



CePACs and Their Value Capture Viability in the U.S. for Infrastructure Funding

Working Paper WP18JK1

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September 2018

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Abstract

CePAC is an innovative market-based land value capture tool used successfully in São Paulo, Brazil. By monetizing land-use entitlements through up-zoning, it generates significant revenues for infrastructure improvements. This paper examines the potential application of CePACs and their value capture viability in the U.S. for local infrastructure funding. On the upside, CePACs improve upon existing land value capture tools, in that they place no additional financial burden on local governments, taxpayers, or property owners, while offering added benefits for developers, real estate investors, and builders. CePACs are particularly suited for the U.S. in a smart growth setting that promotes concentrated and transit-oriented developments (TODs) where continued up-zoning may be needed. By engaging new private sector investments, CePACs could help make existing land value capture solutions much more robust in addressing the critical infrastructure funding problem in the U.S. On the downside, there are a number of practical implementation challenges that need to be overcome. CePACs may face political resistance, both from general lack of knowledge and misunderstanding on ideological pretext. CePACs must comply with the existing local planning and approval processes and need to pass muster on legal/constitutional grounds as relate to the takings doctrine. The scalability of CePACs could also be of concern, given that land use and zoning issues are inherently local and episodic. CePACs also require considerable expertise and may necessitate institutional capacity building, both legislatively and organizationally. One of the critical decisions at the outset would be how to classify CePACs—whether as a financial security subject to relevant federal and state securities regulations (as was done in Brazil) or simply as an innovative local tool that can help to capture the real value of land use entitlements as perceived by the market. The benefits from CePACs are sufficiently large, however, to merit a further examination, especially for their applications on publicly owned land and on TODs and transferable development right (TDR) undertakings where many of the challenges identified in this paper can be avoided.

Keywords: Land value capture, infrastructure finance, municipal finance, land use entitlement, developer exaction, transfer of development right (TDR), transit-oriented development (TOD)

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Acknowledgements

The author would like to thank the Lincoln Institute of Land Policy—International and Institute-Wide Initiatives—for supporting this research and New Cities Foundation for coordinating the research effort. I thank Lourdes Germain, Enrique Silva, Luis Quintanilla Tamez, Gerald Korngold, and Michael Woodbridge for their helpful comments and suggestions. I also thank Paul Rosenstiel for his detailed review and insightful comments on the final draft. I am deeply grateful in particular for Paulo Sandroni for his valuable input throughout the study and for sharing his insights on the CePAC experience from Sao Paulo. Finally, I interviewed numerous public and private sector experts across infrastructure finance disciplines and thank them for their time and sharing their expertise.

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Abbreviations and Acronyms

ABUO	<i>Agua Blanca</i> Urban Operation
AEUO	<i>Agua Espraiada</i> Urban Operation
AIF	Alternative investment fund
ARB	Air Resource Board
BID	Business improvement district
BSE	Brazilian Stock Exchange
CBA	Community benefits agreement
CCX	Chicago Climate Exchange
CDAC	California Debt Advisory Commission
CEPAC	<i>Certificados de Potencial Adicional de Construção</i> (Certificate of Potential Additional Construction)
CFD	Community facilities district
CMO	Collateralized mortgage obligation
CVM	<i>Comissão de Valores Mobiliários</i>
DA	Development agreement
EMURB	<i>Empresa Municipal de Urbanização</i>
EU	European Union
FAR	Floor area ratio
FLUO	<i>Faria Lima</i> Urban Operation
GO	General Obligation
LACMTA	Los Angeles County Metropolitan Transportation Authority
OODC	<i>Outoga Onerosa do Direito de Construir</i>
O&M	Operations and maintenance
P3	Public private partnership
REIT	Real estate investment trust
SEC	Securities Exchange Commission
TDR	Transferable development right
TFAR	Transfer of floor area rights
TIF	Tax increment financing
TOD	Transit oriented development
UNFCCC	United Nations Framework Convention on Climate Change
UO	Urban Operation
UWF	Urban wealth fund
ZEIS	<i>Zonas Especiais de Interesse Social</i>

CEPACs and Their Value Capture Viability in the U.S. for Infrastructure Funding

Introduction

The Trump Administration’s long-awaited infrastructure plan currently calls for \$1.5 trillion in capital injection over the next 10 years to fix aging U.S. infrastructure. The much-touted federal initiative, however, relies heavily on local and state governments and on an unprecedented level of private sector participation. For \$200-billion in federal contributions, local and state governments are expected to produce \$800 billion in matching funds, with the remaining \$500 billion set squarely on the private sector’s shoulders.

As federal and state transfers continue to be slashed, this added infrastructure burden means many local governments are likely to face dire fiscal situations for some time to come. *Truth in Accounting* reports that 9 of the 10 largest cities in the U.S. currently do not have enough money to pay their bills and, out of the 75 largest cities, 64 are also operating at a net-loss (Farmer 2017). Of the \$335 billion in total outstanding debt among these 75 cities, unfunded pension liabilities account for two-thirds and retiree health benefits account for most of the rest. Under this fiscal picture, infrastructure often takes a backseat.

Land value capture tools¹ have consistently served local governments well in the past as self-reliant revenue sources to fund infrastructure. Given the scale of the current funding needs, however, the existing tools in the land value capture tool box—be they property taxes, tax increment financing, special assessments, developer exactions, or other land use and zoning incentives—may not be enough.²

Big problems call for big solutions and big solutions require big and innovative thinking. In recent years, the U.S. governments at every level have relied primarily on the private sector to come up with new and innovative ways to solve their infrastructure problems. In part due to a deep-seated political culture regarding public asset ownership, private sector participation in the U.S. has largely been limited to public-private partnerships (P3s)—and P3s have yet to make any dent. P3s are, in essence, infrastructure delivery and financing mechanisms and do not address the problem at the core—i.e., the funding (revenue) side of the infrastructure equation.

Fortunately, or unfortunately, other countries have been well ahead of the U.S. in this regard. By engaging the private sector, several have been able to tackle the funding side of the problem head on by introducing sweeping market-based solutions to fit the seriousness of their needs. Three notable examples are Australia’s asset recycling program, Copenhagen’s urban wealth fund, and Brazil’s CePAC land value capture tool.

Over three decades ago, Australia saw the opportunity to leverage its public pension funds and steadily emerged as the world leader in facilitating private sector investments for global infrastructure needs. Capitalizing on this global infrastructure investment knowledge, its

¹ In this paper, “land value capture” is defined broadly as a policy approach that enables the public sector to recover and reinvest land value increases generated by infrastructure investment and other government actions.

² More details on each of the land value capture tools are provided in the section “CePAC Viability in the U.S.”

domestic “asset recycling” program—aimed at divesting the country’s brownfield infrastructure assets and using the proceeds to pay for much needed new greenfield infrastructure—has enabled them to generate substantial public revenue base to make a significant dent in the country’s overall infrastructure funding needs.

In Europe and Asia, especially to address the growing needs in urban areas, several countries have also chosen to inject the private industry’s financial knowledge and sophistication directly into managing their own municipal assets. Copenhagen has established a publicly-owned but privately-driven “urban wealth fund (UWF),” which operates similarly to sovereign wealth funds but at a city scale (Detter and Fölster 2017). The UWF is designed to manage the city’s publicly owned “commercial” assets—e.g., operational assets such as utilities, waste management, mass transit, airports, ports, etc., as well as real estate assets—and leverage them through the global financial market to generate much needed revenues for the city.

In Brazil, after decades of political instability under military dictatorships and transitional civilian governments, the country’s steadfast return to democracy in the 1980s triggered a true laboratory of experimentation for innovations in public policy. CePACs (*Certificados de Potencial Adicional de Construção*, or Certificates for Potential Additional Construction) are a result of this experimentation. CePACs have helped to successfully engage private capital to fund critical infrastructure needs in Brazil’s most populous cities, including São Paulo. A land value capture tool, CePACs provide a means to monetize land use entitlements by selling them as commodities that can be traded in public auctions, with the proceeds serving as a new revenue source for the local government.³

Although no specific details are provided in the current infrastructure plan, at least in spirit, the Trump administration is encouraging more innovations in private sector engagement. Asset recycling and urban wealth funds are two big solutions involving the private sector that deserve to be considered in the U.S. However, given that both of these solutions involve the relinquishing of public assets into private hands, they would likely require a major shift in political culture and encounter significant political resistance. Realistically speaking, it may be a long time before the two concepts can take any practical hold in the U.S.

In comparison, CePACs may be more amenable in the U.S. with potential applications in the nearer term. CePACs essentially represent a market-based land value capture approach that, while having similar institutional building blocks, can improve upon many of the existing land value capture tools used in the U.S.

CePACs are self-financing and have no impact on either a local governments’ debt limit or on local taxpayers’ property tax obligations. For property owners, CePACs do not impose any new special assessments or tax surcharges. For developers, CePACs provide added flexibility to spread out their financial burden from onerous exactions, especially in early stages when the risks are highest. From the investor and lender standpoint, CePACs provide new means to invest in real estate assets, enabling them to further diversify their current portfolio based on their risk-return appetites. For builders, CePACs can unleash new opportunities, both in real estate

³ CePACs are for specific targeted areas and not applied city-wide. Additional details on how CePACs work are provided in the next section.

(private) and infrastructure (public) markets. In short, when added to the current tool box, CePACs could help make land value capture solutions much more robust in addressing the critical infrastructure funding issue in the U.S., especially from the local government standpoint where the burden is the heaviest.

The primary objective of this paper is thus to examine the viability of CePACs in the U.S. in addressing the funding side of the infrastructure problem. The paper attempts to answer the following four basic questions:

1. What are CePACs and how do they work?
2. Where have CePACs been used and how effective were they as a local policy tool?
3. How does CePAC tool compare with the existing land value capture tools in the U.S.?
4. What are the potential opportunities and practical implementation challenges of using CePACs in the U.S.?

The paper concludes with a summary of findings and thoughts on potential next steps.

CePAC Defined

What Is CePAC?⁴

CePAC (*Certificados de Potencial Adicional de Construção* or Certificates for Potential Additional Construction) is an innovative market-based land value capture tool created in Sao Paulo, Brazil, in 1995. It was specifically designed to support large-scale urban redevelopment projects that are implemented through a unique legislative instrument in Brazil known as “Urban Operations” (UOs). UOs are designated redevelopment zones within a city, where local governments are given the authority to undertake major transformations with the goal of attracting private investments. To attract and incentivize private investments, UOs enable local governments to authorize land use and zoning changes that offer additional private development potentials.

Additional development potentials for each UO is determined by the maximum “up-zoning”⁵ that a city can accommodate given the capacity of existing infrastructure and potential new capital investments that could result from the UOs. Corresponding to the potential capital investments are a pre-established list of public improvements (e.g., infrastructure improvements, affordable housing, open and green space provisions, historic preservation, etc.) approved by the city for each UO. These UO “interventions”⁶—i.e., land use and zoning changes together with the pre-defined public works projects—are incorporated into the city planning process and become an integral part of the city’s overall Master Plan.

⁴ Although CePACs have been used by three major cities in Brazil, São Paulo has the longest and the most successful history of their use. The discussions in this section pertain primarily to the Sao Paulo situation.

⁵ Up-zoning involves both density changes (e.g., increase in floor area ratios (FARs) and/or building footprints) and changes in uses (e.g., from residential to commercial mixed use).

⁶ Unlike land use and zoning changes that are typically bottom-up and initiated by developers for their own benefit, “interventions” involve top-down policy changes initiated by the government with larger city-wide benefits.

CePACs are issued by cities as a means to monetize the additional development potential for each UO as generated by their up-zoning. A CePAC certificate is equivalent to a unit of developable space (typically one square meter or about 10 square feet) tied to a specific UO. Each certificate grants the buyer a development right for the unit space, which can be exercised only within the UO in which the CePAC was issued. The total number of CePACs issued for a given UO is limited and is directly linked to the total additional developable space that the UO can support in accordance with the Master Plan.

CePAC buyers are generally developers, landowners, and other investors that provide equity capital in the real estate development market. Unlike most land value capture methods, CePACs are issued upfront and their values are sometimes captured well before actual development projects take place. In return for paying for the early land value capture, CePACs offer added flexibility to buyers, who are granted vested right to execute their development projects at any time, allowing them to wait out the down cycles in the real estate market or sell the certificates in secondary markets as desired. This upfront land value capture reflects an important policy decision on the part of the government to ensure that critical public improvements, such as affordable housing, are built on time and not affected directly by delays and market uncertainties often encountered in private development projects.

For each UO that elects to use them, CePACs are sold as a financial security in the stock market through a series of scheduled online public auctions. Proceeds from CePAC auctions are used to pay for public improvements and other designated interventions identified for the UO. CePAC proceeds are deposited in a separate escrow account to ensure that they are applied towards their designated use only and not for general use by the issuing city. Although CePAC is a municipal security and often referred to as a “bond,” it is not a debt instrument per se and carries no repayment obligations for the issuing city. By allowing early land value capture, CePACs also enable the city to fund public improvements on a “pay-go” basis without having to resort to the usual deficit-based financing that can impact its debt limit.

All CePACs issued within a given UO have the same face value. This face value represents the minimum initial offering price (i.e., minimum bid price) in each auction as regulated by the government. The face values can vary significantly from one UO to another, depending on the inherent differences in property (land and/or building) values prevailing at different locations. In the event that property values vary significantly within a single UO, CePACs can be issued with the same face value but with varying unit developable space attached to the certificates.⁷ Ultimately, the final CePAC prices are market driven and set through public auctions. As previously stated, CePAC proceeds from public auctions are used to fund an approved list of intervention projects for each UO as specified in the Master Plan. These proceeds can also be used to pay for land acquisitions and expropriations associated with the projects, as necessary. Cities are also allowed to use CePACs as a pseudo-currency, which can be used to pay contractors that provide goods and services associated with relevant intervention projects (provided that the contractor accepts CePAC as payment). This type of CePAC usage is administered through closed private auctions held by cities accessible to contractors only and on

⁷ For example, using \$1000 as a nominal face value for a given UO, CePACs in a high property value section can be issued at 0.8 square meters as the unit of developable space (with an effective price of \$1,250), whereas those in a lower value section can be issued at 1.25 square meters (with an effective price of \$800).

an as-needed basis, sometimes in parallel with public auctions. If CePAC proceeds are not used immediately, cities are also allowed to invest the proceeds in the financial market to gain additional returns.

In terms of institutional responsibility, an internal agency within the issuing city (e.g., in the case of São Paulo, *Empresa Municipal de Urbanização* or EMUrb) is generally designated as the responsible party for all matters related to CePAC administration. EMUrb, for example, is responsible for managing the overall investment program within each UO—including setting the investment priorities for specific interventions, preparing for and establishing favorable conditions that can produce maximum auction returns, and compiling and managing all relevant information and data associated with all CePAC auctions. To extract maximum values from the auctions, the most critical and challenging functions of the designated agency are to closely monitor the real estate market conditions and, to the extent possible, make optimal decisions on the pricing, timing, and the issuing amount for each auction (Sandroni 2010).

