contributions. While based upon established evidence, the taxonomy is acknowledged to be exploratory in nature, and its conceptual categories would benefit from empirical validation and refinement across diverse jurisdictions and market contexts. In this way, the paper seeks to fill a conceptual gap in the literature by offering a structured, theory-informed approach to unpacking the logic and implications of developer contributions and, to a lesser extent, land value capture mechanisms more broadly.

The remainder of this paper is organised as follows. Framing developer contributions as a quasi-tax and emphasising the range of different policy instruments and value capture mechanisms, the first part of the paper discusses the nature of land value capture and developer contributions. Given that much of the formal micro-economic analysis of developer contributions on land values has focussed on impact fees in the US context, the main expectations in terms of land value effects generated by this literature are then assessed. 'Informal' economic analyses and research on impact fees and land values is also reviewed. In order to illustrate how different types of developer contributions are transmitted to land prices, there is a brief overview of the calculative technique typically used by market participants to determine bids for development land. This is followed by a classification of developer contributions based on the extent to which various categories of developer contributions involve land value capture (from the owners of development land) and deliver additionality in terms of public goods. Finally, conclusions are drawn.

Conceptual Framework: Land Value Determination and Value Capture

Given that they are quite closely related, concepts such as land value capture, betterment value capture, developer contributions and land value taxation can be prone to conflation. Since the main focus of this paper is on the expected impacts of developer contributions on land values, it is worth spending some time briefly setting out the key concepts underpinning this discussion. However, many of the contextual points discussed in the section below have been addressed before in depth and detail – most notably in Henneberry, Whitehead and Crook (2015) and Crook and Whitehead (2019). Following a brief

overview of how the concept of land value capture has been approached in the literature, the section below frames developer contributions as quasi-development taxation instruments.

Whilst there is a long history of land value capture, a widely accepted definition has remained elusive. One of the first points made by a UK Parliamentary Select Committee report on land value capture was that land value capture is "not a well-defined concept"[6]. Dunning *et al*. (2020) argue that it is a rather generic term with a variety of meanings and methods that are too often used interchangeably and inconsistently. The use of alternative terms such as 'value return', 'value sharing' and 'value recovery' perhaps reflects some of the conceptual confusion. Reflecting the fact that developer contributions may also be paid for by developers and the final users of development projects as well as land owners, Crook (2016) uses the broader term *development value* capture. Lord *et al.* (2025) point to a more recent collaborative and less adversarial reframing of the concept as 'land value sharing' and 'value co-creation;' in Ireland and Sweden respectively. However, the OECD's broad framing of land value capture as "a set of policy instruments" allowing governments to capture the land value uplifts generated by public interventions, such as infrastructure investments or administrative actions, like land use changes provides a useful framework (OECD and Lincoln Institute, 2022, 10). It encompasses the diversity of determinants of land values and range of policy instruments open to policy makers. The diversity and complexity in potential land value determinants is explored next.

Like other asset classes, land values are shaped by the interaction of macro-level factors and micro-level characteristics. Land value emerges from recursive interactions between macro-level socio-economic, political, demographic, cultural, and technological forces, and the material and locational attributes of specific sites. These macro-determinants interact with local regulatory environments, systems of property rights, physical site attributes, and 'legacy' land use patterns to produce temporal and spatial heterogeneity in land values. This framework highlights how increases in land value often reflect the capitalisation of positive externalities such as infrastructure, public services, and

[6] The Select Committee's report on land value capture can be accessed at Land Value Capture - Housing, Communities and Local Government Committee - House of Commons (parliament.uk)

agglomeration economies generated by collective social investment, rather than individual actions. This, in turn, underpins a common rationale for land value capture: reclaiming socially-created value increments for public benefit. However, this logic also implies that negative externalities such as traffic congestion, pollution, or the loss of landscape amenities which can depress land values through collective processes, should similarly warrant compensation. Debateably, land value capture frameworks tend to neglect this symmetry. In the same way, at the meso-level, macro-economic policies, especially monetary and fiscal instruments, can be key land value determinants.

These policies affect land values and markets through multiple transmission channels, often with bi-directional causality. While some impacts are indirect or diffuse, others operate more directly through interest rates, tax incentives, and public infrastructure investment. As land values are proximately determined by construction costs and underlying asset values, this creates direct pathways for policy transmission. Expansionary monetary policy tends to reduce borrowing costs and increases liquidity, lowering the discount rate applied to future land rents while simultaneously reducing development financing costs, both of which elevate land values. Fiscal policies affect land prices through infrastructure investment and tax policies. However, this relationship is also bidirectional - rising real estate asset values can influence policy decisions by affecting household wealth, collateral values for lending, and local government revenues through property taxes. This feedback mechanism means that land markets do not just respond to policy but can also constrain or amplify policy. Disentangling these relationships presents a thorny 'causes of causes' challenge, as policy effects reverberate across different economic scales, producing second- and third-order outcomes that are challenging to trace and/or estimate.

Fiscal policies can influence land values along a continuum ranging from indirect and diffuse to direct and proximate mechanisms. Broad-based national taxes such as income tax, corporation tax, or general expenditure policy affect land values indirectly through their wider macroeconomic impacts on economic growth. However, as suggested above, these effects are often complex, mediated, and difficult to isolate and quantify. Focussing on value capture instruments quite broadly, Abelson (2018) identifies

a wide range of methods of value capture in the form of taxes or quasi-taxes and user charges. The former include betterment taxes on land value uplifts, broad-based land taxes, selective land taxes, broad-based real estate taxes and transaction taxes. Developer contributions, consumer payments and the sale of development rights are classified as user charges (Abelson, 2018).

Tax or quasi-tax receipts can be characterised by their temporal and causal proximity to the economic activities that generate them. Proximate taxes are collected in close conjunction with the underlying transactions, while lagged or mediated taxes emerge over time as indirect fiscal consequences of those activities. At the more proximate end of the spectrum, in the English context taxation or quasi-taxation instruments such as Stamp Duty Land Tax, non-recoverable VAT on construction inputs, Section 106 agreements, and the Community Infrastructure Levy directly influence the financial feasibility of development projects and are then capitalised into land prices. So, planning policy instruments such as developer contributions tend to generate immediate and observable effects on land values and are more explicitly designed as instruments of land value capture.

