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Market systems development in the cities of rapidly urbanising countries

Thinkpiece

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1. Introduction

Donors are increasingly prioritising programmes that support economic transformation in the rapidly growing cities of the developing world, including programmes using market systems approaches, such as the Kuza Project in Kenya.[1] While the core principles of market systems development are applicable to urban and rural contexts, with a few notable exceptions, practical experience of urban programme design in market systems development, has been limited.

The aim of this paper is to offer guidelines for those in the market systems community interested in working in urban settings, by exploring the key features that makes cities unique and the implications these features have for programmes using a market systems approach.

Section 2 examines two key aspects that make urban systems unique (agglomeration and the urban land nexus). In section 3 we draw out insights on the working of cities as complex systems. In section 4, we discuss challenges and opportunities for market systems interventions in cities, focusing on the urban informal economy and informal settlements, whose market operations are particularly critical to poor groups. Finally, section 5 presents rules of thumb to guide practitioners and donors when using market systems approaches in urban contexts.

2. What makes the cities unique: Agglomeration and the urban land nexus

When two senior urban researchers recently tried to develop foundational concepts relevant to all cities, they settled on two: *agglomeration* and the *urban land nexus* (Scott & Storper, 2015; Storper & Scott, 2016). Agglomeration and its benefits are central to urban economics, and are held to create incentives pulling people, enterprises and all that comes with them. Along with benefits, agglomeration also creates crowding as more and more people value being close to the action, with negative as well as positive spillover effects. The resulting repulsive forces work in tension with the attractive forces of agglomeration to create urban systems, and some of their distinguishing features in terms of how, why and to whose benefit people, enterprises, activities, physical structures, and infrastructures are sorted. They are sorted, not in the sense of being directed centrally or being allocated to predetermined locations, but with a spontaneous order that emerges from the structures and complex dynamics of the cities as systems.[2] The result can be described as an urban land nexus.[3] For most contemporary cities, markets are a central, though not the only, factor determining both the economies of agglomeration and the sorting across the urban nexus.

There are problems with such attempts to generalise about what is common and foundational to cities (see Robinson & Roy, 2016). Even if agglomeration and the urban land nexus are common to virtually all cities, they are not necessarily what is central to particular cities. Also, as critics have pointed out, these concepts tend to privilege economic aspects. However, they do provide a useful entry point for understanding **urban market systems** – or what could alternatively be seen as **markets in urban systems**. These concepts are therefore elaborated in the rest of this section.

Agglomeration

The benefits of agglomerating in cities are often divided into those of matching, sharing and learning, following Duranton and Puga (2004):

1 http://www.thekuzaproject.org/
2 Cities as complex systems are explained on the next section.
3 A nexus can be defined as connections linking two or more things or as a central point, and the urban land nexus encompasses both: it is where people, their constructs and activities are connected together to form urban centres.

- Larger settlements can provide the basis for better *matching* between buyers and sellers, including between jobs and people – but in this case, it is the bigger choice that attracts people and enterprises to locate in bigger settlements, not just the attraction of specific employment opportunities or of specific people to hire.

- Larger settlements can also allow residents and enterprises to benefit from *sharing* facilities that need to be or are at their best when large – e.g. a city is in a better position than a small town or a village to accommodate a hospital, stadium, university, or even a piped water network or sewerage network. Some of these have public benefits, are difficult to fund through the market, or are too easy to monopolise, and need some form of collective support to be maintained.

- It is also widely observed that locating in urban agglomerations helps firms and individuals *learn* what they need to compete in national and international markets. While an alternative would be to try to buy this learning on the market, even knowing which knowledge markets to trust requires informal learning, often best acquired informally in cities.

Bringing people and their enterprises together in cities also creates burdens. Congestion and pollution are the most cited (in this paper we sometimes use congestion as an umbrella term to cover all the negative effects of agglomeration). More people and enterprises not only provide the benefits of scale, thicker markets, local knowledge spillovers and the like, they also lead to crowding, bad sanitation, air pollution and some would argue social problems too. In effect, the incremental burdens resulting from additional agglomeration are in tension with the incremental benefits – though there is no reason to assume an equilibrium point at which these two forces balance and the city stops growing. Instead, these two forces act differentially across people and institutions in the urban system and dynamically so that processes of urban growth and urbanisation shift over time and different sets of actors accrue the benefits and burdens.

The urban land nexus

The urban land nexus comes to the fore because, for both agglomeration economies and congestion, it matters which people and enterprises come to a city to do what, and how they are located across urban space. The benefits of cities cannot be secured just by crowding a large number of arbitrarily selected people and enterprises into a city-sized space. They depend on how people and enterprises sort themselves, or are ‘sorted’, into suitable locations.