To provide added credibility in the market place, two federal banks (*Banco do Brasil* and *Caixa Economica Federal*) have been designated to prepare and execute the public auctions on behalf of the issuing cities. In order to be auctioned in the stock market, CePACs must be authorized by *the Comissão de Valores Mobiliários (CVM)* (equivalent to the U.S. Securities and Exchange Commission). The CVM requires that the UOs associated with CePAC auctions be registered, that they are linked to a Master Plan approved by the issuing city, and that the issuing city provide all relevant up-to-date information (e.g., previous auction outcomes, latest property value assessments, potential environmental impacts, changes to the Master Plan, etc.) that may directly or indirectly affect CePAC prices.

To be successful, CePACs generally require a robust real estate market and well-functioning financial institutions. They also require considerable expertise on the part of the issuing city. As experienced by São Paulo (and elaborated further later in this report), there are other potential political and market challenges in their implementation. CePACs, however, also offer significant land value capture opportunities that are not often observed elsewhere, especially when combined with the compounded multiplier effect on incremental property tax revenues. Revenues from CePACs cease when additional development potentials are depleted, but incremental revenues from the property taxes recur annually and generate a lasting benefit. The potential for a secondary market development beyond the public auctions is also yet to be fully explored and capitalized.⁸

CePAC Applications in São Paulo, Brazil

The constitutional foundations underlying the use of the UOs and CePACs in Brazil are the 1988 Federal Constitution and the 2001 City Statute. The 1988 Constitution, specifically articles 182 and 183, established, for the first time in Brazil, a comprehensive legal-political paradigm for

⁸ More details on the secondary market is provided in a later section. As mentioned earlier, secondary market is triggered by resale of CePACs if the original certificate owners (be they landowners, developers or passive investors) decide not to carry out the development project themselves. Without the term limit on the certificates, such resale activities can occur multiple times until the certificate is applied towards actual development project.

urban and land development policies. Critically, the Constitution conferred the relevant governing authority to municipalities and expanded urban property ownership rights to include the larger socio-environmental responsibilities beyond private benefits alone.⁹

After some 50 years of political instability under military dictatorships and several transitional civilian governments, the steadfast return to democracy exercised by Brazil in the 1980s precipitated the creation of the 1988 Federal Constitution. The Constitution encouraged the development of a true laboratory of experimentation in Brazil for new urban planning and management concepts and processes, such as CePAC (Fernandes 2006). To a large extent, the results of such experimentation were incorporated into the 2001 City Statute (*Estatuto da Cidade* or also referred to as Urban Development Act), a federal law that operationalized the many urban land development policies outlined in the 1988 Constitution and instituted their basic regulatory framework.¹⁰

To date, CePACs have been used by three major cities in Brazil: São Paulo, Rio de Janeiro, and Curitiba. Among these, São Paulo, the largest city in Brazil, has the longest and the most successful history of using CePACs. Inspired by the creation of the 1988 Federal Constitution, in 1990, the municipal government of São Paulo established its own 1990 Constitution of the City (or *Lei Organica Municipal*). This enabled the municipal executive branch to propose UOs and the legislative branch the authority to approve each UO. Because both UOs and CePACs were new concepts, it took some time for São Paulo to establish basic institutional building blocks to be able to use the tools effectively.

The concept of CePAC was first introduced in 1995 in connection with the Faria Lima UO (FLUO). When created in 1995, CePAC was considered a debt bond (albeit mistakenly) because it was a municipal financing instrument.¹¹ Because São Paulo did not have the ability to increase its public debt at that time, they were unable to issue CePACs. The enactment of the federal City Statute in 2001 finally allowed CePAC to be formally recognized as a bona fide municipal (non-debt) instrument that could be used in all Brazilian territory. With its subsequent approval by the CVM in 2003, CePAC became a freely tradable security in the Brazilian Stock Exchange. Other institutional building blocks in São Paulo also emerged around this time. The City approved its first Strategic Master Plan in 2002 and promulgated its first set of Land Use Laws in 2004.

⁹ In some municipalities, such as Sao Paulo, innovative approach to urban property ownerships and their value capture (such as OODC and ZEIS discussed later) already existed even before 1988 Federal Constitution and served as an inspiration for the Constitution.

¹⁰ There were other activities and experimentations related to land value capture (LVC)—such as UO, *outoga onerosa do direito de construir* (onerous grant or OODC, to be discussed later), *solo creado* (created land) and operacoes interligadas (inter-linked projects)—that predated the City Statute and helped to set up the logic for the sale of the development rights associated with CePACs. Through these early LVC experimentations, developers come to recognize that it is cheaper to pay the public agency to get additional develop rights (that comes with public improvements) than pay the landowners for the same right (who profit without providing public improvements). This developer acceptance helped to facilitate the enactment of the City Statutes.

¹¹ Public sector financing is almost always 100 percent debt financing (i.e., fully leveraged with no equity at risk), where taxes and other public assets effectively serve as collaterals on the debt. Taxpayers are de facto equity holders of government investments and bear all associated risks.

The first two CePAC auctions for São Paulo were held shortly thereafter in 2004 in connection with two approved UOs at the time: the FLUO and the Agua Espirada UO (AEUO). For the FLUO, the primary intervention project was the extension of Faria Lima Avenue, a major thoroughfare providing improved access to FLUO that involved significant land acquisition costs.¹² In this instance, the City allowed the use of two land value capture methods, the CePAC and the *Outoga Onerosa do Direito de Construir* (OODC).¹³ As they were used before CePACs were approved in 2004, OODC helped to raise about 80 percent of the needed funding for the FLUO intervention. The CePAC auction in 2004 was designed to make up the 20 percent funding gap, which was comprised of the total remaining developable area of about 1.31 million sq. m. (about 14 million sq. ft.). For the AEUO, the designated interventions involved a bridge project, affordable housing provisions, and a metro line extension project. In the AEUO, CePACs were the only land value capture mechanism allowed, with a total developable area of about 4.85 million sq. m. (about 52 million sq. ft.).

Since 2004, the use of CePAC in both FLUO and AEUO has been carried out over a series of multiple auctions. In the initial phase between 2004-2009, 12 auctions were held for the FLUO (7 public, 5 private) and 14 auctions for the AEUO (11 public, 3 private). Over the course of these auctions, a steady and progressive increase in CePAC prices were observed. In the FLUO auctions, for example, the average nominal price increase in the first five years was about 35 percent over the face value, while the maximum auctioned price attained in the same period was over 90 percent above the face value. For the AEUO, the price increases were even more dramatic; the average nominal price rose almost 80 percent, while the maximum price achieved was 3.7 times the face value.

The price increases were reflective of the market adjustments that often accompany a new instrument, with the outliers being indicative of the speculative nature of the transactions. They provided important lessons for the City in setting the appropriate minimum face value for successive auctions. The relatively modest price increases for the FLUO auctions in comparison to those of the AEUO, for example, provided a practical reference point for the City to gain some insight into the issue of relative pricing when both OODC and CePAC are applied in the same area.¹⁴

As of 2017, there are a total of 14 approved UOs in São Paulo. Collectively, they cover almost 25 percent of the total available land area and are expected to affect about 30 to 40 percent of the total buildable area in São Paulo. To date, however, the City has only approved the use of CePACs in three UOs: FLUO, AEUO, and Agua Branca UO (ABUO). The rationale for this decision has, in part, been to ensure market stability. As of 2017, there have been a total of 44 CePAC auctions, primarily for FLUO and AEUO—18 for the FLUO (10 public, 8 private) and

¹² The total cost of the intervention was ultimately US\$380 million, of which two-thirds was for land acquisitions.

¹³ OODC is a broad policy tool used by Sao Paulo that enables the sale of development rights in general. In essence, however, it works very much like developer exactions (in particular, impact fees) in the U.S. CEPAC is considered a form of OODC where its value is determined by public auctions (rather than mandated by public agency as in OODC) and its application is limited to the UOs. Additional description of OODC is provided later in this section.

¹⁴ A preliminary analysis by Sandroni (2010) indicates that the revenues from CePAC auctions in the first five years, when compared to equivalent revenues from OODC, were 50 and 80 percent higher, respectively, for FLUO and AEUO after adjusting for inflation.

26 for the AEUO (16 public, 10 private).¹⁵ For the FLUO, most of the available area which could be assigned to CePACs was used up by 2010.¹⁶ There is still available area remaining for the AEUO, albeit in less desirable locations.

From a financial perspective, Table 1 demonstrates revenues generated from all CePAC transactions for FLUO and AEUO as of December 2015. While occupying less than 0.1 percent of the City’s total developable area, the two UOs alone were able to generate a total US\$2.762 billion in revenue from CEPACs. This amount represents almost 15 percent of all the public investments made by São Paulo during the period same period (2004-2015). It is also worth noting that, through private auctions, about US\$100 million worth of CePACs have been accepted by various São Paulo contractors as payments for the work they performed, in place of direct monetary compensations. Given the approval of CePAC usage for the ABUO in 2015, along with potential approvals for the remaining eleven UOs in the future, a significant additional revenue potential from CePACs still exists in São Paulo that is yet to be fully capitalized.

Table 1: Summary of CePAC Revenues for FLUO and AEUO¹⁷

Revenue Source	Faria Lima UO	Agua Espraiada UO	Total
Public Auctions	\$ 654 M	\$ 1,517 M	\$ 2,171 M
Private Auctions	\$ 70 M	\$ 30 M	\$ 100 M
Investments	\$ 171 M	\$ 320 M	\$ 491 M
Total (2004-2015)	\$ 895 M	\$ 1,867 M	\$ 2,762 M

In terms of the compounded multiplier effect mentioned earlier, a preliminary analysis of the data from the first five years indicated that the increase in property tax revenues generated from CePAC-related developments can be as much as 2.7 to 4.4 times the pre-development base level (Biderman et. al. 2006; Sandroni 2010). In addition to the rise in property prices triggered by the new developments, in the case of São Paulo, these incremental revenues were attributed to the considerable increase in density—which resulted from replacing old single-to-two-story houses with high-rise mixed-use buildings—as well as the foregoing of the property tax discounts that existed for these older houses.¹⁸

From a policy standpoint, São Paulo’s CePAC implementation cannot be viewed in isolation. An important aspect of CePAC’s effectiveness has been the City’s integrated land value capture policy both within and outside the UOs. Outside the UOs, by using the previously mentioned OODC land value capture method, the 2002 Strategic Master Plan and the 2004 Land Use Law

¹⁵ For developers, FLUO and AEUO were considered more desirable than ABUO and its demand is not expected to materialize until the CePAC supply in FLUO and AEUO are depleted.

¹⁶ With the exception of a small area that was added to FLUO in 2015.

¹⁷ The figures presented are latest updated data based on correspondences with Prof. Paulo Sandroni.

¹⁸ Up to 30 percent discount was given for houses that were 25 years or older.

enabled the City to strategically limit the total maximum buildable area for each district. Taken together, the CePACs within the UOs and the OODCs outside the UOs helped the City to achieve the three-pronged goal of (1) improving its land management efficiency, (2) promoting socially desirable land use outcome, and (3) increasing its revenue sources (Sandroni 2011a, 2011b).¹⁹

Invariably, the OODC policy outside the UOs affected the CePAC implementation within the UOs. By limiting and controlling the available areas and their locations, the OODC has had a direct and profound impact on the level of demand and prevailing market price for CePACs in each auction cycle—both positively and negatively, and as determined by the overall real estate market condition in the greater São Paulo area.²⁰ More broadly, however, the OODCs are a clear and transparent land value capture policy exercised by the City outside the UOs that—considered in concert with the clear and transparent CePAC policy within the UOs—offered much needed credibility and confidence in the private investment community. Taken together, they helped to minimize market uncertainty and volatility risks that can often accompany an unfamiliar concept. They thus helped to achieve market stability within a reasonable time frame, allowing the City to reap significant benefits that went beyond what was initially envisioned, both policy-wise and monetarily.

CePAC Policy Considerations and Challenges for Brazil

As of April 2017, after almost 15 years of CePAC implementation, there have been no major legislative or regulatory anomalies in São Paulo that ended in major lawsuits or court proceedings (Sandroni, 2017). Fluctuations in the financial and real estate markets have had varying effect on CePAC auctions, but none serious enough to impact their performance over the long run or threaten its perception as a viable municipal tool. Nevertheless, there have been key challenges and risks encountered by São Paulo from CePAC usage, especially in the early phases of CePAC implementation.

As alluded to earlier, UOs and CePACs being new and complex policy tools, one of the first challenges São Paulo had to face was establishing the basic institutional foundations at the local level. It took over 15 years—from the establishment of the 1988 Constitutional to the first CePAC issuance in 2004—to build the necessary legislative and regulatory institutional building blocks at the municipal level, including establishing basic master planning/environmental

¹⁹ As mentioned earlier, OODC basically represents developer impact fees but with much more onerous conditions than those found in the U.S.

²⁰ Briefly, the OODC mechanism outside the UOs involved applying three well-defined land use standards—i.e., minimum, basic, and maximum—to control the supply of buildable areas in each district. *Minimum use* corresponds to designated uses having social functions (e.g., affordable housing, schools, health/childcare clinics, cultural/sports facilities, etc.); *basic use* corresponds to “by-right zoning” of the property owners; and *maximum use* corresponds to the maximum potential that could be supported by existing infrastructure and potential zoning changes as allowed in the Master Plan. The City’s ultimate goal was to: (1) strategically down-zone select basic use plots to encourage transit-oriented developments (TODs), (2) permit all basic use plots to up-zone to the maximum use standard provided relevant OODC charges were paid, and (3) allow OODC exemptions where minimum use standards were applied. Importantly, unlike CePAC revenues tied to specific UOs, OODC revenues could be applied city-wide to any intervention identified in the 2002 Strategic Master Plan.

clearance processes, developing formal master/land use plans, and promulgating basic land use laws, etc., to put CePACs into real practice.²¹

In addition, as mentioned earlier, a critical part of institutional capacity building has been developing the necessary expertise both within and outside the city government to support the overall CePAC program. The use of municipal financing instruments was relatively new in Brazil, as were sophisticated land value capture methods like CePAC and OODC. In addition to City staff, a complex financial instrument such as CePAC requires a complex web of “intermediaries” to support the program, which was lacking in São Paulo in initial stages.²² In the case of São Paulo, it took at least 5 years and almost 20 auctions before City staff, property owners, developers, investors, intermediaries, and other stakeholders began to understand how CePAC really worked and became proficient at the transactional level (Sandroni 2010).

As mentioned, appropriate pricing of CePACs, the amount to be auctioned, and the timing of the auctions are all recurring challenges that are tied directly to the City staff’s internal competence. The first CePAC auction held for FLUO in 2004 was considered a huge failure because the demand, i.e., the number of CePACs sold, was only 10 percent (9,091) of the total issued (90,000). This “failure” was attributed to a number of reasons. First and foremost, there was a lack of interest in the developer community because, as mentioned earlier, most of the additional development potential in the FLUO had already been sold through the OODC mechanism, which was much cheaper than the CePAC face value offered at the auction. A general recession in the real estate market at the time of the auction also added to this lack of demand.