To some extent in between lie recurrent local property taxes, such as Council Tax and business rates in Britain, which tax buildings rather than purely land values, but nonetheless have a direct impact on land and real estate values through their effects on occupational and ownership costs. Although not conceived primarily as land value capture mechanisms, such recurrent real estate taxes can act as *de facto* forms of value capture by securing a proportion of the economic rent. Local real estate taxes can act as part land value tax, part tax on building usage and part fee for services such as street lighting, roads and other common or public goods. Tax Increment Financing (TIF) instruments illustrate the use of recurrent real estate taxes for land value capture policy. TIF instruments typically use the projected uplift in local real estate tax revenues generated by new development or public infrastructure investment to fund major infrastructure improvements. Fisher, Weber and Leite (2023) use the mega-project in Hudson Yard, New York to illustrate how, in that context, the specific TIF policy instrument involved the creation, capture and, potentially, the destruction of land value when municipalities redirect revenues from general funds to a TIF district potentially reducing property values elsewhere or where

increased supply results in asset value falls in proximate districts. The focus of this discussion is on the extent to which various policy instruments classified as developer contributions used to exact monetary and/or non-monetary benefits directly from land value uplifts on specific development sites can affect land values on those sites and proximate sites.

Beyond fiscal instruments such as taxes and charges, governments can also use regulatory tools (zoning changes, density bonuses), direct ownership strategies (land banking, ground leasing), and partnership arrangements (joint ventures, development corporations) that do not fit neatly into the fiscal categories but can significantly influence land values and act as value capture mechanisms. However, the most extreme form of land value capture is appropriation without compensation. Compulsory purchase powers allow governments to acquire land for public purposes, with the compensation framework normally determining how much value is captured. Where compensation is provided, there is considerable debate about appropriate levels, particularly regarding whether compensation should reflect development potential or only established use. Raising fundamental issues regarding property rights, at the furthest extreme, appropriation without compensation represents complete value capture.

The discussion so far has highlighted the conceptual complexity surrounding land value capture and the diverse range of policy instruments that can affect land values through different transmission mechanisms. To draw together this analysis, drawing from UK and US examples, Table 1 presents a taxonomy that classifies these policy instruments according to their geographic scale, transmission pathways to land values, temporal characteristics, and the degree to which land value capture represents a deliberate policy objective

Table 1 From general taxation to direct appropriation: a taxonomy of land value capture instruments

	Examples	Typical allocation scale of captured value	Expected transmission to land values	Intentionality with regard to land value capture.	Typical temporal attributes
General fiscal instruments.	Income tax. Corporation tax. VAT. Capital gains taxes. Inheritance taxes.	National	Relatively slow and indirect, diffuse and mediated through macro-economic effects.	Incidental	A blend of continuous and event-triggered. Mediated and lagged.
Event-linked real estate specific taxes.	Real estate transfer taxes such as Stamp Duty Land Tax	National	Relatively fast and direct transmission through transaction cost capitalisation	Secondary	Event-triggered. Proximate.
Recurrent local real estate taxes.	Local annual real estate taxes/charges such as Council Tax and Uniform Business Rates	Local authority	Relatively slow and less direct transmission through ongoing occupational cost effects	Secondary	Continuous. Mediated and lagged.
Development-linked value capture instruments.	Section 106 agreements and Community Infrastructure Levy (UK). Impact fees (US)	Local authority, site proximate and/or site-specific.	Relatively fast and direct transmission via land bid adjustments	Deliberate	Event-triggered. Proximate.
Direct value creation and appropriation instruments.	Compulsory purchase (UK). Eminent domain (US). Upzoning (US).	Local authority, site proximate and/or site-specific.	Relatively fast and direct.	Deliberate	Event-triggered. Proximate.

versus an incidental effect. While this taxonomy provides a structured analytical framework for understanding different policy instruments and their relationship to land values, it is important to acknowledge its limitations. Tax Increment Financing (TIF) provides a particularly instructive example of this complexity. TIF mechanisms adapt recurrent local real estate property taxes to create area-based (rather than site-based) value capture instruments. So, unlike instruments such as Section 106 agreements or CIL, which capture value uplifts from specific development projects, TIF captures off-site value increases that may occur across multiple properties and development sites within a designated area.

The discussion above highlights how different policy instruments vary not only in their transmission mechanisms to land values, but also in the timing and predictability of the land value capture they generate. Instruments such as capital gains tax and inheritance tax operate at considerable temporal distance from development activity. As components of general taxation, they generate highly uncertain revenue streams in terms of both timing and quantum. While these taxes may eventually capture some development-generated value appreciation, the relationship is indirect and the fiscal benefits are neither predictable nor directly linked to the original land value-creating projects. Similarly, local recurrent real estate taxes generate continuous revenue streams, but their relationship to development-generated value uplifts is indirect and difficult to isolate. Changes in revenue from these sources - whether positive or negative - are mediated through occupational cost effects and subject to considerable uncertainty about the proportion attributable to specific development activities versus broader market forces.

Transfer taxes like Stamp Duty Land Tax and developer contributions occupy different positions along this temporal and certainty spectrum. Transfer taxes usually form part of general taxation rather than being hypothecated to specific purposes, but their effects are directly and transparently capitalised into land prices and closely linked to contemporary market conditions. Whilst not legally tied to land use regulation, their payment typically coincides with transactions involving development land and completed development projects, creating a close temporal connection between development activity and value capture, though exposure to changes in market conditions means that revenue remains

uncertain. Developer contributions present a more complex temporal profile. Their potential for capture is inherently linked to dynamic land values and market conditions, creating uncertainty when setting and implementing policy. However, once negotiated and agreed, their value becomes relatively certain (though in-kind contributions may retain some valuation uncertainty). This creates a paradox whereby the most development-specific instruments combine high uncertainty in their potential with relatively high certainty in their delivery if projects are completed.

Having established this broader conceptual framework on the varied aspects of land value capture, the remainder of this analysis focuses specifically on development-linked value capture mechanisms. These quasi-tax instruments, exemplified by Section 106 agreements and the Community Infrastructure Levy in the English and Welsh contexts, represent the most direct and deliberate attempts to capture land value uplifts generated by specific development projects. Unlike the broader fiscal and regulatory instruments discussed above, developer contributions are explicitly designed to establish a direct connection between development-generated value creation and public benefit provision, making them particularly important for understanding the mechanics and impacts of land value capture policy.

Land value capture instruments such as developer contributions can be framed as a quasi-tax instrument. In 2004 Kate Barker (a well-known policy advisor on housing to the UK government) wrote that "Many planners today feel they have become reluctant and inefficient tax collectors" (Barker, 2004, 25). Indeed, an element of land value capture is implicit in a wide range of real estate taxes. Non-hypothecated receipts from developer contributions can be transferred to 'off-site' locations that are typically within the planning authority's jurisdiction. Alternatively, they can be highly localised and generated by a specific scheme and hypothecated for a specific purpose exclusively for that scheme. Often determining the extent to which these quasi-taxes are progressive or regressive and horizontally or vertically equitable, like trade tariffs, developer contributions can be *ad valorem* or specific.