This sorting is often mediated by markets – with the price of land as one of the more prominent ‘invisible’ hands. Government authorities of various types and levels are also involved in most sorting processes, and are needed, for example, to ensure the provision of public infrastructure and facilities. Cities are also key sites of social movements and civil society organisations, which can shape these sorting processes.

On the other hand, urban land markets are notoriously problematic, and most urban land uses have multiple and consequential extra-market impacts. Urban government actors rarely represent a well-defined public interest, and public infrastructure and facilities in turn affect land markets, complicating local politics. Civil society organisations and movements are often contradictory and contested. Nevertheless, many urban areas are sufficiently successful to attract more people, enterprises and investments, and at a first approximation those that attract the most people are also the most successful.

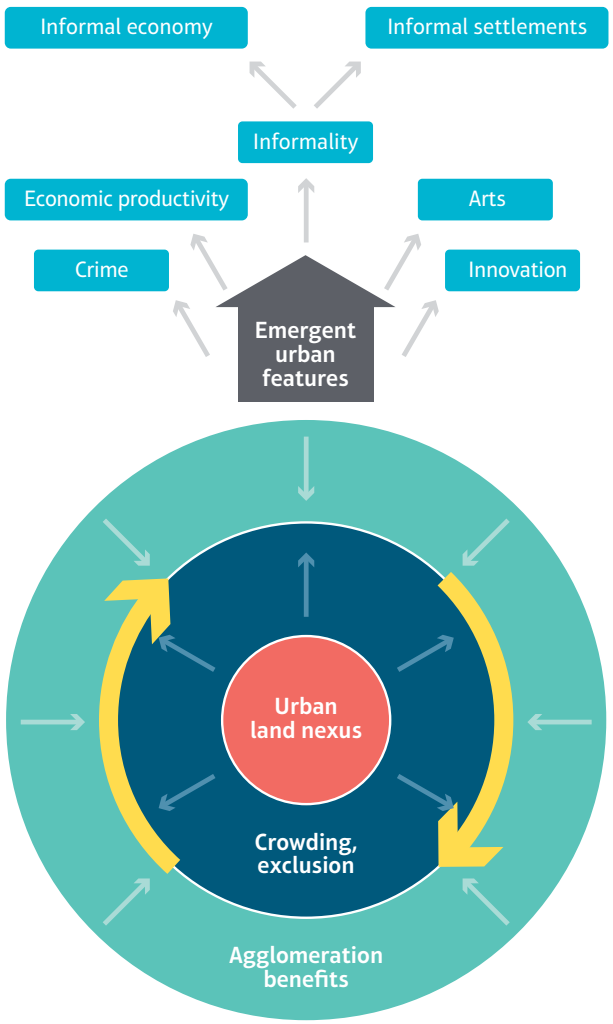
3. Cities as systems

There is a growing acknowledgement of the complex nature of cities and urban societies. To

understand them – and especially to craft effective interventions for changing them – our efforts must take account of that complexity. Market systems approaches already embrace a notion of dynamism and complexity, but specific elements make cities as systems particularly relevant for this approach. Urban complexity is the result of a critical mass of interconnections between people, as well as between people and other elements such as spaces, places, architecture, geography, infrastructure, and natural ecosystems, all acting at the same time, but in ways that depend on what others are doing (Crossley, 2008; Miller and Page, 2007). This gives cities a character over and above their individual components. From a systems perspective, cities are open systems driven to emergent order (Allen, 2012; Bak, 1996; Portugali, 2006, 2000). They have enduring features with lifetimes that are often longer than the states that contain them (Khanna, 2016).

Agglomeration and congestion help to explain how cities emerge and how they continue to develop. The benefits of being in proximity to others drive people to move to cities, while the costs of proximity (crowding) provide a counter-drive. Together, along with other factors, they keep cities *emerging* and *evolving* over time as open, driven systems that never reach a true equilibrium (Portugali, 2016). Figure 1 depicts the urban land nexus as the culmination of agglomeration, crowding, and the resulting dynamic structures for sorting people as well as their interactions and transactions.

Figure 1: The urban land nexus and emergent informality



As the critical mass of activity in the city increases, emergent features such as innovation, economic activity, and even crime scale non-linearly. In this way, the emergent city solves a problem of human society through scaling: "they structure space and human spatial densities in such a manner that the costs of running the city (especially the transportation of people, goods, energy and information) scales in the same way as the rate of social interactions (Bettencourt, 2013), while preserving human effort"(Bettencourt, 2015, p. 226). At the same time, exclusion leads to the emergence of informality as people develop ways of persisting and subsisting within the urban land nexus.