There was also a significant political component that led to the underperforming of the first CePAC auction for FLUO. The incumbent mayor of São Paulo, a major supporter of UOs and CePACs, had lost his re-election bid and the auction took place during the last week of his tenure as mayor. The newly elected mayor had been publicly critical about the UOs and CePACs during his campaign, causing public uncertainties about their future. Political risks are often a major stumbling block when engaging private sector investments in public endeavors. These political risks, sometimes referred to as “regulator capriciousness” by the investment community, often entail policy “flip-flops” resulting from administration changes, as was the case for São Paulo, or from reasons that are politically driven.

For CePAC, political risks can also entail politically-motivated zoning changes that deviate from land use policies outlined in the Master Plan.²³ Risk of corruption—which can involve tampering with CePAC pricing and timing of auctions, bribery, and/or other actions that disproportionately favor one interest group against another—remains a constant concern. Politically driven activities, such as these, can cause disruption and loss of confidence in the marketplace, with

²¹ Though continuously evolving, some of these basic institutional building blocks—be they related to property rights, land use and zoning, local master and environmental planning, or real estate and financial markets—have arguably been in place longer in the U.S. than in Brazil.

²² In many ways, the basic skill sets and intermediaries needed for CePAC are similar to those necessary for administering municipal bonds in the U.S. and include, for example, financial and legal advisory, broker-dealers, insurance services, underwriters, investment banks, rating agencies, market data consolidators, etc.

²³ For example, up-zoning can be used as a political tool by local elected officials to raise political funds from local developers. Elected officials can choose to overturn local planning commissions’ decisions in favor of up-zoning (as requested by local developers) but deviate from the overall master/land use plan.

detrimental effects over the long run. After the initial trepidation described above, the City has thus far been able to avoid any major politically-motivated challenges in CePAC issuance in large part because São Paulo has consistently honored the fundamental rules of engagement outlined in their 2002 Strategic Master Plan and 2004 Land Use Laws.

As expected, both real estate and financial market conditions have also impacted the CePAC program. In general, CePAC performance has followed the real estate business cycles closely. For example, aside from the 2004 downcycle mentioned earlier, the peak real estate business cycle in 2007 gave a substantial and much-needed boost to CePAC auctions. The 2008 financial crisis also had a significant impact, but CePACs fared no worse than any other financial transactions or instruments. The downturn in both CePAC demand and pricing from the crisis recovered relatively quickly with the subsequent recovery of the Brazilian economy, putting them back on track at the pre-crisis level. In some ways, the financial crisis had the effect of moderating the speculative and unusually high price bidding activities that had ensued just prior to the crisis. It can also be said that, especially in the first five years, it was difficult to separate out negative market impacts from those resulting from the City's (EMurb's) inexperience in preparing and informing the market about the auctions (Sandroni 2010).

From a public policy standpoint, the most critical challenge associated with the UOs and CePACs has been the considerable increase in property values within the UOs (both vacant land and developed areas) that caused gentrification and the displacement of poor households. In the case of the FLUO, the fact that the UO was located in a dynamic and desirable area of São Paulo attracted upper and upper-middle income residents immediately, which served as an important impetus for attracting private investments. It was found, for example, that on a per unit space basis, the market-based CePAC tool generated considerably more revenue than the OODC tool used prior to 2004, creating a significant surplus in revenue beyond what was needed for the designated intervention projects. Notwithstanding these benefits, however, the displacement of poor households was taking place even before Faria Lima was designated as an UO and it intensified significantly more after the approval.

To mitigate the gentrification and displacement issues, São Paulo formally introduced a policy instrument called ZEIS (*Zonas Especiais de Interesse Social*, or Special Zones of Social Interest), which enabled the City to declare some areas to be strictly dedicated to affordable housing. This policy helped the City actively control the property value increases and, as needed, forcibly change a given area's highest and best use. The 2002 Strategic Master Plan called for a total of 750 ZEISs in São Paulo both within and outside the UOs, representing about 31 square kilometers in total area (about 210 acres). In the FLUO, for example, a small slum (*Coliseu*) in a very highly priced land area was designated as a ZEIS. In AEUO, through the ZEIS program, the City was able to use CePAC proceeds to build 600 affordable housing units in *Jardim Edith*, a slum in one of the more expensive areas of São Paulo (Sandroni 2010).

In terms of income distribution effects with respect to the poor, CePACs have generally been considered less regressive when compared to property taxes, because the primary beneficiaries (typically in higher income brackets) are responsible for paying for the improvements. Without CePACs, the improvements would have likely been funded through the general tax base, where some part of the cost would have been paid by the poorer households (Biderman et. al. 2006). To

make CePACs even more progressive, a policy change is being considered by São Paulo to remove geographic constraints on the use of CePAC proceeds and to allow the surplus revenues to be invested more broadly on city-wide projects and on social programs that benefit the poor overall.

CePACs vs. Existing Land Value Capture Tools in the U.S.

Property Taxes and Tax Increment Financing

Property taxes can be an important form of land value capture, as tax obligations on well-functioning property tax systems are rooted on the market value of real estate. The value capture link, however, is not automatic. Rather, it depends on the enabling and administrative framework in place for the property tax. Land value increases in jurisdictions with well-functioning property tax systems should generate higher assessed values for properties near planned public investments—and such taxation does capture value from private entities for the public sector.

However, limits on value assessments or increases can restrict the property tax's ability to capture value. Many communities use tax-increment finance (TIF) to promote economic development by earmarking property tax revenues from increases in assessed values within a designated district.²⁴ Though not by itself an additional means of land value capture, TIFs can similarly direct a portion of increased land values captured by the property tax toward specific public purposes.

Prior to the 1970s, local governments in the U.S. enjoyed an elaborate infrastructure funding scheme—a combination of federal grants (for water and sewer systems), state grants (for roads and schools), and local bond issues (for the rest) (Fulton and Shigley 2012). At the time, property taxes were the local revenue workhorse for infrastructure and mostly paid for the debt service on the local bonds. The growth in property tax revenues from general increases in property values were sufficient to cover timely capital investments needed to accommodate the growth resulting from the rapidly changing economic and demographic landscape.

To a large extent, however, the virtual elimination of local grants, a steady decline in intergovernmental transfers, and the slashing of local property tax rates across the country²⁵ that subsequently ensued have since dispelled the long-held notion that growth pays for itself. Despite significant reductions, property taxes still make up the largest portion of local revenues

²⁴ TIF revenue source is predominantly property tax-based but, in limited instances, sales or incomes taxes are also used. For securing early financing, TIF bonds can generally be issued early backed by the anticipated earmarked revenue but only when the assessed value appreciates by a threshold amount above the base value (e.g., 25 percent in the case of California).

²⁵ Substantial increase in property owner tax burden that resulted from hyperinflation combined with the unprecedented rise in property values resulted in subsequent trend to cut property taxes throughout the U.S. In California, for example, with the passage of Proposition 13 in 1978, the local property tax revenues were cut as much as two-thirds.

in the U.S. and represent one of the key public funding sources for local infrastructure.²⁶ Increasingly, as local communities engage in “fiscal zoning”—i.e., encouraging tax-rich commercial developments while discouraging tax-poor residential projects—sales tax revenues are becoming an important source of local revenue.

Introduced in California in 1952, the TIF has gained greater prominence over the last two decades and is now widely adopted by local governments in the U.S.²⁷ TIF has historically been advocated as self-financing because the basic property tax rate remains unchanged in the district and only the incremental revenues are allowed to be diverted, leaving the pre-TIF tax revenues to continue to be distributed to the local government. Generally, TIF earmarks also end when the investments are paid off and the incremental revenues then get reverted back to the local government in perpetuity. As mentioned, TIF was originally intended as an economic development tool for “blighted” neighborhoods. As this usage is still common today, the self-financing aspect adds to its popularity because it is preferred to more traditional economic development funding mechanisms, such as tax incentives, enterprise zones, and other direct subsidies that often add to public sector deficits.

A great deal has been written about different aspects of TIF. Past analyses have included both fiscal and economic outcomes, and impacts both within and outside the TIF districts. Overall, the performance assessments of TIF as an effective land value capture tool have been mixed at best. Evidence from past studies indicate that, in aggregate, there is some positive association between TIF districts and growth in property values. However, it has also been found that TIF is likely to result in a net financial loss to local governments, and taxpayers generally have to subsidize the projects (Greenbaum and Landers 2014).

The use of TIF has also been both over-extended and over-leveraged; reasons which precipitated its demise in California. Many cities in California used TIF-funded redevelopment so aggressively that they diverted significant property tax revenues from other taxing entities—particularly from the State, where even public education funding was put at risk (Lefcoe 2014). In general, the tendency has also been to over-inflate the incremental revenue projections to help secure the upfront financing, which frequently resulted in large and mounting TIF debts for local governments.²⁸

Misaligned incentives were another cause for the over-extension and over-leveraging. Due to the complexity of TIF financing, there was a need for an “expert advisory community” mostly made up of development professionals and financial intermediaries. Because public officials and city

²⁶ Today, about 30% of local revenues are from property taxes. The remaining sources are divided between sales taxes (6%), federal and state transfers (30%), and others (currently at about 20%, a growing portion of “other” category is user-based charges from utilities, tuitions, various licensing activities, and others such as developer impact fees). In general, local incomes tax revenues are a tiny portion of the total revenues (Marlowe 2014).

²⁷ As of 2017, the number of states that allow TIF increased from a mere eight in 1970 to all except for two states—Arizona repealed its TIF legislation in 1999 and California ended its use in 2012 (Greenbaum and Landers 2014). The percentage of urban land with TIF districts has historically varied widely from 10% for cities in Iowa, to 30% for the City of Chicago, to as much as 50% for several major cities in California (Pacewicz 2012).

²⁸ In some cases, the TIF debt reached as much as 3.5 times the annual property tax receipt requiring the local government to divert a significant part of their property tax revenues to service the TIF debt (Pacewicz 2012).

staff, the ultimate TIF decision makers, lacked the necessary knowledge to understand the TIF mechanics, they relied on these expert advisors, who had a vested interest in its continued use.²⁹ Directly or indirectly, many of these intermediaries also had vested interest in the development projects themselves and often pitched TIF as an easy “self-financing” solution that could withstand both political and fiscal scrutiny (Pacewicz 2012).

Whether they use general obligation (GO) or TIF bonds, local governments rely on the same property tax base for capital investments. For both, if revenues fall short of the projections, the local government and taxpayers are ultimately beholden to any residual repayment liabilities. In many respects, however, TIF bonds are less secure than GO bonds because, under GO bonds, multiple tax sources can be tapped as deemed necessary (including tax increases) to defease the liabilities whereas, under TIF, property tax rate is fixed with no other revenue sources available.

Comparing TIF and CePACs

From the land value capture perspective, TIF is primarily a financing (not funding) mechanism, which can be very limited in its efficacy. Especially when revenue projections fall short, which, as mentioned, is often the case, TIF is no longer self-financing and *does* impose significant burden on both the taxpayers and the public debt limit. TIF is also a “passive” tool in that there is no guarantee it will generate any revenues to pay for needed public investments.

In comparison, CePACs represent an “active intervention” tool that creates entirely new and non-traditional land value capture revenue sources that neither involve taxpayers nor the government. Based on the São Paulo experience to date, CePACs can also generate significant revenues (and often surpluses) and become truly self-financing unlike TIF. With CePACs, the risk of over-extension and over-leveraging closely identified with TIF also has not been a concern. The supply of CePACs are controlled carefully by the government and the market demand is managed through well-timed public auctions. The overall process is administered by a dedicated public agency with a knowledge base that accumulates with each auction.

Special Assessments (Betterment Levies)

With origins tracing as far back as medieval Europe, special assessments are one of the most traditional method of land-secured financing, wherein funding for public service within a geographic district is provided by property owners in the district who benefit directly from the service. Until the Great Depression in the 1930s when the federal government stepped in, special assessments were responsible for financing much of the public infrastructure in the U.S. to support urban and suburban development.

Instead of property value-based payment, as is the case for *ad valorem* property taxes, an assessment district typically requires property owners to pay based on the *benefit* each property receives from public improvements. Assessments levied must be proportional to the special benefits each owner receives. Land Value capture here is thus *non-ad valorem* and property

²⁹ Over the years, TIF financing has become increasingly “creative” and complex, where both property and sales (and, sometimes, income) tax receipts are securitized to create structured bonds not only to pay for new improvements but also to retire existing infrastructure debts.

value appreciation is generally inferred indirectly through the assessment of specific benefits. For this reason, as is the case in most of Latin America, special assessments are alternatively referred to as betterment levies, betterment taxes, or betterment contributions (Borrero Ochoa 2011).³⁰

In the U.S., starting in the 1970s, with the sharp decline in local property tax revenues coupled with public schools taking priority in public spending, the use of assessment districts by local communities to fund infrastructure became much more prevalent. In general, special assessments can be used to finance both construction and operations and maintenance (O&M) of capital improvements, as well as public services such as police and fire protection. Traditionally, most special assessments have also covered improvements with benefits that are considered both (1) “special” (e.g., streets, sidewalks, storm drains, sewers, and utilities within the assessment district) that provide *direct* benefit to the district and (2) “general” (e.g., arterial streets, parks, schools, libraries and other outlying infrastructure) that provide broad *community-wide* benefits both within and outside the district. Unlike taxes, special assessments generally do not require voter approval.

In addition to their common use in residential communities, special assessments have also been used to support major business and shopping centers. Starting in the early 1990s, many states allowed the creation of business improvement districts (BIDs) to levy assessments on businesses and real property within the districts to pay for extra services (e.g., street cleaning, trash pickup, policing, other services to attract foot traffic). These BIDs were generally directed by a local business advisory group and services were often outsourced to private contractors.

Major rail transit systems have also been funded through various forms of assessment districts (Maier and Jordan-Tank 2014). In Washington D.C., for example, two special assessment districts have been established to help finance the new Metrorail Silver Line designed to connect the fast-growing northern Virginia area with Dulles International Airport and beyond. Also, Los Angeles County Metropolitan Transportation Authority (LACMTA) has been granted the authority to create assessment districts around stations on their new rail transit lines. LACMTA can issue bonds backed by special assessments and the bond proceeds can be used to pay for specific stations and related facilities. Throughout the U.S., special assessments are also being used more frequently to fund public improvements that support TODs near stations.

In many cases, with the decline in property tax revenues, special assessments have been used in conjunction with developer exactions (to be discussed later) to pay for infrastructure. Starting in the 1970s, along with special assessments, local governments in the U.S. also began to lean heavily on developers to pay for infrastructure, which often resulted in legal disputes. Instead of resorting to expensive court proceedings, a reasonable compromise has been for developers to assume some responsibility to pay for public works and for local governments to help create assessment districts to supplement the upfront cost by issuing bonds. Public bonds secured by special assessments are tax-exempt and provide much cheaper financing than a private bank loan. This compromise has helped developers pass on some of the costs to home buyers while

³⁰ In Latin America, betterment levies are one of two most common land value capture tools used successfully in countries such as Colombia (the other tool being building rights charges, such as the OODC and CePACs, both used successfully in Brazil).

avoiding having to draw down on their limited capital in early stages of project development (Misczynski 2012).