However, unlike many conventional tax instruments, some developer contributions used to 'tax' uplifts generated by development imply rates of taxation that are negotiable, variable and discretionary

whereas others may be fixed, uniform and non-discretionary. The current system in England and Wales has evolved to become a quasi-tax generated by two policy instruments (s106 agreements and the Community Infrastructure Levy) where the 'tax' rate is loosely linked to expected financial gains from development through the assessment of financial viability (see McAllister, 2017). Whilst often set out in schedules in planning policy documents, developer contributions secured through s106 agreements are typically discretionary and negotiated, can cover a varied range of issues, are payable prior to, during and/or on completion of works on site, and are often substantially paid 'in kind'. These contributions are characteristically site-adjacent or site-specific, directly addressing the infrastructure needs and impacts generated by the particular development project. The spatial relationship between contribution and expenditure tends to be proximate, with funds typically allocated to infrastructure, affordable housing, or community facilities that serve the immediate area affected by the development.

CIL contributions are typically a pro-rata cash contribution (e.g., £100/m^2 of gross floorspace) varying within and among local government jurisdictions. In contrast to s106 contributions, the Community Infrastructure Levy operates as a non-discretionary, formulaic charge applied uniformly across development projects within a charging area. CIL revenues are pooled and can be allocated to strategic infrastructure priorities across a much wider geographical area, with no requirement for spatial proximity between the contributing development and the infrastructure investment. This creates potential for significant spatial redistribution of value capture, where developments in one location may fund infrastructure improvements in entirely different parts of the local authority area. Additionally, CIL funds are often subject to spending delays and can accumulate unspent, creating temporal gaps between value capture and infrastructure delivery that do not typically occur with the more immediate, site-specific nature of Section 106 contributions. This distinction highlights how different developer contribution mechanisms create different spatial and temporal relationships between development activity, value capture, and infrastructure provision. As a blend of different types of developer contribution (CIL and s106), both types of developer contributions provide flexible instruments to capture land value whilst, at the same time, incorporating numerous inconsistencies and variations (see Wyatt, 2017 and the Select Committee report discussed above for further detail).

Developer contributions have been described as "surrogate betterment tax" by Corkindale (2004, 16) and as "…locally determined and negotiated betterment levies on development values, hypothecated for local needs" by Crook and Monk (2011, 997). Drawing upon micro-economic models and techniques, there is a long established yet largely theoretical literature on the welfare effects of the use of developer contributions to provide public goods used to mitigate the effects of negative externalities and to provide benefits to the local community. This literature has evaluated the effects of developer contributions on allocative efficiency with a focus on their impact on the quantity and form of development and consumer welfare (see Evans, 1983; Keogh, 1985; Bowers, 1992 and Crook and Whitehead, 2002).

Land value capture through developer contributions has also been framed as a zero-sum game whereby gains to the community result in financial losses by the landowner. The quantity of land value captured is then a function of reduced land bids or values that the land value capture instrument has produced. Implicitly, if land values are increased or remain unchanged by the provision of monetary and non-monetary benefits from developer contributions, land value capture has not occurred. This point was made by Crook and Whitehead (2002, 1272) who, in the context of affordable housing provision through developer contributions, argued that "[T]he starting point is to demonstrate that landowners do indeed bear the burden of provision in the form of lower land prices." When evaluating the use of impact fees in the US, the underlying logic was also summed up by Evans-Cowley, Forgey and Rutherford (2005, 106)

> "When a property owner sells undeveloped land, the developer will pay less for it because the developer knows that he/she will have to pay the impact fee upon development of the land. Thus, the developer pays a lower price while the seller of undeveloped land receives less money due to the capitalization of the impact fee into the price of the property."

Most of the theoretical analysis and empirical evidence of the impact on land prices of developer contributions has come from analysing the effect of impact fees in the United States.

Before going on to discuss the research on impact fees and land values, it is also worth noting that, following the same logic, government subsidies to encourage certain patterns of development are also likely to be passed backwards to landowners. In effect, subsidies to the final users of development projects can act as the opposite of land value capture. At the macro-level, policy instruments such as tax relief on mortgage interest, property transfer taxes, interest free loans, loan guarantees etc. can lead to higher demand for and higher prices of properties and, consequently, of development land. At a project level, Jefferys and Lloyd (2017) highlighted that capital grants made to affordable housing providers involved some transfer of public subsidy (intended for low-income groups) to landowners. In effect, capital grants were acting as a form of land value subsidy. McAllister, Shepherd and Wyatt (2017) estimated that the austerity-driven withdrawal of grant funding to registered providers of affordable housing in London after 2010 resulted in an increase in land value capture compared to a regime where there was grant funding from general taxation to purchase affordable housing. Essentially, since registered providers were unable to pay as much to developers for affordable housing due to grant funding cuts, developers were, in turn, unable to bid as much for development sites.

Impact Fees and Land Values

Impact or linkage fees are the most common form of developer contribution in the US. For instance, it is estimated that San Francisco collected nearly $237 million in impacts fees in 2015-16 (see Germán and Bernstein, 2018). The experience of impact fees in the US has generated a longstanding body of theoretical and empirical research on their effects on land values. Formal micro-economic analyses of impact fees in the US have focussed on the effects of these land use exactions on housing supply, the relative costs and benefits of different methods of financing infrastructure provision and the values of both developed (usually the prices of existing houses) and undeveloped (both the prices of new housing and development sites) land. Whilst implicit, the concept of land value capture is not central in this

literature and the property taxation regime (typically millage rates within local jurisdictions) prevalent in the US is taken as read. Building on the "informal literature", Brueckner (1997, 386) attempted to provide the "missing formal analysis" when evaluating the outcomes of a binary choice between funding infrastructure for new development by the whole community within a jurisdiction relative to impact fees directly paid by the developer and, indirectly, paid for by either landowners and/or buyers of new homes. Whilst the inferences can be more nuanced, in this largely US context, the somewhat simplified formal models suggested that the use of impact fees typically raises the value of developed land (existing house prices) within the local jurisdiction since the liability for payment for required infrastructure is not spread across all existing property taxpayers. Whilst Brueckner (1997) concluded that the adoption of impact fees would be commonly expected to deter new housing supply after a jurisdiction has reached a certain size, later work has focussed on the potential for impact fees to make development acceptable to existing residents who do not have to pay for additional infrastructure.