Complex systems typically remain dynamic, never settling into truly stable states. Regular patterns that emerge may persist for long periods, but then collapse if seemingly small changes within the system lead to tipping points.[4] However, such tipping points are not triggered in simple or straightforward ways. Furthermore, complex systems often have mechanisms that reduce the impacts of perturbations, absorbing efforts to change and keeping the

4 A tipping point can be defined as 'the moment of critical mass, the threshold, the boiling point' (Gladwell 2000). It is the moment when things change unexpectedly.

system within the prevailing pattern. This ability of complex systems to absorb perturbations

without undergoing fundamental change – known as resilience – is a double-edged sword. This resilience can be a desirable feature when preparing a city for the challenge of climate change (Fischer et al., 2010; Olsson et al., 2014; Chapin et al., 2010; Westley et al., 2011), as it allows the city to continue functioning despite climate perturbations.

Resilience is less desirable if one is attempting to change the way the city system functions, for example by making its markets work better for the poor. The ability to absorb interventions without undergoing fundamental change can become a barrier to creating more inclusive cities.

4. Challenges and opportunities in cities in rapid urban transition

Urban transition

Urban transition conventionally refers to a shift in a country's population from being mostly rural to mostly urban, held to accompany 'development'. New cities emerging within rapidly urbanising countries tend to have low average incomes, rapid population growth, and economic growth rates that may be higher than population growth, but which rarely yield the sort of growth in per capita income that is considered desirable. These factors are important, as the processes that accompany the urban transition often put certain groups, including low-income urban residents, untrained rural-urban migrants – and especially women within these groups – at a disadvantage when it comes to accessing the benefits of urban agglomeration.

It is noteworthy that in the midst of these transitions, there tend to be vocal groups concerned that urbanisation is taking place too rapidly, and outpacing economic advancement. This was true in the industrializing and urbanising Europe and North America, in urbanizing Latin America, in urbanizing Asia, and now mostly in urbanising Sub-Saharan Africa. Many of the same symptoms typically ascribed to excessively rapid urban population growth, such as rapidly expanding 'slums', can also be symptoms of the failure to plan for rapid urban population growth. However, if the perception is that migration is driving the expansion of slums, this can inhibit efforts to open up land so as to accommodate growth, and be used to justify restrictive regulations that make it increasingly difficult for the growing low income population to secure a home through formal land markets. In effect, within rapidly growing urban systems in rapidly urbanising countries, there is a danger of exclusionary feedback loops, with fears of excessive population growth reinforcing the very policies that create those symptoms.

Large informal settlements and informal economies are frequently emergent features of the resulting urban systems, and it is important to understand both how disadvantaged groups do access urban benefits, and how they could be allowed to do so better. By spanning both urban space and urban markets, urban informality pose particular opportunities and challenges for market systems practice. Informal markets reveal the needs and capacities of low-income city residents. Informal land and shelter markets, for example, are often more accommodating of the income streams of poor urban residents, who cannot access finance and find it difficult to accumulate wealth in a liquid form (e.g. formal savings accounts). Urban systems are likely to serve poor groups better if formal governance systems are brought into better alignment with these revealed needs and capacities.

4.1 Informal settlement

A local planner's vision of how an urban system ought to develop is for serviced plots and houses to be provided first, following formal procedures, and for people to move in as and when

they become available. However, informal settlements often appear ahead of planned residential development, on land where other uses have been designated, without the land owners' consent, without the correct registrations, or contravening building regulations in some way. Removing or even stopping informal settlement by force is rarely a realistic option, at least in the short run. In cities with large populations in informal settlements, strictly enforcing existing regulations would typically lead to enormous hardship and the disruption of the city economy. State-subsidised upgrading at scale is likely to be strongly resisted. And yet, resistance to accepting the processes and outcomes of currently informal markets also tends to be strong. Informality of this sort is often in an awkward equilibrium. It does not really serve either those who live in informal settlements or those who don't, but nor does it elicit constructive compromises.

Incremental housing and land development

A large share of the population cannot afford to buy or rent formally developed and serviced homes. However, some can afford a relatively inaccessible plot of land on the periphery, if it is made available. As revealed by recent research in Dar-es-Salaam, Tanzania, this can provide a means for upwardly mobile urban residents to move out of poverty (Andreasen, Agergaard, & Møller-Jensen, 2016). Housing itself can be built incrementally, and self-provisioning can be combined with longer-term attempts to secure formal service extensions and to construct additional rooms for rental accommodation (Andreasen & Møller-Jensen, 2016). This provides an important route out of poverty for a better off minority of the urban poor, as well as an important additional source of low-cost housing generally. There can be serious disadvantages with this sort of informal development. Completely unguided informal development can be environmentally destructive; in the example of Dar-es-Salaam, the danger exists that it could lead to the destruction or salination of critical water aquifers (McGranahan et al., 2016). Arbitrary attempts to prevent informal development are also destructive, however.