Historically, due to the rapid expansion of assessment districts and increasing financial burden on local property owners, there has been a great deal of general resistance to special assessments. As a result, some of the most of critical decisions—e.g. assessment area of influence, type of facilities and services to be covered, the definition of general vs. special benefits, the amount of assessment levies and collection period, etc.—have been determined through court actions and often on a case-by-case basis. In response, certain states have introduced new regulations to make special assessments more restrictive and challenging.³¹ For example, local property owners might consider special assessments as disguised taxes³² and demand a public vote, which can (and has) result in the establishment of a two-third voter approval requirement (Fulton and Shigley 2012). The public hearing and notification process for authorizing an assessment has become much tougher, as a result.

The most difficult challenge associated with special assessments has been the assessments of benefits themselves. The general trend has been that more rigor is required in the analysis of the benefits, in particular in differentiating between special vs. general benefits, and that the burden of proof must fall on local governments. Increasingly, the bases for special assessments are also being confined to “special” benefits that are unique, measurable, and direct to the assessment district itself (e.g., sewer lines, sidewalks) and exclude “general” community-wide benefits beyond the district (e.g., parks, open space).

In California, in part to relieve the restrictiveness of special assessments, a unique hybrid was created under the Mello-Roos Community Facilities Act of 1982.³³ This Act provided an extremely flexible revenue source for financing public improvements. It allows local governments to create community facilities districts (CFDs) that are empowered to levy a special tax—a *non ad valorem* tax surcharge as opposed to a special assessment—on land within the districts, thus creating a dependable revenue stream for infrastructure funding. The revenue stream can be used to issue tax-exempt CFD bonds (referred to as “Mello-Roos” bonds or, more commonly, “dirt” bonds) and finance infrastructure improvements without the restrictions traditionally imposed on special assessments (CDAC 1992).³⁴ Local governments in California have relied on Mello-Roos levies for many years and, by most accounts, the tool has been successful.³⁵

³¹ For example, Proposition 218 enacted in California in 1996 imposed new requirements on special assessment districts, including two-third voter approval, a more stringent public approval process, more rigorous assessment of special vs. general benefits, and placing the burden of proof responsibility on local governments’ shoulder.

³² The difference is that taxes are used to pay for all public improvements, whereas assessments are used to pay only for certain improvements that benefit the assessment district.

³³ Named after the two lead legislators Senator Henry J. Mello (D-Watsonville) and Assemblyman Mike Roos (D-Los Angeles).

³⁴ CFD bonds can be used to finance the construction, expansion, rehabilitation, or acquisition of any real or tangible property with an estimated useful life of five years or more. Their use has been less extensive in developed areas due to the two-third voter approval requirement.

³⁵ A CFD formation requires a two-thirds majority vote of residents living within the proposed boundaries. Where there are fewer than 12 residents, however, the vote is instead conducted only of current landowners. For this reason,

Because of the reliance on court rulings, the determination of assessment levies have varied greatly in the U.S. The levies have generally been based on a joint consideration of assessed benefits and the cost of improvements. In most states, legislation has also been introduced to address the levy affordability issue, granting exemptions or deferments for people with limited financial resources. However, when compared to other countries that have adopted the special assessment tool, there has been a general lack of guidelines in the U.S. in determining the assessment levy and the methods have been less sophisticated and arcane when compared to those used, for example, in Latin America.³⁶

Comparing Special Assessments and CePACs

As a land value capture tool, CePACs and special assessments share some similar features. They both represent an “active” intervention in that new revenue sources are identified over and beyond the reliance on taxpayers and local governments’ general fund. In addition, the beneficiaries are directly responsible for the public investments from which they benefit. CePACs, however, do not carry some of the restrictions associated with special assessments.

As discussed, there are several critical limitations to special assessments. For one, the willingness of property owners to pay is often limited and the assessments themselves are sometimes not sufficient to cover the public investments needed. More importantly, benefit assessments are highly contested and often lead to legal proceedings. As a result, the determination of the assessment levy is an art often left to prevailing local political forces. In the case of CePACs, there are no mandated levies on property owners and no assessments are needed with regard to the benefits, whether special or general, nor to the appropriate level of assessment levy. Effectively, under CePAC, the property owners participate as CePAC buyers and the price they pay for needed public improvements are voluntary and determined by the market at the time of public auctions.

Developer Exactions

Developer exactions are the financial responsibilities local governments place upon developers to provide some or all of the physical improvements necessitated by their development projects. Exactions generally involve new developments and are closely linked to local government approval of development projects. They are imposed as conditions of approval at major project

Mello-Roos applications have been much more prevalent in new developments in sparsely populated areas and very limited in urban and densely populated setting with diverse and large voter base.

³⁶ The use of special assessments, or betterment levies as they are called, have been especially successful in Latin America, in part due to more formalized approach to determine the levy. In Columbia, for example, its law stipulates three basic parameters to be used to guide the calculation of the betterment levy—the construction cost of the improvements, the value added to properties that can be attributed to the project, and the affordability of the levy (i.e., the capacity of the property owners to pay) (Borrero Ochoa 2011). The law also states that the upper bound of the levy should be the lowest of the three parameters. In using these guidelines, local governments have found that defining the area of influence and measuring project benefits can be the most challenging tasks in collecting the betterment levy. As a result, they each had to devise their own methods to fit the local needs. Interestingly, Bogota and other cities in Columbia have observed a higher compliance with betterment levies when compared to property taxes even though the levies have generally been higher, indicating that there is a clear link between the benefit and the willingness to pay.

milestones—for example, when developers seek land use entitlements or land subdivision approvals³⁷ (for purposes of selling, leasing, or financing their projects for entire subdivision) or when building permits are issued (for specific property).³⁸ Because most exactions are collected at the project outset, the tool provides the benefit of “concurrency” with respect to when most of the funding is available and when most of capital expenditure is needed to build public improvements.

Developer exactions were first adopted in the U.S. in the 1920s by cities seeking new infrastructure financing alternatives. Initially, exactions were primarily in the form of developers’ dedications of land—e.g., for streets, sidewalks, utility easements—involving the transfer of land ownership to a local agency. Many more complex forms of exactions have since emerged, most of which can be categorized into three basic groups—(1) dedications of public land, (2) provisions of public infrastructure (construction and/or maintenance) or public service (e.g., policing, fire protection), or (3) various forms of in-lieu fees (e.g., tap fees, linkage fees, or impact fees).

By far, in-lieu fees, especially impact fees, are the most common form of developer exactions. Impact fees are associated with cost of any incremental public service capacity necessitated by new developments and include a wide range of infrastructure improvements and services. Tap fees generally represent utility connection fees (e.g., water, sewer lines), whereas linkage fees are typically associated with large-scale new developments (e.g., commercial, industrial, multi-family) to pay for the secondary effects, such as offsetting traffic increase or providing affordable housing. Both tap fees and impact fees are determined based on costs, whereas linkage fees are based on property sales price.

Starting in the 1970s, the use of developer exactions began to increase, especially those associated with impact fees. Today, the use of impact fees is most prevalent in the southern and western regions. A recent survey indicated that nearly 1,000 local governments across the U.S. use impact fees to raise infrastructure funding in order to support new developments (Burge 2010, 2012). In Florida, for example, impact fee revenues have increased tenfold over the past two decades (Burge 2010, 2012). Over the years, local governments have been wielding progressively more power to expand exactions to include both on-site and off-site improvements, e.g., from environmental (sewer, storm water runoff) to new roads, new interchanges, more schools, affordable housing, and other provisions such as child care, parks and recreational facilities, public art, etc.

Exactions are imposed on developers and have very different characteristics than taxes and assessments, which fall on the property owners. Generally speaking, exactions are also voluntary and negotiated and not mandated like special assessments or property taxes. The legal basis for exactions is found in local governments’ police power, one of the trinity of powers that

³⁷ Subdivision power and regulations are integral part of local governments’ land use planning and zoning ordinance.

³⁸ In some cases, especially for utility connections, additional fees are also collected when certificates of occupancy are issued upon final inspection.

distinguish government from private organization.³⁹ Exactions represent an exercise of police power because, when properly applied, they engender a legitimate governmental (public) interest. The process of exactions can be derived generally from local master (or comprehensive) plans and, more specifically, from local zoning ordinances (and associated subdivision regulations and approval process).⁴⁰

Because developer exactions have always been contested, local governments' ability to collect exactions have often been determined by lawsuits and court rulings. In recent decades, unlike earlier decades, the trend has been that courts have generally leaned in favor of a stronger legal right to property owners and forced local governments to moderate their once aggressive regulatory position on exactions. The two most important legal aspects to exactions have been (1) the constitutional arguments against zoning—i.e., due process, equal protection, and just compensation (also referred to as the “takings” or eminent domain clause)⁴¹—and (2) rational relationship test to justify exactions—i.e., essential nexus, rough proportionality, and reasonable relationship tests.

Due process guarantees involve both procedural (e.g., whether appropriate notice, proper hearing, timely permitting have been given) and substantive (i.e., whether zoning is a legitimate use of the police power) issues. Under equal protection, the primary issue has been whether a zoning ordinance favors certain property owners over others. The most contentious and difficult legal challenge regarding zoning and exactions, however, has been the just compensation clause. The constitutional protection against taking property without just compensation usually applies to situations where a government agency physically takes a property (i. e., eminent domain). Additional complexities arise, however, when a “regulatory taking” occurs where the government imposes (1) a regulation (e.g., downzoning) that limits the owner's use of that property or (2) exactions or fees on specific groups to pay for an improvement that benefits not only the group but the larger public (Rappa 2002).

In addressing regulatory takings related to exactions, two landmark cases have generally guided local governments in providing their justification and accountability —*Nollan v. California Coastal Commission* (1987) and *Dolan v. City of Tigard* (1994). These two cases have established that, in order to collect exactions, (1) there needs to be a direct relationship between the project proposed and the exaction required (referred to as the “essential nexus” test per *Nollan*) and (2) the exaction must be roughly proportional to the impact created by the project (referred to as “rough proportionality” test per *Dolan*). In California, the *Ehrlich v. City of Culver City* (1996) case also helped to establish an additional and more inclusive test for exactions by reconciling the elements of the essential nexus/rough proportionality test with the pre-*Nollan/Dolan* reasonable relationship test that had been codified into the state legislation.⁴²

³⁹ The other two are the authority to tax and the power to take property under eminent domain. Police power permits local governments to restrict private activities in order to protect public health, safety, welfare, and public morals.

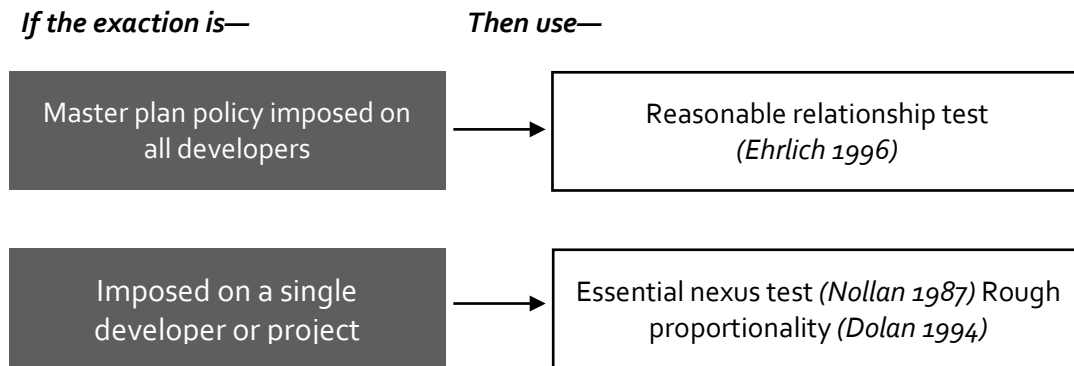
⁴⁰ Legal basis for exactions can also be established as part of capital improvements plan or environmental clearance and approval requirements.

⁴¹ Due process clause is contained in both the 5th and 14th amendments of U.S. Constitution, equal rights clause in the 14th Amendment, and just compensation or takings clause in the 5th Amendment.

⁴² In *Associated Home Builders v. City of Walnut Creek* (1971), the California Supreme Court ruled that an indirect relationship between the proposed project and the exaction was legally acceptable. This “reasonable relationship”

Figure 1 provides a broad rational relationship test guideline for exactions as relates to these landmark cases (Fulton and Shigley 2012). As shown, the reasonable relationship test is sufficient for exactions that are imposed on all developers as a part of broad policy scheme, whereas the stricter essential nexus and rough proportionality test should be used when exactions are imposed on a single developer.

Figure 1: Rational Relationship Test Guidelines for Exactions



More recently, *Koontz v. St. John River Management District* (2013) further clarified *Nollan/Dolan* decisions. *Koontz* essentially leaned further in favor of property owners/developers by expanding the application of *Nollan/Dolan* test to include (1) monetary exactions as well as exactions of land and (2) cases where permits are denied as well when permits are granted. More importantly, while making it clear that *Nollan/Dolan* tests are applicable for adjudicative exactions (i.e., pertaining to individual parcels), *Koontz* left open their applicability to legislative exactions (i.e., pertaining to entire areas of cities) for lower courts to resolve (Wake and Bona 2015).⁴³

Local governments often commission “nexus” or fee studies to develop a quantitative and legal basis for the imposition of impact fees, while also demonstrating the required nexus. There is shockingly little uniformity in impact fees, however, due to the widely varying level of concessions provided by developers that often depend on the local political and economic climate (Fulton and Shigley 2012). In rural and growth-hungry areas, impact fees have generally remained minimal. In fast growing areas, however, impact fees (especially when combined with assessments) have sometimes reached as high as 20 percent of the property sales prices (Dresch and Sheffrin 1997). In a robust real estate market, developers and builders have simply passed the fees onto property buyers, whereas in a down-cycle, they have been willing to assume some of the costs so as to lower the price and remain competitive.

test was codified in California legislation AB1600 (1989), which is designed to set legal and procedural parameters for charging developer impact fees.

⁴³ Legislatively imposed exactions, for example, include affordable housing and open space provisions. If lower courts rule in favor of *Koontz* for legislatively imposed exactions, such decision could potentially make linkage fees for affordable housing vulnerable.

Because exaction decisions are often left to the judicial system, they can become quite expensive and inefficient as a result, incurring transaction costs that are non-productive from both the government and developer perspective. Exactions can also add considerable cost to new developments and can have varying impacts on the overall property value. For undeveloped land under residential and commercial zoning, a recent study (Burge 2010, 2012) indicated that property value impacts can vary depending on who ultimately bears the burden of the exactions. For example, the study found that school impact fees, which are paid by residential (but not commercial) developers, increase the value of commercially-zoned parcels in part because the fees reduce the reliance on property taxes and lower the financial burden on commercial interests. The study also found that impact fees paid by commercial developers lower the value of commercially zoned undeveloped land, whereas impact fee associated with utility systems that apply more universally are found to have a uniformly negative influence on land values in general (Burge 2012).