Much of the literature on impact fees suggests a blend of potential effects on land values and house prices (in both undeveloped and developed land). Been (2005) provided a thorough analysis of (then) existing, largely 'informal' literature that analysed the wide range of expected effects of impact fees would be transmitted to land and house prices. For some elements of impact fees, developers can recover the costs of some impact fees from buyers of new homes in the form of higher house prices. This is not necessarily problematic where the impact fees provide additional services or amenities generating the higher sales prices. Although consumers pay higher house prices, they are not worse off because additional value is received for the higher price paid. Where the costs of impact fees cannot be passed forward by developers and recovered from house buyers, normally developers will be aware of the impact fees and will bid less for development land as argued by Evans-Cowley *et al*. (2005) above. Hence, the impact fee is expected to be passed backward to the landowner. In the long run, lower land prices will make the development of some sites unviable until the resulting lack of supply leads to increases in house prices. Reflecting the importance of certainty in the amount of developer contributions for developers, it is expected that the developer will only be exposed through lower than

anticipated profits to the costs of impact fees if they fail to correctly anticipate the cost of impact fees when they bid for sites.

Turning to the empirical evidence on effect of impact fees on development land prices, the evidence is quite mixed. An analysis by Evans-Cowley *et al.* (2005) of the sale prices of 5,425 plots in 43 urban centres in Texas found a small but statistically significant negative effect of impact fees on land prices. However, it was not close to the expected 'a $1 development impact fee produces a $1 reduction in land value' effect. In contrast, using a sample of 1,000 repeat land sales in Florida, Ihlanfeldt and Shaughnessy (2004) found that for every $1 development impact fee, there was a $1 reduction in land value. It was also found that the home buyer paid more than the full price of the impact fee, while additionally the undeveloped land seller also absorbed the cost of the impact fee. In Queensland, Australia, Murray (2018) investigated the effect of unanticipated changes in developer charges on house prices and supply concluding that impact of changes in developer charges was "fully incident on the landowner, even when the landowner is a property developer." (Murray, 2018, 1)

Drawing upon a much larger sample and more granular data, Burge (2014) analysed a panel data set 1,547,711 residential zoned parcel sales and 134,610 commercially zoned parcel sales in Florida. The study was able to distinguish between impact fees for education, water and sewage infrastructure. Suggesting that the impact fee could be passed forward, it was found that impact fees for education had a relatively limited negative impact on land prices and, in some model specifications, no effect could not be excluded. However, in contrast, water and sewage infrastructure impact fees could not be excluded as having a $1 for $1 negative effect on land prices. It was concluded that the monetary costs of water and sewer impact fees were not fully offset by other benefits to residential developers so that a substantial portion of the fee was shifted backwards to landowners. In contrast, it was found that educational impact fees had much smaller impacts falling far short of full negative capitalisation in land prices.

Whilst the empirical evidence is rather limited and inconsistent, both informal and formal theoretical analyses suggests that developer contributions, such as impact fees, can affect land prices on development sites both before and after development and affect land values of properties in the same jurisdiction. Burge's (2014) findings are consistent with different developer contributions having different types of impacts on land values. The implication was that developers' land bids suggested that they could recover impacts fees for education from homebuyers and recover impact fees for water and sewage infrastructure through land value capture from landowners. In the next section, the standard land pricing model used by developers is outlined and the range of ways in which developer contributions can affect non-land development costs, revenues and, consequently, development land prices is assessed.

Land Bid Determination

An analysis of the calculative techniques used by developers to estimate land bids illustrates how the private costs and benefits of different developer contributions can produce a range of positive and negative effects on development land values. Whilst much of this description of development appraisal techniques will be well-known to real estate specialists, it is key to understanding how developer contributions are transmitted to land values and to understanding whether land value is actually being captured in developer contributions. Crosby, Devaney and Wyatt (2020) provide one of the few pieces of empirical evidence on the appraisal practices of development organisations. Their survey of British developers found that, almost without exception, used variations of a residual method of land appraisal.

The standard calculative technique used by developers to estimate land bids is founded on the premise that the landowners will receive the difference between the expected revenues from developing the land and the expected costs of developing the land with a normal profit to the developer deducted as one of the costs. The estimated surplus available for land purchase is commonly labelled a 'residual value' which is synonymous with the land value. All else equal, the higher the non-land development costs, the lower will be the land value. In this respect, payments to building contractors, the consultants etc.,

can be also framed as land value capture by them in payment for their various services. Developer contributions are often then simply another cost of development that can reduce the residual surplus available for a land bid.

Whilst there can be variants, the core model of development land bid determination applied by market participants is founded upon the estimation and processing of four main inputs:

- Total expected revenues from a development project.
- Total expected non-land costs of a development project.
- Developers' minimum required return from a development.
- Expected timing of revenues and costs.

Expressed informally, land value bids are simply the output of a calculation of the development project's revenues and then deducting the expected non-land costs and a return to the developer. Timing is also a determining factor. The earlier costs and revenues are expected to be received, the higher the land value should be - all else equal. Development risk will be a determinant of developers' minimum required return. For instance, there will be much less uncertainty in appraising development sites where a planning consent has been granted. Where no consent is in place, depending on how much flexibility there is in a zoning regime or how much certainty there is in plan-led discretionary regime, developers will have less certainty about the likely timing of a consent, the size and composition of the scheme that will be permitted and the level of developer contributions that will be required. The additional uncertainty associated with such 'planning risk' will tend to increase the risk premium that developers require and reduce land bids.

Developer contributions can affect both the expected costs of and revenues from a development project in a range of ways. The resultant land value estimate will, in turn, be affected in sometimes obvious, fairly measurable and significant ways. However, land values can also be affected in more minor, more

difficult to quantify and less direct ways. As we have seen above, since it is by far the largest source of developer contributions in England, the provision of non-market housing provides a good example to illustrate the range of potential mechanisms by which the developer contribution is transmitted to development projects' costs and revenues. Clearly, a planning policy regulation to provide 'in kind' a proportion of, say 35%, non-market housing will reduce the total revenue to the developer compared to a scenario where no non-market housing is provided.

The total cost to the developer of this contribution depends on the discounted (below market) price that they receive for the affordable housing and the development costs associated with building it. The reduction in revenue can be calculated by working out the difference between payments that would have been received for the equivalent quantity of market housing and the payments received for the non-market housing. Where the developer expects to have to provide non-market housing, the amount of the combination of lower revenues and remaining construction costs will be indicative of the lower land value bid[7]. Whilst this lower revenue receipt is undoubtedly expected to have the largest effect on land bid, there are also a range of more minor and less direct effects on the potential land bid.