Comparing Developer Exactions and CePACs

Among all the land value capture tools that exist in the U.S. today, CePACs can be most likened to developer exactions. They are both founded on value capitalization of development rights and land use entitlements. They are both voluntary and not mandated. And they also share the benefits of concurrency where the value is captured early on when the capital investments are most needed.⁴⁴ In both cases, the primary financial burden is on developers and landowners. Accordingly, depending on the real estate market condition, some or all of the burden can be passed onto the ultimate property owners if and when the development projects proceed and reach their beneficial conclusion. In comparison to exactions, however, CePACs allow for the risk of financial burden to be shared across a wider community of private investors (provided, of course, there is sufficient market demand from investors), especially in early stages when the project risk is the highest. This early and wider risk sharing can help minimize the potential developer bankruptcy risk often associated with high levels of exactions or assessments.

More critically, however, because CePACs rely on development rights and land use entitlements that are founded on property rights and zoning regulations, the tool would be subject to the same legal bases as developer exactions—in particular, takings/just compensation clause and essential nexus/rough proportionality test per *Nollan/Dolan/Koontz*. At minimum, CePACs would be no worse than exactions and may be subject to the same legal precedents as exactions. More than likely, however, CePACs could potentially face less legal scrutiny because the financial burden is effectively determined by the demand-supply dynamics of the market. Compared to exactions, CePACs would also be less likely to be subject to direct political influence or perception of coercion because there is no “taking” per se and “just compensation” is determined by free market conditions. As mentioned, the usage of CePACs is also explicitly linked to a specific geographic zone and the needed public improvements are clearly established in the Master Plan

⁴⁴ As mentioned earlier, benefit of concurrency is related to having most of the funding available when most of capital expenditure is needed to build public improvements, allowing pay-as-you-go financing and without incurring unnecessary financing costs. Property taxes, TIFs, and special assessments are all imposed after development projects are complete and occupied by property owners and, often, there is a lag in infrastructure provisions due to the delay in funding availability.

well ahead of time. Accordingly, establishing “essential nexus” is a prerequisite to CePACs and “rough proportionality” would again be determined by the market.

It is important to note that CePACs represent “incremental” development rights over and above the by-right zoning. While CePACs create new development potentials through new zoning regulations that are offered in the free market, the existing property owners’ “by-right” development rights based on existing zoning ordinance are still in effect and honored. Because they are market-based, when compared to exactions, it can also be said that CePACs provide more bargaining space and flexibility, and potentially less cause for legal action when compared to the bilateral situation under exactions. Notwithstanding that the U.S. is much more litigious than Brazil, the São Paulo experience has seen no major CePAC-related lawsuits since the first auction in 2004.

Insofar as the effect of CePACs on overall property values, there is currently insufficient data to determine their comparative performance to exactions based on their usage in Brazil. Nonetheless, the São Paulo experience thus far indicates that the property value impacts have generally been positive and no negative impacts have been observed—at least not due to who assumes financial burden, as was found by Berge (2012) in the case of impact fees in the U.S. discussed above.

Contract-Based Tools: Development Agreements and Community Benefits Agreements

There are currently two land value capture tools in the U.S. that are based on negotiated contracts—development agreements and community benefits agreements—that provide a more flexible and less litigious means to land value capture when compared to other tools discussed above. Each serves very different and specific needs for infrastructure funding. The recent proliferation of these contract-based tools has occurred rather quickly and with little debate, in part due to their undeniable benefits (Selmi 2011).

Development agreements (DAs) are voluntary contracts negotiated between local governments and developers that provide legally binding assurances on both sides. Under DAs, developers promise to make large upfront investments on infrastructure and, in return, local governments agree that land use and zoning regulations that apply to the development projects will not change during the term of the agreement. Although they can be used for smaller projects, DAs can be most effective for large scale development projects that will be implemented in multiple phases over a long term. First introduced in California in the 70s, the need for DA was in part triggered by the onerous new requirements for “vested rights” set by the so-called *Avco* case.⁴⁵ The court ruling required that the vested rights should not be granted until much later in the development process after substantial investments have been made by developers, leaving developers more vulnerable to changes in requirements and other discretionary approvals.

⁴⁵ A vested right is the property owner’s irrevocable right to develop his or her property that cannot be changed by future growth restrictions or other regulatory reversals. The court ruling on *Avco Community Developers v. South Coastal Regional Commission* (1976) case imposed much harsher requirements, where vested rights can be granted to property owners only after they obtain building permits and made substantial investments on their development project. In an attempt to soften the impact of *Avco*, the California legislature subsequently established the development agreement law in 1979 (Government Code § 65864 et seq.) (Barclay and Gray 2016).

In exchange for large-scale infrastructure provisions, DAs make it easier for developers to obtain vested rights. By locking in their entitlements through these vested rights, it is also easier for developers to secure financing. In general, DAs must conform to local master (comprehensive) plans and are often processed concurrently with master (comprehensive) plan amendments. DAs can also be accompanied by specific plans that essentially establish a special set of development and zoning standards for the project. In general, DAs are exempt from the *Nollan/Dolan/Koontz* nexus and rough proportionality test, allowing local governments to negotiate large concessions from developers that exceed what they would have obtained under normal circumstances.

DAs have been particularly popular in rapidly growing areas. In California, for example, DAs were the cornerstone of the Foothill Circulation Phasing Program, often cited as a successful DA example, where 19 developers in Orange County agreed to provide more than \$250 million for public improvements in exchange for the vested right to build their projects (Irani et. al. 1991). While the number of states that authorize the use of DAs is still limited, their use has been expanding rapidly in those states where they are allowed. In Washington, for example, there are currently multiple ongoing DAs involving both small and large complex projects ranging from cleanup and redevelopment of a contaminated riverfront site to a 1,200-acre phased, master-planned community that includes affordable housing targets and significant open space (MRSC 2018).

From the local government perspective, DAs can facilitate master (comprehensive) planning and long-range planning goals, help secure commitments for infrastructure, provide public benefits not obtainable under the regulatory takings doctrine, and help avoid administrative and litigation expenses (Selmi 2011). In contrast, the popularity of DAs in the developer community suggest that developers highly value the certainty afforded by vested rights and are willing to pay an extraordinarily high price to acquire this certainty.

Thus far, some of the key criticisms against DAs have included the need for greater public participation and transparency, concerns about local governments voluntarily relinquishing their ability to change regulations, and the use (or misuse) of DAs to strong-arm the exactions to the detriment of developers (Selmi 2011).⁴⁶ Also, when the DA term is long,⁴⁷ recognizing DAs' vested rights as currency, developers often sell the projects before they are built, bringing in new owners who may want changes in the original plan. As a result, the lack of a framework for renegotiation (and appropriate terms and conditions for amendments, extensions, and terminations) has also been identified as an area of concern (Fulton and Shigley 2012).

Introduced in the late 1990s, community benefits agreements (CBAs) are voluntary contracts negotiated between local community groups and developers that can be initiated by either or both parties. Compared to other tools, the CBA concept is still in its infancy in the U.S. and is a relative newcomer to the land value capture tool box. Similar to DAs, CBAs enable developers

⁴⁶ Selmi (2011) also raises questions about reconciling the public law of land use with the private law of contract and identifies six potential long term effects associated with the use of DAs—including, e.g., circumventing constitutional restraints designed to prevent local government from leveraging its monopolistic land use authority or increasing the likelihood that local governments will not treat similarly situated applicants equally—and suggests the need for further legislative oversight of DAs and other land use based contracts.

⁴⁷ The term of DAs can sometimes be as long as 30 years or more.

to agree to provide specific amenities and/or mitigations that benefit the local communities or neighborhoods. In exchange, local communities provide their support (or at minimum, their acquiescence) for the proposed development projects. The promise of community support can be especially useful for developers seeking timely project approvals or government subsidies (Salkin and Lavine 2007/2008). For developers, in addition to helping to avoid long delays, CBAs also help reduce the possibility that their projects may ultimately be denied altogether. Similar to DAs, the existence of CBAs can also make it easier for developers to secure financing.

The local community signatory to CBAs are typically coalitions of community groups that incorporate a broad array of local stakeholders, often including local residents (across income spectrum and ethnicity), representatives from labor, environmental, and religious organizations, and affordable housing advocates. Many CBA provisions are inspired by social justice issues and driven primarily by social programs and secondarily by local infrastructure needs. In the past, social program provisions have generally included living wage requirements, local hiring goals (including minority hiring minimums), job training programs, and funding for various community services and programs (e.g., child care, small and local businesses set-asides). Infrastructure related provisions have most importantly included guarantees for affordable housing, which are often supplemented further with other community service support facilities (e.g., parks and recreational facilities, community centers, day care centers, youth facilities, job training facilities, etc.).

In states that authorize DAs, CBAs have often been incorporated into DAs, which helps to increase both transparency and enforceability of CBA contracts. Although the use of CBAs have generally been more ubiquitous than DAs in terms of the number of states that use them, their performance outcomes have been much more mixed in comparison (Salkin and Lavine 2008).⁴⁸ For one, the legal environment surrounding CBAs is untested and there are concerns about their enforceability in the court of law. When not combined with DAs, CBAs are considered enforceable only by contracting community groups. There has also been concern about the legitimacy of community representatives for purposes of negotiating on behalf of the public. More broadly, because CBAs are also considered as an economic development tool, questions have been raised regarding the effectiveness of CBAs as a land value capture tool in the context of the larger redistributive effects, such as social equity and poverty reduction (Wolf-Powers 2012).⁴⁹

Comparing Contract-Based Tools to CePACs

DAs are, in essence, an expanded form of developer exactions, and the previous discussion on the merits of CePACs relative to exactions still applies. In many respects, CePACs are much closer to DAs than regular exactions and share the same incremental benefits identified above—

⁴⁸ According to a recent study, states that have used CBAs have included, in addition to California, Colorado, Connecticut, the District of Columbia, Louisiana, Minnesota, New Jersey, New York, Pennsylvania, and Wisconsin (Salkin and Lavine 2008).

⁴⁹ Wolf-Powers (2012) suggests that CBAs' effectiveness should be viewed from local governments overall land value capture policy goals and treat CBAs' ability to mitigate negative impacts (through just compensation) as distinct from their use as an instrument to pursue redistributive goals. Wolf-Powers also suggests the importance of identifying legitimate claimants to the value created when the public sector takes actions that increase the worth of private property.

i.e., facilitating long-range planning goals, securing large infrastructure funding commitments that are not obtainable under normal processes, increasing flexibility to be able to bypass the regulatory takings doctrine and essential nexus/rough proportionality test, and minimizing litigation expenses. CePACs can also alleviate most of the key criticisms against DAs. For example, basic processes underlying CePACs, including public auctions, are completely transparent. CePACs are also market driven and no strong-arming of developers or investors is necessary to generate revenues.

The most critical commonality between CePACs and DAs is the vested rights requirement. As mentioned, the additional development rights linked to CePACs are vested in perpetuity until they are sold. Just like developers who were party to DAs in the U.S., the value of the vested rights as currency have been clearly recognized by local governments in Brazil. In exchange for voluntarily relinquishing their police power and ability to change regulations, CePACs enabled local governments to capture and monetize the value of vested rights to the maximum extent possible. The fact that CePACs are tradable assets also provides added flexibility, as is the case for renegotiation provisions in the context of DAs.

Although CBAs are not specifically designed for raising infrastructure funding, the concept can be an important tool that can complement CePACs. The use of CBAs in conjunction with DAs is very similar to the CePAC-ZEIS pairing present in the São Paulo case. Just like ZEIS, a CBA-like tool can be used in conjunction with CePACs to ensure provisions for affordable housing and other facilities that support critical social programs.

Other Land Use and Zoning Regulatory Incentives

Development projects, large and small, often require changes in zoning. These zoning changes range from those that are considered minor and will likely *not* require master (comprehensive) plan amendments (e.g., variances, non-conforming uses, conditional use permits (CUPs), spot zoning, etc.) to those that are considered major (e.g., changes in density, height, and/or land use restrictions) and *must* be accompanied by master (comprehensive) plan amendments. Local governments frequently use these zoning changes as an incentive to enhance the effectiveness of the various land value capture tools discussed earlier.

Outside of the master (comprehensive) planning process, major zoning changes are often initiated by developers and, more often than not, granted approval by local governments. In general, the zone change approval rate is especially high for cities where the local master (comprehensive) plan is outdated and where the existing zoning does not reflect the current needs—which unfortunately is true of many U.S. cities. Even when a local master (comprehensive) plan is up-to-date, zoning changes may be granted by local governments as an incentive to enhance their negotiating position to maximize developer exactions. More often than not, zoning changes are also used as a political tool by local elected officials to raise funding for political purposes. Under these circumstances, elected officials sometimes overturn the local planning commissions' decisions in favor of up-zoning.

There are three incentive-based land value capture tools that are based on land use and zoning regulations—air rights, density bonuses, and vested rights. Issues related to vested rights were addressed briefly in relation to DAs earlier.

In the U.S., property ownership generally comes with the ownership of the land, the earth beneath it,⁵⁰ and the air above it (McStotts 2007). Consistent with general property rights, the use of air rights—i.e., construction “in space” above the existing surface use—is also subject to local land use and zoning regulations.⁵¹ Local governments often use air rights on publicly owned land for land value capture purposes. They can transfer the unused air rights above their existing property (e.g., above existing railroad tracks and/or stations) to private developers.⁵² These air rights can be transferred for free, which occurs for large-scale development projects that serve as a major economic catalyst in the area, or they can be leased or sold. The overall land value capture in these cases can come from the proceeds from air rights sale/lease and/or from the future increase in property tax revenues from new developments.

Transferable development rights (TDRs), or transfer of floor area rights (TFARs), is a common air right-related land value capture tool in the U.S. After being first adopted by New York City in 1968, nationwide, more than two dozen local jurisdictions have since adopted the program (LAC 2018). TDR is an economic incentive program that helps to direct new developments away from historic landmarks and other sensitive sites needing preservation (“sender”) to areas that are looking to promote more concentrated developments (“receiver”), such as areas planned around smart growth and TOD principles.

TDRs typically can take one of three forms in terms of receiver site flexibility—adjacent-lot TDR, district-wide TDR, or inter-district TDR. In general, the first half (sender) of the TDR equation (i.e., agreement on the resources protected) is not as difficult as the second half (receiver) of the equation (i.e., agreement on where to transfer and how to configure it), which can be much more problematic because zoning changes are likely to be required (Lane 1998). One of the key concerns identified around TDR has been the poor planning of additional infrastructure needs on the receiving end to accommodate the incremental development density.

TDRs can be used for both privately and publicly owned sites. For privately owned sites which are subject to preservation ordinance, through TDRs, local governments can provide financial relief to property owners by enabling them to sell their “latent” unused rights to developers who need additional development density elsewhere. In addition to achieving preservation goals, local governments can capture value from the receiver site both from exactions (if applied) and from future increases in property tax revenue that results from the new developments. For publicly owned sender sites, local governments can also sell or lease the latent development rights to potential developers on the receiver site, where land value capture includes sales/lease proceeds over-and-above the developer exactions (if applied) and future increases in tax revenues. For air

⁵⁰ Except for mineral rights, which are treated separately from property rights.