- The construction costs of non-market housing will typically be lower than market housing reflecting a lower build specification. This effect of a lower build cost would increase the bid for the land – all else equal. However, in some cases, it is also possible that required standards for non-market housing may be higher than for market housing and result in higher construction costs per unit of space.
- The sale prices on market housing may be lower due to the potential negative externality of non-market housing. This 'proximity effect' on sale prices would decrease the bid for the land – all else equal.

[7] The net reduction in revenue due to the developer contribution of non-market housing will not precisely equate to the reduction in land bid. This is because the reduced revenue will tend to be receivable after land acquisition. The land value reduction will be a function of the discounted value of the revenue reduction and consequent impacts on other costs that commonly have an *ad valorem* relationship to the land price e.g., land transfer tax and brokerage fees.

- Where payments for non-market housing are received at a different time than payments for market housing, the timing of cash inflows will be affected.
- Where the payments for non-market housing have a different risk profile than payments for market housing, the risk of and the developer's minimum required return from the project will be affected.[8]
- The costs and timescale associated with land use regulation may be affected by the developer's willingness to make appropriate affordable housing contributions.[9]
- Finally, it is possible that projects that comply with local authority aspirations for affordable may be permitted at a higher density. The potential effects on land value capture of such density bonuses are discussed in more detail below.

Although likely to be unusual, particularly in relatively high risk/low value markets it is possible that a development project blending non-market and market housing could produce a higher land bid than a project consisting of only market housing.

Alternatively, a developer contribution consisting of a communal facility in a development scheme will also affect both development costs and revenues. If the land used for the communal facility e.g., a playground could have been used to develop more dwellings, then revenue is reduced and so is the land bid. The installation costs of providing the playground will also produce a lower land bid. However, depending on the intended market for the dwellings, it is likely that there will be lower demand for dwellings without access to a local playground and, therefore, sale prices will be lower. The effect of the developer contribution on land value will depend then on the extent to which both the lower revenue caused by lower density and the direct costs of installation can be recovered from the positive capitalisation of the provision of the playground in sale prices.

[8] In the Great Britain, it is common for registered providers of non-market housing to pay significant proportions of the prices of non-market housing in advance of build completion. Sales to registered providers also tend to have lower transaction costs and lower execution risk compared to sales of market housing to individual purchasers.

[9] For example, in 2017 the Greater London Authority introduced a 'fast track route' for development projects that reached or exceeded a threshold of 35% affordable housing.

The discussion to this point suggests that developer contributions can have a wide range of both positive and negative effects on the costs and revenues generated by development projects. Both positive and negative externalities can also affect the values of land values of proximate properties. Developer contributions can therefore produce complex trade-offs between land value conservation, creation, destruction and transfer that affect the development site itself, proximate sites and, much less directly and more marginally, prices in the broader land market. They can be used to conserve land values in proximate sites *at the cost of the landowner* of the development site, enhance or conserve the value of the development site itself at the cost of future house buyers, and/or transfer land value from the owner of development site to provide net gains in public goods. These different categories are discussed in more detail below and set out in Table 1.

Enabling Developer Contributions

This category of developer contributions is often a *sine qua non* of development e.g., provision of essential infrastructure (mainly the key utilities and highways works) to un-serviced sites. The use of developer contributions is a mechanism to ensure that new facilities, services or infrastructure necessary for the development to occur are provided. However, since the developer contributions comprise essential infrastructure, crucially such infrastructure *would be provided voluntarily* by developers in the absence of a specific regulatory mechanism. Whilst it is expected that the costs of this category of developer contribution would be paid for from a reduced land price (compared to a serviced development site), the developer contributions deliver private rather than public benefits and do not involve land value transfer from the landowner to the community (assuming that the community does not pay for required infrastructure).

The effects of investment in infrastructure and planning promotion on development land values are illustrated by Christensen (2014). Indeed, in order to privately capture the consequent land value uplifts, some participants in the development land market specialise in transforming un-serviced and constrained land without consent for development into ‘clean’, serviced sites with consent for

development. The core business model of master developers/land promoters is to try to increase the value of 'raw' land through investment in planning promotion and infrastructure such as drainage and mains services upgrades, flood defences and road works, public open space, cycle ways, schools and local community centres etc. Land value uplifts are then typically realised by the master developer/land promoter when serviced land parcels are sold to housebuilders. The key point here is that, whilst developer contributions may sometimes be used as a legal instrument through which the infrastructure is secured, the infrastructure would normally have been provided by the master developer in the absence of such an instrument.

Commercial Developer Contributions

These developer contributions may be used to provide goods and services that optimise private returns from the development project. Some developer contributions involve the provision of public goods on the development site which produce *land value increases in the development site* relative to land values if the developer contributions had not been made. The developer contribution provides facilities, amenities, services and/or infrastructure that may not be a pre-requisite of development but that *would be provided voluntarily* by the developer in the absence of specific developer contributions. This is because any additional development costs or reduced development revenues are expected to be recovered through and capitalised into higher sale prices. Such profit-enhancing or profit-neutral developer contributions could include. provision of playgrounds, open space, landscaping, noise reduction measures etc. They mainly constitute the minimum level of private provision of public goods that is necessary to optimise the private returns from a development project. If this condition holds, land value capture from the landowner by the community does not occur. As discussed earlier, the increased cost associated with the provision of such goods is effectively shifted forward to new house buyers who, in turn, benefit from the goods and services provided.

Compensatory Developer Contributions

Akin to an offsetting mechanism, the purpose of some developer contributions is to internalise or mitigate negative externalities and implicitly to alleviate potential land value reductions in neighbouring sites. Whilst house buyers on the development site may gain some benefits from these measures, this will often involve extraction of land value on the development site in order to provide public or merit goods that mitigate the impacts of negative externalities on proximate sites created by a proposed development. Since this category of developer contributions would not be provided voluntarily by the developer and usually does not significantly affect other expected costs and revenues from the proposed project, the private costs of this category of developer contributions are expected to shift backwards to the landowner producing reduced land bids from developers. Land value is then being effectively transferred from the development site to reduce land value decreases on proximate sites. There may be potentially little net gain to the wider community.

An example here is where relatively stringent design standards are applied in order to reduce any adverse impacts of a development project on buildings or neighbourhoods designated as historically or architecturally important. Where the stringent design standards generate additional development costs that cannot be recovered through higher sale prices, the additional costs can be interpreted as a form of land value capture where the landowner of the development site indirectly absorbs the additional costs associated with mitigating the impact of the development on the values of proximate properties. This point is particularly pertinent in the debate about the financing of Net Zero standards in new homes. The extent to which any additional construction costs for new buildings can be passed backwards to landowners, forwards to consumers or subsidised from public funds remains a highly topical policy issue.