⁵¹ Federal regulation under the Air Commerce Act of 1926 also establishes the upper limit of property owners’ airspace right based on navigable airspace required by commercial aviation.

⁵² Two good examples in this regard are Burnham Place at Union Station in Washington, D.C., a planned 3 million sq. ft. development above the Union Station’s rail yard and Hudson Yards development in New York City, a \$20 billion, 17 million sq. ft. project built above the MTA tracks.

right sales proceeds, local governments generally set up a pre-established public benefit trust fund that can be used for affordable housing and other city-wide public benefit programs not covered by more traditional land value capture tools.

In addition to resolving the receiver side of the equation addressed above, a number of other issues and concerns have been raised for TDRs. These issues have included integrating TDRs into master (comprehensive) plans, effective state legislation which establishes clear legal authority, developing hard data for determining the dollar value of the rights, and providing multiple options to address the takings issue (e.g., hardship exemption as well as outright sale) (Lane 1998, McStotts 2007).

Density bonuses are often associated with affordable housing. They are granted when developers agree to include a certain number of affordable housing units as part of their exactions. For every unit of affordable housing developers build, local governments allow a greater density (e.g., for residential development, a greater number of market rate housing units) than would be allowed under normal zoning rules (Goetz and Sasaki 2017). Density bonuses can vary from project to project, but are generally never allowed to exceed a maximum threshold (e.g., 20 percent) that is pre-established by the local government. Many local governments have their own density bonus ordinances in addition to state-level density bonus laws. Density bonuses are one of the three most common land value capture tools used for affordable housing, the others being linkage (or impact) fees and inclusionary housing/zoning (Thaden and Wang 2017).

Land Use and Zoning Regulatory Incentives and CePACs

All of the incentives discussed above are relevant to CePACs. CePACs are based on up-zoning, which is effectively a density bonus provision involving transfer of air rights. CePAC feasibility in the U.S. would thus intersect directly with legal precedents established for zoning changes, air rights, density bonuses, and vested rights. Historically, land value capture tools in the U.S. have progressed in the direction of increasing flexibility—from mandates (property tax, special assessments) to forced negotiations (developer exactions) to voluntary negotiations (DAs). CePACs are a market-based land value capture tool that offer additional flexibility beyond the level currently provided by DAs.

Because CePACs are essentially land use entitlement certificates that are sold through public auctions, a key issue that needs to be addressed for assessing their viability in the U.S. is determining the legal ramifications of the difference between granting land use entitlements in exchange for exactions versus selling the entitlements outright through public auctions. As discussed in the next section, at the core of CePACs' legal/constitutional issue is the question of ownership of the development right above the by-right zoning.

CePAC Viability in the U.S.: Potential Opportunities and Implementation Challenges

Potential Opportunities

Land Value Capture and Infrastructure Funding Policy Perspective

As discussed in the previous section, CePACs offer several benefits when compared to the existing land value capture tools in the U.S. From the government and general taxpayer standpoint, CePACs are self-financing and have no impact on either local governments' debt limit or on local taxpayers' property tax obligations. For property owners, CePACs do not impose any new special assessments or tax surcharges. For developers, CePACs provide additional flexibility over and beyond that offered by exactions and DAs. CePACs also offer an alternative for developers to spread out their financial burden from onerous exactions, especially in early stages when the risks are at their highest. From the investor and lender standpoint, CePACs provide new means to invest in real estate assets, enabling them to further diversify their current portfolio based on their risk-return appetites. For builders, CePACs can unlock new opportunities in real estate (private) and infrastructure (public) markets, which may not have been possible otherwise.

More generally, CePACs represent an innovative, market-based tool that could be added to the current toolbox, thus helping to make land value capture solutions more robust when framed as a means for solving the critical infrastructure problems in the U.S., in particular from local government standpoint where the infrastructure burden is the heaviest. Consistent with the current infrastructure policy trend, CePACs can also help encourage private sector participation—not so much on the financing and delivery side as in public private partnership (P3)—but directly in addressing the funding source issue, which is, in essence, at the core of the problem.⁵³ Solving the revenue side of the infrastructure equation may also help unleash the pent up demand for P3s.⁵⁴ In addition, CePACs provide increased transparency, which benefits the larger community. This added transparency is particularly useful with respect to the obscure developer negotiation process currently associated with exactions and DAs. As a land value capture tool, CePACs are also less regressive when compared to property taxes.

Potential Applications and Market Size

The potential market size of CePACs in the U.S. depends on the extent CePACs can be applied in urban, suburban, exurban, and/or rural context. As mentioned, CePAC usage in Brazil was limited to high growth, high density areas in major urban settings. Such high-density application is consistent with the current smart growth trends in the U.S. that promote highly concentrated and transit-oriented developments (TODs). Given the persistent history of concentrated land use patterns and benefits derived from agglomeration economies in the U.S. (Fischel 2015),⁵⁵ this

⁵³ P3s and private sector participation in delivery and financing still require governments to pay the private sector.

⁵⁴ P3 activities in the U.S. has been much slower than anticipated in part due to the lack of funding, especially for the availability payment P3 model where P3 concessionaires need to be repaid over the concession term for their upfront investments.

⁵⁵ According to Fischel (2015), the developed land in the U.S. comprise only 4.6 percent of the total available land area in the U.S., of which 87 percent (or 3.2 percent) is classified as urban area that contains 80.7 percent of U.S. population.

smart growth trend is more than likely to continue in both urban and suburban areas where there is a continuing and growing need for up-zoning. In both urban and suburban settings, therefore, CePACs could prove to be a useful land value capture tool.

The use of CePACs can also be potentially beneficial in the context of large-scale, planned developments in suburban and exurban settings—especially for subdivision-level developments and/or multiple-owner properties where special development and zoning standards need to be established. The rapid rise of DAs within these settings demonstrates the need and latent demand for vested rights that could be monetized.

In the current DA model, one or more developers typically assume heavy financial burdens early on to obtain their vested rights. CePACs may offer an alternative solution to the developer community, where they are given an option (albeit for a price) to diffuse the early financial burden across a number of CePAC buyers. In addition to developers themselves, this buyer pool may include landowners, future property owners, investors, builders, and other relevant local stakeholders. Instead of DA, potential scenarios that could unfold under CePAC may include, for example, a specific group of developers choosing to proceed with their projects at some future point and (1) buying back the pre-sold CePAC certificates from original buyers at a (higher) price as determined by the prevailing secondary market conditions, thereby sharing in the returns as well as the risks with a larger investor pool, and/or (2) if the original CePAC buyers are future property owners, bartering CePACs as deposits for their ownerships of future properties that result from the development projects. Under CePAC, vested rights are assured regardless of who owns the certificates, so the developers' risks are primarily associated with the premium they pay in delaying the CePAC purchase.

Whether in urban, suburban, or exurban settings, CePACs can be a useful land value capture tool when there are formal zoning changes that are not episodic in nature. For example, CePACs can be useful in addressing specific policy-related problems where new development and zoning standards may need to be implemented—e.g., attracting new businesses into a designated urban area or solving growing congestion problem in a suburban area by diverting new developments to less congested districts. Another potential application might be related to larger scale TDR situations (involving both publicly and privately owned “sender” land). While the details of new developments are being worked out for the up-zoned “receiver” site, CePACs might serve as a more versatile alternative to developer exactions in securing early funding for affordable housing and incremental infrastructure needs.

Potential CePAC Investor Perspective

Financing real estate development projects can be a complex undertaking. From the investor perspective, whether institutional or retail, there are currently several ways to invest in real estate assets. Most of the available investment options, however, are associated with mature (“brownfield”) assets that are already built and generating revenue.⁵⁶ In general, “greenfield”

⁵⁶ Available investment options include, for example, on the equity side, investing in (a) existing real estate assets with a direct ownership interest or (b) real estate investment trusts (REITs) or funds with a portfolio of assets, both generating steady stream of rental revenues; on the debt side, mortgage-backed derivatives (i.e., collateralized mortgage obligations or CMOs) that generate a stream of revenues from pooled mortgage loan payments.

assets that are under development are considered high risk and, although this early development stage is when funding is needed the most, available investment options are currently very limited. Despite high risks, however, greenfield development finance also comes with potential high returns that may be suited for investors seeking high risk-high return opportunities.

Obtaining land use entitlements and vested rights are critical prerequisites for developers looking to secure stable longer term financing (debt) for their projects. Developers generally need at-risk capital (equity)⁵⁷ to fund both the early activities related to obtaining the prerequisite entitlements and for making the down payment to secure the longer-term debt. Typically, they rely on two main sources to raise this early capital—their own internal funding sources or an equity allocation from real estate funds (more generally, alternative investment funds or AIFs).⁵⁸ These AIF funds are third-party managed funds that specialize in real estate and alternative assets⁵⁹ and that source their capital primarily from large institutional investors. Thus, on the equity side of the development finance equation, institutional investors play a critical role.

On the debt (fixed income) side of the development finance equation, investors can participate in various lending activities at different stages of real estate development projects, with varying terms and risks levels. In addition, they can also participate in infrastructure financing activities through the municipal bond market—whether in general obligation bonds (backed by general funds) or in special purpose or revenue bonds (backed by revenues from TIF districts, special assessment districts, or *Mello-Roos* districts). The U.S. has by far the largest and most mature municipal bond market in the world, in part due to the high participation rate of retail investors, where the main attractor has been the tax-exemptions on interest income from the bonds.⁶⁰

Given this current climate, CePACs can offer investors new entry points to the real estate market, especially on the equity side of the development finance, where the investment options are currently quite limited. As mentioned, managed AIFs have been a critical source of equity capital in development finance. Since the 2008 financial crisis, these equity-based funds have enjoyed significant success in raising capital from the global investment community.⁶¹ As a result, AIFs (and institutional investors) are constantly looking for investment opportunities for the capital they raised that can help further diversify their risks.

For developers, CePACs can be monetized when they proceed with their development projects and CePACs become part of the projects' equity. For investors (including speculative developers and property owners), their CePAC purchases can be monetized when they participate as equity investors in others' development projects or when they sell them in the secondary market. As mentioned, not all CePACs in a given zone are issued at one time. They are issued in multiple tranches through a series of well-timed public auctions and, based on the historical track record observed in São Paulo, both the face value of CePACs and maximum bid price achieved increase

⁵⁷ This early funding need is at-risk equity capital because it is lost if the project is unsuccessful and/or if the developer defaults on the loan.

⁵⁸ In some cases, developers may also rely on short-term loans with very high premiums for early stage funding.

⁵⁹ Alternative assets are non-traditional assets that include, for example, private equity, hedge funds, managed futures, real estate, infrastructure, commodities and derivatives contracts.

⁶⁰ Retail investors own about 70 percent of the muni bonds in the U.S. (Fried 2018).

⁶¹ It is estimated, for example, that AIFs that specialize in infrastructure assets have collectively raised about \$300 billion of equity capital over the decade ending in 2014. Equity capital is leveraged to secure larger debt financing.

significantly with each successive auction. For early buyers, each successive auction assures steady appreciation on the CePACs they hold. The proceeds from the first issuance of each CePACs in public auctions are captured by local governments, whereas any capital gains from secondary market transactions are captured by the CePAC buyers/investors.

As mentioned, for passive investors, the exit strategy is either to sell the certificates to developers at an appropriate time or join the developers as equity investors and see the project through. In either case, the return proposition is much better for equity investors when compared to the current “binary” situation, wherein either (a) no project occurs because of the developers’ perceived risk or (b) there is a project but no return is assured until construction is substantially complete.

In short, in the wide risk-return spectrum of development finance that extends from at-risk equity capital on the real estate project side to municipal bonds on the infrastructure financing side, CePACs may provide some investors with alternative opportunities that fall in the middle. CePACs could be a safer investment option on the equity side (i.e., lower risk/lower return) but a potentially more lucrative option than real estate loans or municipal bonds on the fixed income side (i.e., higher risk/higher return).

Managing the “Zoning Budget” from Affordable Housing Perspective

Despite strong political commitments, increasing the local housing supply, and affordable housing in particular, has been an uphill battle for many local governments. This challenge has been partly due to their inability to balance the overall local “zoning budget.” Their decision to engage in “up-zoning” for housing is often offset by even more “down-zoning” as a result of the *seriatim* nature of local land use and zoning decisions (Hills and Schleicher 2011). Down-zoning decisions are ubiquitous when considered collectively, but each decision is episodic in nature and locally focused with strong support from many small neighborhood groups and their elected officials who care deeply about the outcome. Because all downzoning decisions have only a small effect on overall housing supply and are made well in advance of any proposed new developments, very little integrated city-wide political capital is typically spent (either by local governments or by developers) in fighting them, often resulting in uneven political playing field in favor of down-zoning.

According to Hill and Schleicher (2011), local governments can solve this political imbalance by creating an annual local “zoning budget” and establishing a consolidated and integrated approach to housing supply to formally offset various downzoning decisions. CePACs can potentially be a useful tool in facilitating the management of such a zoning budget, in particular for affordable housing. Local housing supply needs could be directly incorporated into the underlying up-zoning decisions associated with CePACs and become a formal part of master (comprehensive) plan amendments. In addition to meeting the overall land use and zoning goals associated with housing, CePACs could also allow early fundraising for timely implementation of affordable housing needs.

Secondary Market and Commoditization Potential

Sao Paulo's CePAC market has been dominated by developers with necessary capital to buy large amount of CePACs to use them in their projects. In part due to the size of capital needed and the locational inflexibility of CePAC usage, a secondary market for CePACs has yet to be fully materialized in Sao Paulo. The absence of such secondary market, however, has not hindered the use of CePACs as a successfully land value capture tool on the part of the city.

Secondary markets for CePACs have the potential for increasing the “passive” investor pool beyond developers and property owners who have a vested interest in specific site locations. For passive investors, so long as their investments perform commensurate with the risk they are taking, the specific site location may be of less importance. Especially when coupled with more locational flexibility, the secondary market potential for CePACs in the U.S. could possibly be more significant in part because of (1) the current institutional investors' interest in real estate and infrastructure assets with a significant pool of investment capital and (2) the level of sophistication of these institutions and their intermediaries in designing various derivative instruments that could attract more passive investors. A key challenge regarding a secondary market development would be to carefully balance the benefits from wider investor participation with the potential risks of speculation that could disrupt the overall market stability and undermine underlying public policy goals.

The strength of secondary market potential is also closely tied with the concept of “commoditizing” land use entitlements. Especially when considered in the context of the just compensation clause, the idea of exchanging land use entitlements for other goods—i.e., moving towards commoditization—is not too far-fetched. In many respects, the idea of commoditization has become more acceptable in recent years. For example, tradable emissions under cap-and-trade programs have shown that market-based commoditization of public goods (i.e., emissions) can sometimes lead to better outcomes in meeting public policy goals (i.e., reduction in emissions) than when compared to direct regulations and top-down government mandates (Fischel 2015). In many ways, CePACs are designed to encourage commoditization of land use entitlements and vested rights.

In the era of shared car ownership, an increasing rental population, and a general movement away from liability that comes with direct ownership, CePACs may provide an alternative solution for shared property ownership—i.e., through shared development rights—where both risks and rewards are shared more widely. Conceptually, when such commoditization of land use entitlements become more widely accepted in the long run, along with the market maturity, CePAC transactions can perhaps be expanded to retail investors beyond the usual suspects of property owners, developers, and institutional investors. In a rapidly changing and dynamic urban landscape, CePACs can potentially be a tradable real estate security or currency in the long run that could be used both to secure residential housing needs as well as to actively participate in real estate investing without direct ownership. Involvement of retail investors, if it ever

materializes in the distant future, could potentially trigger more robust secondary markets much like municipal bonds and provide additional liquidity for CePAC investors.⁶²

Practical Implementation Issues and Challenges

Political Resistance and Developer/Investor Buy-In

Like all new concepts, CePACs may face strong political resistance. This resistance may be more general in nature, stemming from general lack of knowledge, or more specific, due to differences on policy grounds. Resistance may also come from stakeholders who may be impacted negatively.

The concept of CePAC is very new and complex. As is often the case with anything new, the general lack of familiarity and knowledge about the concept can engender suspicion about its effectiveness. There may also be resistance on cultural basis—the fact that CePACs represent a foreign concept originated outside the U.S. may add to this suspicion. Because of its complexity, there may also be misconceptions and miscommunications regarding the concept, further fueling the initial resistance. In addition, general uncertainty about its potential outcome can create resistance from potential stakeholders, both on the government side (supply) and CePAC buyer side (demand).

Political resistance may also stem from legitimate differences on ideological and policy grounds. CePACs promote a market-based approach and encourage private sector investment. These could simply be viewed as windfall profits for private sector at the expense of the general public's interest. Similar to DAs, it could also be viewed as the loss of police power on the part of local governments—in particular, as relates to relinquishing the vested rights and the ability to change zoning once CePACs are sold. As has been the case for P3s, many of these private sector-related views are misconceptions that need to be overcome.⁶³ The effectiveness of CePACs needs to be articulated in comparison to the existing tools and currently available policy options, as well as with respect to how risks are allocated. When faced with ideological differences, however, such articulation may not be readily accepted.

CePAC is a market-based tool where developers and investors may need to bear significant risks.⁶⁴ One of the key perceived risks from CePAC investors' standpoint is whether development projects would actually materialize and CePACs retain real value appreciation. To some extent, the fact that basic infrastructure is laid out early on strengthens subsequent land value capture proposition and incentivizes development projects to move ahead. In addition, judging from Sao Paulo experience, CePAC zones are by design located in high-demand highly

⁶² Practically speaking, however, given that CePAC is a new and complex tool, especially in the initial stages of implementation when market is not mature, regulators would deem CePAC trading to be appropriate only for sophisticated institutional investors (capable of independently evaluating inherent risks associated with CePACs) and might not allow their sale to retail investors.

⁶³ It should be noted that not all resistance to P3s are misconceptions. P3s are often rejected because they can be more expensive than traditional public-sector financing and delivery approach.

⁶⁴ As was the case for Sao Paulo, it would be the local governments' responsibility to provide basic documentation and data to disclose potential risks associated with CePACs. More sophisticated risk assessments, however, would be provided by intermediaries and advisory community if and when they develop.

desirable areas of the city that can attract private investments relatively easily and where property values would be on the rise even without the CePACs. Nevertheless, compared to up-zoning changes that are developer-initiated with actual development projects in mind, CePACs can carry the risk of no projects ever being built.

Even after local governments accept CePACs as an effective tool, there thus needs to be a general buy-in from the developer and investor community. It may be necessary to modify the CePAC model to fit the needs of investor/developer community in the U.S., including various incentives that can help reduce their risks—e.g., legally binding vested rights, flexibility regarding locational restrictions, buy back options if development projects do not materialize within a reasonable time frame, etc.—to the extent that these incentives do not deviate materially from the intended policy objectives.

Finally, there may also be some resistance to increased transparency due to the unique real estate development climate in the U.S. As alluded to earlier, increased transparency, which can be beneficial from the larger public policy standpoint, may also hinder legacy political relationships that exist between elected officials and large local developers. Where these legacy relationships have been mutually beneficial—i.e., not only with respect to serving the underlying political agenda but also in meeting the larger public policy goals—the resistance may be substantive. Under these circumstances, it may be much more challenging to discern whether CePACs may ultimately prove to be a more effective tool when compared to the status quo.

Compliance with Local Planning and Approval Processes

As discussed earlier, the effectiveness of CePAC program in Sao Paulo was dependent on its complete integration with respect to the City's master planning process. CePAC implementation in the U.S. should be no different and should comply with all local planning processes and requirements, including master (comprehensive) planning, environmental clearances, and other relevant land use planning and zoning approval processes.

In general, CePACs can be issued when major land use and zoning changes associated with up-zoning decisions are made. Consistent with current local planning processes in the U.S., any zoning changes associated with CePACs (and CePAC issuances) should always be accompanied by master (comprehensive) plan amendments.

On the environmental review front, the clearance process associated with a CePAC program would likely be a two-tiered process. At the time a CePAC program is initiated, no specific development projects would be identified for the up-zoned CePAC site. As such, before CePACs could be issued, *programmatic* environmental impact reviews would need to be conducted initially for the up-zoned sites, in conjunction with MP amendments. If and when specific development projects are identified subsequent to CePAC sales, the developer group of interest—who must own CePAC certificates tied to the development site—must conduct project-specific environmental impact reviews. At the project implementation stage, projects in CePAC sites should be treated no differently than any other real estate development projects. Each

project would be subject to environmental clearance and approval processes on their own merit.⁶⁵

When CePACs are applied for large-scale developments under suburban or exurban settings, they may be sold in larger units of areas. Working together with current property owners, local governments may also choose to subdivide the land to an appropriate size before CePACs are issued. Under these circumstances, all local planning and approval processes associated with subdivision activities must also be satisfied before CePACs can be issued. These requirements may vary depending on subdivision regulations specific to each state and local government. In California, for example, all subdivision activities must be subject to the State's Subdivision Map Act, which requires, for example, that tentative maps be approved at minimum whenever subdivision occurs. These tentative maps can also be vested at the time of the subdivision approval.

Under some circumstances, in addition to master (comprehensive) plan amendments, local governments may choose to develop a specific plan for CePAC sites, therein establishing a special set of development standards before issuing CePACs. This decision may potentially trigger additional environmental reviews. Under such conditions, as specific development projects are identified subsequent to CePAC sales, project-specific environmental impact reviews must be carried out on a project-by-project basis.

The compliance with local planning and approval processes may be perceived as cumbersome at the outset, but, generally, the requirements under a CePAC program should be no more difficult than what is currently required for any other land use and zoning changes.

Legal/Constitutional Grounds on Takings Doctrine

As mentioned earlier, one of the key legal and constitutional issues associated with CePACs may have to do with the takings doctrine as relates to the ownership of the development right above the by-right zoning. The extent of concerns about such takings would vary depending on (1) whether the CePAC zone under consideration is publicly or privately owned and (2) whether the CePAC investors' motivation is of speculative or non-speculative nature.

If a CePAC zone is on publicly owned land, there would be no takings concern as local governments are both effecting (creating) and voluntarily relinquishing their own additional development rights to meet the overall land use/zoning and redevelopment policy goal. Under this scenario, CePAC purchases would be entirely voluntary from buyers' standpoint and the price they pay would be based on the value of the additional development right as perceived by the market and on individual CePAC buyer's willingness to pay for that right.

⁶⁵ This two-tiered approval process is no different than the existing practice. When land use entitlements and/or vested rights are granted, specific development projects are often not well-defined and, at this early stage, master plan amendment through programmatic level environment reviews are generally sufficient. As individual projects become better defined with more details, each would be subject to more detailed environmental review and approval processes.

If a CePAC zone is on privately owned land, the existing property owners already have the development right according to the by-right zoning as established in the local governments' existing land use plan and zoning ordinances. As mentioned earlier, any incremental development right above the by-right zoning (i.e., up-zoning), if requested by the existing owners, would generally involve some level of negotiated exactions. On the other hand, if up-zoning is initiated by local governments as is the case for CePACs, the property owners (and their affiliate developers and investors) have the option of attaining the additional development right above their by-right zoning as long as they are willing to pay the perceived market price of the right.

Under this scenario, especially when CePAC purchases are non-speculative in nature and the existing owners use CePACs for actual development projects, CePAC transactions would have the same takings concerns as regular developer exactions—except the amount of exactions in this case would be determined not based on cost of mitigating negative impacts of additional developments, as is typically the case for regular exactions, but rather on perceived market value of the additional development. For this non-speculative CePAC purchases by existing owners on their own properties, at worst, CePAC transactions would be subject to the same regulatory takings and essential nexus/rough proportionality test per *Nollan/Dolan/Koontz* legal precedents as regular exactions. More than likely, however, given that the “exactions” are voluntary and determined by the market with complete transparency, CePAC transactions could potentially face less legal scrutiny than regular exactions.

If existing owners on privately owned land choose not to purchase CePACs—either because they do not have development projects of interest or they determine the market price to be too high—and other investors step in to purchase CePACs for the additional development right above the by-right zoning, the takings concern can become much more serious. Such CePAC purchases would involve developers and investors that are not directly affiliated with the owners and their CePAC transactions would more than likely be speculative in nature.⁶⁶ As mentioned, in the current land use/zoning practice, the existing owners generally do not have the right to develop above the by-right zoning in any event, unless they provide some agreed upon level of exactions. The basic issue then is to determine the difference between granting land use entitlements in exchange for exactions versus granting/selling the entitlements through public auctions. Under this scenario, the takings concerns can be addressed in part by (a) revisiting the fundamental question of property ownership and (b) assessing the extent to which existing owners are negatively impacted given the existing land use regulatory regime.

As mentioned earlier, in the U.S., property ownership generally comes with the ownership of the land, the earth beneath it, and the air above it (McStotts 2007). Consistent with general property rights, the use of air rights above the existing surface use is also subject to local land use and zoning regulations, as discussed earlier for various TDR situations. From property ownership standpoint, the potential takings issue associated with air rights above the by-right zoning must be examined if CePACs are sold to parties that are not existing owners. There is currently less legal clarity about horizontal subdivision of airspace. On the one hand, some courts have held that one must own underlying surface land in order to own the overlying airspace (Schwartz

⁶⁶ It is important to note that all development projects above by-right zoning, whether carried out by the existing owners or others, would need to adhere to local governments land use and zoning requirements for the CePAC zone.

2015), whereas others, by using legislative means, have permitted separation of air rights ownership by the creation of condominiums. A potential legal question then might be whether a taking has taken place if local governments do not pay just compensation to the existing owners for the airspace above the by-right zoning in order to sell the entitlement to the right.⁶⁷

Regarding the regulatory takings question on to what extent CePACs would negatively impact the existing property owners, conceptually, CePACs are incremental land use entitlements over and above the by-right zoning and not supposed to impact the pre-existing by-right development rights of existing property owners. Since existing owners are not granted development rights above the by-right zoning in any event, the property owners are not any worse off due to CePACs. In addition, judging from the São Paulo experience, CePACs can have positive impact on existing property owners even if they do not purchase CePACs as overall property values within CePAC sites often increase substantially.

More generally, as observed historically, the legal/constitutional pendulum will always swing one way or another, either in favor of property owners/developers or of public agencies. There are ample precedents, however, where, anything above by-right zoning, developers/property owners have been willing to pay exactions to get additional development right. Lawsuits will undoubtedly ensue if developers/property owners are not willing to pay exactions but it is also important to recognize that experienced developers rarely go to court, as they know that the city will not deal with them again regardless of the outcome (Fischel 2015). Considering this large community of developers/property owners who are indeed willing to pay exactions as a point of departure, CePACs provide much more transparent and better value capture rationale for determining what the appropriate exactions ought to be. As mentioned, there is currently no standard guidelines on how exactions are determined. The processes are often political in nature and exactions, at best, are based on cost of mitigating negative impacts. In the case of CePACs, the “exactions” are determined based on real benefit to developers in terms of the value of the additional development right as perceived by the market.⁶⁸

Finally, as mentioned earlier, vested rights are at the core of the CePAC value proposition. As such, potential legal ramifications associated with vested rights must also be evaluated carefully. As is the case with private properties where ownerships do not change hands until properties are sold, CePACs vested rights are in effect in perpetuity until CePACs are sold or used for actual development projects. From a practical standpoint, and to avoid undesirable holdouts, the concept may need to be modified for the U.S. market where term limits on CePAC certificates are imposed. These term limits may be applied in several different ways. For example, by requiring CePAC buyers to either sell or proceed with development projects after a certain time period, allowing buy-back options at the end of the period based on pre-established price guidelines, or imposing additional fees or penalties to extend the vested rights beyond the period.

⁶⁷ Some of these questions are on new legal/constitutional grounds beyond the scope of this study.

⁶⁸ One potential legal question associated with CePACs might be whether the proceeds are construed as a tax, which was the primary cause for the recent cap-and-trade lawsuit in California described later. Such tax concern would be minimal if CePACs are applied only for the designated areas that benefit the CePAC buyers only, as was the case for Sao Paulo. If the locational restrictions are loosened, the illegal tax issue would become more substantive.

CePAC Classification, Administration, and Enabling Legislation

In the case of São Paulo, CePACs were exchanged as a freely tradable financial security in the Brazilian Stock Exchange (BSE). Although they were traded in the stock market, given the basic nature of CePACs and that Brazil has well developed commodities market, CePACs functioned more like a commodities security.⁶⁹ For the U.S. application, one of the key CePAC implementation issues at the outset is how CePACs are classified as a financial instrument—which, in turn, would help determine how their transactions are administered and what enabling legislation would be needed. Relevant questions related to CePAC classification might be: (a) whether they should be considered a financial security as was the case in Sao Paulo, (b) what type of security it should be, and (b) whether they should be considered a municipal security.

In the U.S., a financial security is a tradable financial asset that can be broadly categorized into equity (e.g., common stocks), debt (e.g., bank notes, bonds), or derivative (e.g., forwards, futures, options). As mentioned, however, CePACs are unlike any of the three traditional security types exchanged in U.S. stock exchanges. They are more like commodities that can be most likened to emissions in the context of emissions trading or cap-and-trade program. In the U.S., a commodities exchange is where various commodities and their derivatives are traded and there are many large established commodities exchanges throughout the world.⁷⁰ In the case of emissions trading, for example, six international emission exchanges were set up separately to administer carbon trading and credits related to the United Nations Framework Convention on Climate Change (UNFCCC).^{71,72}

Similar to traditional securities, there are a number of common financial derivatives associated with commodities, such as forward contracts, futures contracts, and call options.⁷³ Increasingly, these derivatives are traded via clearinghouses that provide various back house support services outside the formal exchanges. In the case of cap-and-trade programming in California, for example, the State's Air Resource Board (ARB) has been designated as the clearinghouse to administer the program, in part due to the absence of a formal emissions exchange in the U.S. Similar to CePAC auctions in São Paulo, the ARB currently holds regularly scheduled public auctions to manage and control the emission trading activities for the State.