Table 2 Categories of Developer Contribution and Land Value Capture

Type of developer contributions	Expected impact on value of development site	Expected impact on value of final development.	Expected impact on value of proximate sites	Land value captured? Additionality?	Examples
Enabling - Direct provision of or monetary contribution to delivery of infrastructure required for development to progress.	Positive[10]	Positive	Neutral	No	Provision of or payment for upgrades to main utilities.
Commercial – Direct provision of or monetary contribution to delivery of sufficient public goods to maximise development land value or development return.	Positive	Positive	Neutral or positive	No	Provision of or payment for communal facilities and open space linked to the specific scheme.
Compensatory - Provision of or monetary contribution to the delivery of public goods required to mitigate impacts of negative externalities on *curren*t and future residents of proximate sites.	Negative	Neutral or positive	Positive	No	Provision of or payment for additional works or facilities to mitigate or offset the negative impacts of the scheme.
Supplementary - Provision of monetary contribution to the provision of additional public goods to provide benefits to local community.	Negative	Neutral or positive	Positive	Yes	Provision of and payment for infrastructure, facilities and services with limited links to specific scheme.
Redistributive - Provision of or monetary contribution to the delivery of public goods for redistribution.	Negative	Negative	Negative[11]	Yes	Development of non-market housing without grant funding.
Subsidised – Provision of or monetary contribution to the delivery of public goods directly or indirectly subsidised by granting irregular development rights or financial transfers.	Positive	Neutral	Neutral or negative	No	Grants to providers of non-market housing enabling them to pay higher prices to developers for non-market housing.

[10] The expected impacts on development land value are estimated against a scenario where the developer contribution is not made. Clearly, it is difficult to envision the development of projects where there are no utilities provided.

[11] It is assumed that the provision of non-market housing produces negative externalities. This may not necessarily be the case with some projects.

Supplementary Developer Contributions

These are essentially developer contributions above the minimum required to enable development, optimise private returns and mitigate negative externalities on proximate sites. This could involve the provision of public goods that transfer value from the development site and increase the value of proximate properties. The developer contribution may be to provide new facilities or retain existing amenities that would not have been provided voluntarily by developer and which generate positive externalities for the development site and as well as proximate sites. However, the private costs to the developer are higher than the private returns and the developer's land bid for the development site is reduced where these additional costs are anticipated. Normally, land value capture on behalf of the community takes place. Such developer contributions could include. provision of infrastructure, facilities and services upgrades above the level necessary to optimise the profitability of the project to the developer. Typically, such developer contributions tend to directly benefit landowners of proximate sites but provide marginal gains to the wider community.

Redistributive Developer Contributions

Another category of developer contributions is the provision of public goods that reduce the value of the development site and, possibly, proximate sites. Similar to the previous category, the developer contribution is used to provide new facilities or retain existing amenities that would not have been provided voluntarily by the developer. However, in this case the developer contributions can generate negative externalities for the development site as well as proximate sites. Typically, significant land value capture take place. In the British context, the most important example of this type of developer contribution has been affordable housing. In most market conditions, a profit-driven developer would not normally provide any of this housing tenure in the absence of a developer contribution. The difference between the net revenue from the market housing that would have been built and the actual affordable housing that they are (typically) forced to provide is essentially the amount of land value capture on behalf of the community. The landowner of the development indirectly bears some of the

costs for the affordable housing through reduced quantities of private housing and reduced sale prices of private housing. The values of proximate land may also be reduced by the provision of affordable housing on the development site. The benefits are more difficult to express in monetary terms as affordable housing provision tend to fulfil a redistributive function that may benefit the wider community.

Subsidised Developer Contributions

All of the developer contributions discussed above can be subsidised either directly or indirectly. As discussed earlier, capital grants from public funds to providers of non-market housing to acquire non-market housing enable such providers to pay higher prices to developers. Developers are then, in turn, are able to make higher land bids so that, in effect, there is a transfer of public subsidy to landowners. Depending on the level of subsidy, a proportion of affordable housing developer contributions are then effectively being paid for from general taxation rather than land value capture. In practice, where grant funding is partial and does not cover all developers' costs in providing affordable housing, it is likely that the cost of the developer contribution will be shared between general taxation and land value capture.

Whilst land value uplifts are partially dependent on what land use regulators permit, some incentives and quasi-subsidies in the planning system are deliberately designed to create 'bonus' land value in order to capture it on behalf of the community. For instance, a 'density bonus' may involve creating additional land value on the development site by permitting a higher density of development than would normally be permitted. However, the increased density tends to be conditional upon the provision of non-market housing and/or other public goods. Where the additional permitted density results in additional negative externalities, the impact of this type of planning incentive (increased density) may be land value reductions in proximate sites.

According to Shih and Shieh (2020, 383), "the planning world has seen the ascendance of density-based regulatory measures in its toolbox" as density bonuses have been "widely adopted across different planning systems". In the US, the use of density bonuses has been a long-established approach to securing affordable housing (see Erber and Prior, 1974). More recently, Kim (2020) analysed a number of different zoning techniques that were used to create and recapture additional land value in high rise developments in a number of 'gateway' cities. The planning instruments used included: the use of professional discretion in planned unit development (PUD), traditional text/map amendments, development agreements, special purpose districts, and incentive zoning programs. The use of PUDs, amendments and development agreements tend to apply local discretion on a project-by-project basis. Special purpose districts and incentive zoning create density/height bonus programs across a specific designated area and can be applied to multiple projects within a defined boundary. What they have in common is an implicit trade-off between exacting public goods and potential additional negative externalities generated by increases in development density.

In the British context, such density bonuses tend to be much more discretionary taken on a case-by-case basis. In the London office sector, Cheshire and Dericks (2020) demonstrated that 'trophy' architects have been commissioned by developers because of their ability to persuade planning authorities to permit increased densities in an implicit trade-off between (perceived) better quality of design and increased density. In residential development, evidence tends to be much more anecdotal. However, it is clear that market participants have experience of such trade-offs between density and affordable housing contributions. For example, Wilding (2019) reported one planning consultant's perception of the signals that they were receiving from the planning authority.

> "The message was: 'We're trying to maximise the amount of affordable housing. If that means we have to increase density, go a bit higher, push the boundaries of a development, that's something we can look at'."

Another consultant was similarly quoted.

"What we've found effective is going to the mayor or local authorities and saying: 'We can give you 35 per cent if the building is going to be 16 storeys rather than 12 storeys'.

Any increase in the value of the development site due to a 'density bonus' may be fully captured in the form of increased provision of public goods through developer contributions. However, if there are additional negative externalities associated with the increased density of development, this will cause reductions in the values of proximate land. The main mechanism here could be that, by permitting higher density of development, local planning authorities are in effect creating additional land value from the economic rent generated by density restrictions in order to capture it.

Conclusion

This discussion has highlighted the range from general fiscal instruments with diffuse, indirect effects on land values through to direct regulatory interventions that immediately capture or appropriate land value. Importantly, it demonstrates that while all policy instruments may affect land values to some degree, they differ markedly in terms of the directness, speed, and predictability of their transmission mechanisms. The classification also reveals how instruments vary in their relationship to land value capture - from entirely incidental effects through to explicitly designed value capture mechanisms.

Given that granting consent to develop can generate huge unearned financial gains for landowners, historically there have been numerous attempts in various planning jurisdictions to, *de facto* if not always *de jure*, tax this betterment. Outside of developer contributions, part of the uplifts in land values are taxed, sometimes rather circuitously, through a range of recurrent and non-recurrent real estate and wealth taxes that can also be interpreted as a form of land value capture. Developer contributions, since they are at the nexus of land use regulation, land markets and the development industry, are commonly conflated with land value capture and do indeed frequently capture land value. Whilst there are numerous variants of this type of planning policy instrument, intrinsically linked with specific development projects, they typically involve contributions in cash, in kind or, less directly, can be in

the form of ‘onerous’ design standards. Whilst they are directly payable by developers before, during and/or after the completion of the development project, when they are anticipated by developers before land acquisition, they can be passed backwards to the landowner and/or forwards to final buyers. Where their costs are not passed backwards and cannot be passed forwards, some developer contributions then become a quasi-tax on developers’ profits. It is only when developer contributions are shifted back to the landowner that land value capture occurs.

In the absence of public funding which can sometimes subsidise landowners, developer contributions that pay for the hard and soft infrastructure necessary for a site to be developed will be shifted backwards to the landowner provided that the developer is able to estimate them accurately when bidding for land. Whilst a binary distinction between serviced and un-serviced sites is often too simplistic, the expected costs of enabling infrastructure should be observable in the price premium paid for serviced or partially serviced sites. Provided that the resultant land price provides a sufficient incentive for landowners to sell, developers will normally voluntarily provide enabling infrastructure that is an essential condition for development to occur. In the British context, most developer contributions for enabling infrastructure works tend to involve planning obligations related to upgrades in off-site infrastructure. Such developer contributions can be regarded as a normal development cost similar to build costs, professional fees, site preparation, demolition etc. Although they may be contractually delivered through a legal agreement with the local planning authority, it seems a stretch to categorise such contributions as land value capture. Whilst developer contributions can provide a convenient mechanism for the delivery of such infrastructure, there is no additionality unless the infrastructure works add more than the minimum capacity required to service the development site. The additional capacity could increase the value of proximate development sites where sufficient infrastructure is now provided. Similarly, other developer contributions such as open space that are expected to positively affect sale prices will only involve land value capture if some of the cost is shifted backwards to landowners rather than forwards to house buyers. Where the developer would have provided such public goods in order to maximise profitability, there is again no additionality from this type of developer contribution.

Developer contributions are also commonly used to mitigate and/or offset the impacts on a development project on the land values of proximate properties. This effectively involves capturing land value on the development site in order to try to conserve land values on proximate properties. Their implicit purpose is to indirectly compensate proximate landowners to some degree for negative impacts generated by new development. Of course, the development scheme and/or some of the related developer contributions can also produce positive externalities that can also increase the land values of proximate sites. These positive effects on land values of proximate sites underpin the use of Tax Incremental Financing and other area-based land value capture mechanisms such as Special Assessment Districts.

In the British context, by far the most important source of land value capture from developer contributions has been through the provision of non-market housing through developer contributions. In the absence of density bonuses or subsidies, the direct transmission mechanism of non-market housing contributions to reduced land value bids seems clear. However, where increased density is permitted above what would *normally* be approved in return for additional affordable housing, it is not evident that the landowner (developer) will receive reduced land bids (profits). Where higher densities result in negative externalities on proximate sites, land value is effectively being captured from neighbouring landowners to subsidise the provision of additional affordable housing. Another, more likely, possibility is that the land value captured is part of the economic rent produced by planning restrictions on density. In some cases, the additional land value created from increased density is, in turn, being used to compensate landowners and/or developers for developer contributions. In other cases, in particular where real estate values are comparatively low, higher densities may be required to make developer contributions economically viable. However, it is far from clear that it is landowners who are bearing the cost of provision in such cases.

This analysis of developer contributions as a land value capture mechanism to transfer betterment value from landowners to the wider community highlights the complexities in assessing how and whether their cost is borne by landowners of the development site, developers, final users, unrealised economic

rent created by stringent land use regulation, subsidies, landowners of neighbouring sites or some combination of these sources. As interest in land value capture to fund public goods increases and more measurement occurs, classification is likely to become more important. Arguably, design standards are an often, overlooked mechanism for capturing land value to reduce negative externalities. Depending on the extent to which additional costs associated with Net Zero new development can be shifted backwards to landowners rather than forwards to end users, design standards seem to provide an opportunity to use land value capture to pay for improvements in environmental performance of new developments.

References

ABELSON, P. (2018) An Analysis of Value Capture Instruments. *Economic Papers: A Journal of Applied Economics and Policy,* **37**, 4, 399–411.

ALTERMAN, R. (2012), Land use regulations and property values: The 'Windfalls Capture' idea revisited. in *The Oxford Handbook of Urban Economics and Planning*, Brooks, N., Donaghy, K. and Knaap, G (eds.), 755-786.

BARKER, K. (2004), The Political and Economic Case for a Planning Gain Supplement. in *Building Sustainable Communities: Capturing Land Development Value for the Public Realm*, Bill, P. (ed), 19–27. London: The Smith Institute.

BEEN, V., (2005), Impact fees and housing affordability. *Cityscape*, 139-185.

BOWERS, J. (1992), The economics of planning gain: a re-appraisal, *Urban Studies*, **29**, 1329-1339.

BRUECKNER, J. (1997), Infrastructure financing and urban development: The economics of impact fees. *Journal of Public Economics*, **66**, 383-407.

BURGE, G. (2014), The capitalization effects of school, residential, and commercial impact fees on undeveloped land values. *Regional Science and Urban Economics*, **44,** 1-13.