⁶⁹ In Brazil, there are no separate commodities exchanges. BSE serves as both stocks and commodities exchange.

⁷⁰ In the U.S., there are altogether 13 commodities exchanges.

⁷¹ In the U.S., Chicago Climate Exchange (CCX) was set up initially but it ceased carbon trading activities in 2010.

⁷² The European Union (EU) has operated by far the largest cap-and-trade program thus far, but it has largely been unsuccessful due to widely fluctuating auction prices that have crashed on more than one occasion. Cap-and-trade can be an effective approach to meeting carbon emission reduction goals, but collection of any revenues from these programs is generally considered to take a long time. Although California has been a unique exception in being able to set up a working cap-and-trade auction program, the state has had its own set of challenges. For example, a lawsuit was filed in 2013 by the California Chamber of Commerce challenging the state's ability to collect revenue from cap-and-trade auctions. A state appeals court upheld the ARB's program in a 2-1 decision, ruling that its auction sales do not equate to an illegal tax because the purchase of pollution credits by businesses is voluntary and the credits they buy are "a thing of value." The cap-and-trade program was approved with a majority vote, whereas opponents believe a two-thirds vote was required to authorize a tax.

⁷³ If and when CePAC market develops and matures, some of these derivatives may have potential beneficial application. For example, developers can use call options to purchase CePACs at a specified time in the future and at an agreed price, instead of outright purchasing at the time of auction.

One of the critical first steps, were CePACs to be implemented in the U.S., is to decide whether CePACs should be, as was the case for Sao Paulo, a financial security subject to the U.S. securities and securities exchange regulations. Given that local governments are the primary issuers, CePACs would most likely to be considered a municipal security that are exempt from federal securities registration and reporting requirements, while still being subject to the anti-fraud provisions of the federal securities law. In addition, if a significant intermediary market develops for CePACs as a municipal security, brokers, dealers, and other advisors are required to register with the U.S. Securities Exchange Commission (SEC) and comply the SEC rules.

Currently, municipal securities in the U.S. comprise almost entirely of municipal bonds, a debt instrument, and it may be necessary to establish a different set of rules and regulations for a commodity-like municipal instrument. As mentioned, as CePACs are closest to emission trading, much of the basic regulatory framework established for cap-and-trade programs (typically at state level) could be transferred for potential CePAC application.⁷⁴ In addition, tax-exemption on municipal security (i.e., municipal bond) currently applies only for debt instruments, where tax exemptions are on interest income only and not on capital gains. This means CePACs are not eligible for tax-exemption under current regulations and, though unlikely, a new set of rules need to be established to allow exemptions based on capital gains.

As a municipal security or financial instrument, CePACs would also be subject to state-level blue sky laws that govern all offers and sales of securities within a given state with the basic goal of preventing fraud and ensuring that investors have access to accurate information to make informed investment decisions. Blue sky laws vary significantly from state to state.⁷⁵ The relevance of blue sky laws as pertains to CePAC applications in different states is beyond the scope of this study but an important issue that needs to be further addressed before CePACs can be implemented in the U.S.

For local governments to issue CePACs, they may also be subject to the Dillon Rule. Local governments in the U.S. follow one of two types of governing authority as promulgated by their state: Home Rule or Dillon Rule. Home Rule gives them governing authority to make a wide range of legislative decisions that have not been addressed by the state, whereas the Dillon Rule creates a framework where they can only legislate what the state government has decreed. For most of states in the U.S., the Dillon rule applies to all municipalities, whereas for select others, it applies only to certain municipalities. For most large metropolitan areas, states have granted more independence. In California, for example, most of large cities are charter cities exempt from the Dillon's Rule and have significant level of independence. The extent of the need for state-level enabling legislation thus would in part be determined by the application of the Dillon Rule in each state.

⁷⁴ States with ongoing cap-and-trade program include California, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont. With the exception of California, these states have focused primarily on carbon dioxide emissions from power plants (which fell 51 percent between 2005 and 2016) and collectively generated about \$2.6 billion in revenue from quarterly auctions. To date, California is the only state with a cap-and-trade program that includes gasoline and diesel distributors. California has been able to set up a robust cap-and trade auction program and already collected \$2.3 billion in revenue over the last 5 years, \$250 million of which is specifically earmarked for its high-speed rail project.

⁷⁵ In California, for example, its blue sky law is contained in the Corporate Securities Laws (1968) and administered by the Department of Corporations.

As mentioned, CePACs are a commodities-like security most likened to emissions in cap-and-trade context. If CePACs were to be traded in public auctions as was the case for Sao Paulo, one of the key questions would be who should be responsible for the administration of CePAC transactions. In the case of Sao Paulo, CePACs were issued by the City and traded in the BSE but the public auctions were administered by the two designated national banks on behalf of the City. In the U.S. context, CePAC administration can be conducted (1) at national level through formal commodities exchanges (either existing or newly formed), (2) through a state level platform much like California's ARB for its cap-and-trade program, or (3) at local level administered by the issuing local agency. In large part, the choice would depend on potential demand and market size for CePACs and whether existing legislation would either enable the use of CePACs or impose significant restrictions.

The degree to which new legislation may be required to implement CePACs in the U.S. would vary significantly from state to state and depend largely on the extent to which existing legislation—whether federal-level securities regulations or state-level blue sky laws, the Dillon Rule, cap-and-trade regulatory framework, etc. discussed above—may be applicable for CePACs. As discussed above, how CePACs are classified and who would be responsible for the oversight and administration would have critical bearing on new legislative requirements.

Institutional Capacity Building Needs

In order to implement CePACs in the U.S., it is necessary to build institutional capacity to support the overall program. As discussed above, the nature and extent of the capacity building would largely depend on how CePACs are classified and how CePAC oversight and administration responsibilities are structured. In the case of São Paulo, CePAC program development and oversight was at municipal level (the primary beneficiary of the land value capture) and was decoupled from the administration of CePAC auctions and trading activities, which was handled by the Brazilian Stock Exchange.

Regarding program oversight, given that land use and zoning is very much a local matter, it may be desirable to assign primary responsibilities to local governments. Depending on the level of adoption, however, the oversight role might also reside at the state-level, similar to the cap-and-trade program in California. If adopted at the local level, capacity building may require establishing a new independent agency altogether, similar to EMurb in São Paulo or an independent P3 office in the U.S.⁷⁶, or embedding the responsibility within an existing agency, such as a local redevelopment agency. Regardless of where the CePAC resources reside, it would be imperative that CePAC activities be coordinated closely with the local treasury department. Additional CePAC-related capacity may also need to be built within the treasury, while keeping in mind that it may be possible to tap into the same resources that are currently devoted to issuing municipal bonds.

On the transactional side, as mentioned earlier, there may be three potential options regarding how CePAC auctions and trading activities could be administered—namely, (1) the same local agency responsible for CePAC program oversight would also administer CePAC auctions, (2) a state-wide clearinghouse would be established to consolidate and administer all CePAC auctions

⁷⁶ For example, Office of Public-Private Partnerships (OP3) in Washington, D.C.

on behalf of local governments in the state, or (3) as was the case for Brazil, a formal commodities exchange, either existing or newly formed specifically for CePACs, would administer the auctions on behalf of all local governments in the U.S. The choice would depend on many factors, including, how CePACs are classified, the extent and rate of CePAC adoption, the legal enabling framework for CEPACs at the federal and state level, and the capacity of local governments.

In addition to direct oversight and administration responsibility, depending on how they are classified, CePACs would also require a community of intermediaries to support the overall process. These intermediaries would include, for example, (1) technical advisory for policy-level analysis and due diligence, (2) financial and legal advisory for program development, (3) underwriters, insurance companies, and other financial and legal intermediaries for implementation and transactional support, and (4) additional expertise for post-transactional data analysis. In many respects, in regard to these intermediaries, the U.S. already has significant capacity. It would be possible, for example, to tap into the existing intermediary capacity associated with municipal bonds. Other expertise relevant to CePACs may also include those associated with commodities exchange and cap-and-trade transactions.

Other Considerations: Scalability and Modifications to São Paulo Model

The success of CePACs, especially as relates to market potential, would in part depend on the extent to which land use entitlements and vested rights can be commoditized. In the case of cap-and-trade where such commoditization was possible, as described earlier, the underlying asset was emissions that are universally accessible. Land use and zoning issues are inherently local. Any transactions related to land use entitlements are thus episodic in nature and often subject to political climates that are unique to the specific localities. In this regard, another potential CePAC implementation challenge in the U.S. might be the scalability of the concept from one local situation to another.

As mentioned earlier, much would depend on the extent to which developers are willing to share the risks and the returns, especially when compared to the choices they currently have, such as exactions or DAs. In the same vein, CePAC's success would also depend on the extent to which local elected officials are willing to give up the use of zoning decisions as their political capital. Over the long run, the direction of the shared ownership trend we observe today may also have some bearing on the commoditization potential. In part due to the dependence on local situations, potential fluctuations in demand and volatility risks may also need to be considered, especially if CePACs are viewed as a reliable and stable infrastructure funding source. In the case of São Paulo, after initial trepidation, the demand for CePACs has been relatively stable, in large part due to the City's commitment to the program.

A number of potential modifications to the CePAC model may be useful to make it more effective in the U.S. If CePACs are used strictly as a financial instrument as was the case in Sao Paulo, these potential modifications may include (1) buy-back options with some minimum return guarantees, (2) potential imposition of term limits and penalties if not used for actual developments or sold in secondary markets, (3) the transferability of CePAC development rights

over a wider geographic locations, and (4) the use of CePAC surpluses on public improvements outside the designated CePAC zones.

Finally, especially for publicly owned land and TDR situations, the option of using CePAC-like tool not so much as a financial instrument but as an alternative means to issue land use entitlement certificates or permits should be explored. Under this scenario, CePAC issuance and administration would be under the discretion of local governments as relates to land use and zoning decisions, thereby avoiding much of the security-related legislative requirements. CePAC auctions in this case would be held primarily to determine the value of such certificates or permits with maximum transparency, while providing the buyers with added benefit of being able to buy or sell the certificates. Such scenario could potentially facilitate the option of building the CePAC market in the U.S. in phases, starting with using them primarily as a self-contained local instrument on publicly owned land and in some TDR situations to gradually transitioning into a full-fledged municipal security with wider accessibility and trading. This phased approach would allow sufficient time to build necessary legislative and institutional building blocks in parallel and in stages as they become necessary.

Conclusions and Potential Next Steps

CePAC is a market-based land value capture tool used successfully by major cities in Brazil. Through CePAC, São Paulo was able to monetize land use entitlements and generate as much as 15 percent of the City's overall capital investment needs by leveraging less than 0.1 percent of its total developable area. This paper examined the potential application of CePACs and their land value capture viability in the U.S. for local infrastructure funding.

On the upside, CePACs improve upon existing land value capture tools in the U.S. They are self-financing and have no impact on either local government debt limits or on local taxpayers' property tax obligations. For property owners, CEPACs do not impose any new special assessments or tax surcharges. For developers, CePACs can help to spread out their financial burden from onerous exactions, especially in early stages when the risks are at their highest. From the investor and lender standpoint, CePACs provide new means to invest in real estate assets, enabling investors to diversify their current portfolio based on their risk-return appetites. For builders, CePACs can unlock new opportunities both in real estate (private) and infrastructure (public) markets.

CePACs' potential applications in the U.S. could be in both urban and suburban settings. CePACs are particularly suited for the current smart growth trend in the U.S. that promotes concentrated and transit-oriented developments (TODs), where continued up-zoning may be needed. Especially when considering the modern U.S. context—high density urban settings, an era of shared car ownership, an increasing rental population, and the general movement away from liability that comes with direct property ownership—CePACs could help trigger commoditization of land use entitlements and participation of the larger investment community in land value capture undertakings. CePACs can also be beneficial in large scale, multi-phased developments in suburban settings where vested rights become a prized commodity for

developers. For local governments, CePACs can help monetize the vested rights and offer a more transparent alternative to the now commonly used development agreements.

When added to the current tool box, CePACs could help make land value capture solutions much more robust in addressing the critical infrastructure funding issue in the U.S., especially from the local government standpoint where the burden is presently the heaviest. CePACs also address the core of the U.S. infrastructure problem: solving the issue of where funding (revenue) can be sourced. CePACs encourage increased private investments in infrastructure *funding*, as opposed to the *financing and delivery* side stimulated through public-private partnership (P3s).

On the downside, there are a number of practical implementation challenges in using CePACs in the U.S. Being a new instrument involving the private sector, CePACs may face strong political resistance both from a general lack of knowledge and on ideological grounds. CePACs would also need to pass muster on fundamental legal and constitutional grounds. In particular, the question of ownership of development rights above the by-right zoning and related takings issue *per Nollan/Dolan/Koontz* must be addressed. In addition, enabling legislative requirements both at federal and state levels, security-related or otherwise, must also be examined carefully. CePAC implementation must also comply with the existing local planning and land use/zoning approval processes. No different than any major zoning changes, CePACs would need to be accompanied by master (comprehensive) plan amendments and programmatic environmental reviews. In addition, given that land use/zoning issues and transactions therefrom are inherently local and episodic in nature and subject to local political climates, the scalability of CePACs is also a concern.

Most critically, CePACs require considerable expertise and it would be necessary to build institutional capacity to support the overall CePAC implementation. The nature and extent of the capacity building would also depend on how CePAC implementation would be structured organizationally. CePAC program development and oversight could reside at the local level, whereas it may be more efficient to consolidate and administer CePAC auctions at the state level on behalf of all localities. In the case of São Paulo, CePAC was treated as a financial security traded in the Brazilian Stock Exchange. The critical decision at the outset of U.S. implementation would be whether to classify CePACs as a bona fide municipal financial security—i.e., traded in either a formal commodities exchange subject to U.S. securities regulations or a state-level clearinghouse subject to blue sky laws—or as simply land use entitlement certificates that could be traded under strict control and oversight by local governments. The choice would, in part, depend on the rate of CePAC adoption, the capacity of local governments, and the extent to which existing legislation could restrict or enable CePAC usage.

Although there are a number of practical implementation challenges, it appears the benefits from CePACs are sufficiently large—especially when compared to existing land value capture tools—to merit further examination of more limited application of the concept in the U.S. CePACs have been used most effectively in the context of high-density, TODs in urban settings. The limited potential applications can be examined in the context of the same high-density TOD setting but primarily for publicly owned land—in general and for specific situations involving TDRs or zoning budget/affordable housing considerations discussed earlier—where takings concerns and

new legislative requirements can be minimized. In comparison to existing tools, such application would help determine the real value of land use entitlements and provide more transparent and innovative means for land value capture. There has been increasing voter support for public transit in the U.S. in recent years and public investments in mass transit systems have been increasing as a result. The private sector-driven TODs, however, have not kept up with the rate of public investments in transit stations. The up-zoning incentives that underlie CePACs may just be the catalyst needed to trigger robust transit-oriented development projects in major U.S. cities that have yet to be materialized.

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