CHESHIRE, P. AND DERICKS, G. (2020), 'Trophy Architects' and Design as Rent-seeking: Quantifying Deadweight Losses in a Tightly Regulated Office Market. *Economica*, **87**, 1078-1104.

CHRISTENSEN, F. (2014), Understanding value changes in the urban development process and the impact of municipal planning. *Land Use Policy* **36**, 113–121.

CORKINDALE, J. (2004), *The land use planning system: evaluating options for reform*, Institute of Economic Affairs.

CROOK, T. (2016), Capturing development value through de jure national taxation: The English experience. *Planning gain: Providing infrastructure and affordable housing*, 37-62.

CROOK, A. AND MONK, S. (2011), Planning gains, providing homes, *Housing Studies*, 26 (7-8), 997-1018.

CROOK, A. AND WHITEHEAD, C. (2002), Social housing and planning gain: is this an appropriate way of providing affordable housing?, *Environment and Planning A*, **34**, 1259-1279.

CROOK, A.T. AND WHITEHEAD, C. (2019), Capturing development value, principles and practice: why is it so difficult?. *The Town Planning Review*, **90**, 359-381.

CROSBY, N., DEVANEY, S. AND WYATT, P. (2020), Performance metrics and required returns for UK real estate development schemes. *Journal of Property Research*, **37**, 171-193.

D'IGNAZIO, C. AND KLEIN, L. (2018), *Data feminism*. MIT Press.

DUNNING, R., O'BRIEN, P., PAYNE, S. AND BUCK, M. (2020), *Land value capture: attitudes from the house-building industry on alternative mechanisms.* RICS Report, London.

ERBER, E. AND PRIOR, J. (1974), The Trend in Housing Density Bonuses. *Land Use Law & Zoning Digest*, **26**, 6-9.

EVANS A, (1983), The determination of the price of land, *Urban Studies,* **20**, 119–129

EVANS-COWLEY, E., FORGEY, F. AND RUTHERFORD, R. (2005), The effect of development impact fees on land values, *Growth and Change*, **36**, 100-112.

FERM, J. AND RACO, M. (2020), Viability planning, value capture and the geographies of market-led planning reform in England. *Planning Theory & Practice*, **21**, 218-235.

FISHER, B. WEBER, R. AND LEITE, F. (2023), Value creation, capture, and destruction: Hudson yards and the false promise of self-financing mega-projects. *Journal of the American Planning Association,* **89**, 1, 134–145.

FOYE, C. (2022), Section 106, viability, and the depoliticization of English land value capture policy. *International Journal of Urban and Regional Research*, **46**, 269-286.

GERMÁN, L. AND BERNSTEIN, A. (2018), *Land value capture: Tools to finance our urban future. Policy brief*, Lincoln Institute of Land Policy, Cambridge, MA.

HENNEBERRY, J., WHITEHEAD, C. AND CROOK, T. (2015), *Planning gain: Providing infrastructure and affordable housing*. John Wiley & Sons.

IHLANFELDT, K.R. AND SHAUGHNESSY, T. (2004), An empirical investigation of the effects of impact fees on housing and land markets. *Regional Science and Urban Economics*, **34**, 639-661.

JEFFERYS, P. AND LLOYD, T. (2017), *Rediscovering our tradition of building beautiful and affordable homes: policy briefing*

KEOGH, G. (1985), The economics of planning gain, In *Land Policy: Problems and Alternatives*, Barrett, S and Healey, P (eds) 203-228.

KIM, M. (2020), Upzoning and value capture: How US local governments use land use regulation power to create and capture value from real estate developments. *Land Use Policy*, **95**, 104624.

LI, Y., LI, W., LI, X. AND WEBSTER, C. (2023), Developer obligations and negotiation-based benefit distribution in urban redevelopment: Evidence from Shenzhen, China. *Cities*, **134,** 104166.

LORD, A., DUNNING, R., BUCK, M., CANTILLON, S., BURGESS, G., CROOK, T., WATKINS, C. AND WHITEHEAD, C. (2018), *The incidence, value and delivery of planning obligations and community infrastructure levy in England in 2018–19*. Report for Ministry of Housing, Communities and Local Government.

MINISTRY OF HOUSING, COMMUNITIES AND LOCAL GOVERNMENT (MHCLG). 2024. Proposed reforms to the National Planning Policy Framework and other changes to the planning system. https://www.gov.uk/government/consultations/proposed-reforms-to-the-national-planning-policy-framework-and-other-changes-to-the-planning-system/proposed-reforms-to-the-national-planning-policy-framework-and-other-changes-to-the-planning-system

MCALLISTER, P. (2017), The calculative turn in land value capture: lessons from the English planning system. *Land Use Policy*, **63,** 122-129.

MCALLISTER, P., SHEPHERD, E. AND WYATT, P. (2018), Policy Shifts, Developer Contributions and Land Value Capture in London 2005-2017, *Land Use Policy*, **78**, 316-326.

MURRAY, C. (2018), Developers pay developer charges. *Cities*, **74**, 1-6.

NASCIMENTO NETO, P., ARREORTUA, L.S., MOREIRA, T. AND BURNETT, F.L. (2024). On the land value capture: Politics of land use in the Global North and South. *Housing, Theory and Society*, **41***,* 2, 234-254.

OECD AND LINCOLN INSTITUTE OF LAND STUDIES. (2022) *Global Compendium of Land Value Capture Policies.* OECD Regional Development Studies.

SHEPHERD, E. (2025) Public policy and contested political concepts: the ideological morphology of land value capture. *Journal of Political Ideologies*, 1-27.

SHIH, M. AND SHIEH, L. (2020), Negotiating Density and Financing Public Goods in Vancouver and New Taipei City: A Development Rights Perspective. *Planning Practice & Research*, **35**, 380-395.

WHITEHEAD, C. (2007), Planning policies and affordable housing: England as a successful case study?, *Housing Studies*, **22**, 25-44.

WILDING, M. (2019), How big London housing schemes are faring against the mayor's affordable housing target, *Planning*, 25 February 2019.

WOLF-POWERS, L., (2024) Dilemmas of 21st century land value capture: Examining Henry George's legacy in a new Gilded Age. *Environment and Planning A: Economy and Space*, **56**, 6, 1738-1752.

LORD, A., SHEPHERD, E. AND WHITE, T. (2025) Language Value Capture? Redefining Terms for the Debate on Land's Public Value. *Planning Theory & Practice*, **26**, 1, 153-158.

WYATT, P. (2017), Experiences of running negotiable and non-negotiable developer contributions side-by-side, *Planning Practice & Research*, **32**, 152-170.