Basic services in informal settlements

The challenges facing urban residents in the informal settlements of low income countries often include unavailable public services and unaffordable private alternatives. Water provides a good example of the issues involved. Local authorities and public utilities tend to be disinclined to extend piped water networks into informal settlements, not because residents are too poor to cover the costs of piped water (in most circumstances pipes are the cheapest way of transporting water), but because, for example:

- Not being formal, these settlements are unlikely to be in the plans at least until after they have been formally recognised, and this can justify neglect;
- Government authorities may not want to confer these settlements with the legitimacy that goes with infrastructure provision (in some cases provision may be illegal);
- Extending piping haphazardly into settled neighbourhoods tends to be more expensive, and protecting the pipes can be difficult in some informal settlements, particularly without local cooperation.

Private providers face many of the same disincentives. Private operators of water utilities will normally have government contracts that determine whether they are required or even allowed to serve informal settlements, as well whether they will profit from doing so. Regulations often prohibit large independent piped systems selling water, on grounds of safety and potential monopoly pricing. Informal water vending by smaller operators takes place, but such water is often too expensive for low income households to use for all their needs.

While informality shifts city water systems even further from an idealised vision of an integrated and universal piped water network, the case in Manila (Box 1) shows that integrated city-wide systems can yield surprisingly positive outcomes, even in informal settings.

Box 1: Extending water connections in Manila's informal settlements

Manila's success in extending water

The percentage of the population in Manila (living in two concession areas, East Manila and West Manila) with access to piped water rose between 1997 and 2016 from 53 per cent to 93 per cent, while the share of the piped system with water available 24/7 increased from 67 per cent to 98 per cent. Water losses also declined. While piped water is not provided to all neighbourhoods, due to land ownership issues and legitimate concerns about how expansion was achieved, equity of the pricing and whether the system is replicable in less affluent cities,[5] in terms of getting better water services to more people it has been a success.

Market innovations and increasing water coverage in Manila

1997: two private concessions were created for water provision in Manila, one for East Manila and one for West Manila, replacing competition in a market with competitive bidding. At the start, Manila's experience was rocky; but eventually, Manila Water, operating in East Manila, became a successful concession, particularly in terms of serving informal settlements. This was by no means a predictable outcome of the creation of the concession, however.

1998: Manila Water launched a community-based engagement model, drawing on strong civil society capacities that had developed in the Philippines during the 1990s, and supported by the government's easing of land tenure requirements. This model came to rely on bulk water metering at the community level, with a range of civil society organisations, including local entrepreneurs, taking responsibility for distributing water and collecting water payments in different parts of East Manila. These organisations had already been innovating in water provision, but were unable to scale up. The model was sufficiently aligned with the concessionaire's business model and community-based provisioning, which offered incentives for both, building on each other's existing capacities and willingness, and enabling an impressive extension of water delivery.

2007-2008: Manila Water began to replace the bulk water meters with individual meters, and to replace the community model with a more conventional household model. While the collective metering and community organising model had been successful, it was complicated. The empowerment benefits often ascribed to the community model were constrained by the awkward role of civil society organisations, which served both Manila Water and the community and were often caught between the two (Cheng, 2013; Matous, 2013).

2007-2008: under new investors, the concessionaire in West Manila copied the community and individual models Manila Water had pioneered in East Manila.

Lessons

Quite a number of concession agreements for city water and sanitation systems existed in the late 1990s and early 2000s, and few turned out as well as Manila Water, particularly for the poorest. The key was not the (controversial) partial privatisation of water provision, but the innovations that took place soon after the concession: the regulator emphasised coverage, the government eased the rules on land tenure, and Manila Water sought 'unusual' partners looking to solve the root cause of their problem, community expansion and coverage. The community-based extension programme with civil society organisations, which the communities already trusted and whose characteristics they were already aware of, removed some of the key barriers which deter publicly and privately operated utilities from extending piped systems into informal settlements. Most critically, given that this was a private concession, the operator's business model could be aligned with this strategy; so much so that when the community-based approach began to falter, the utility was able to switch to household connections.

Source: Adapted from FSG 2016

5 Net income per capita (constant $) almost doubled over this period, which may go some way to explaining the shifts.

4.2 The informal economy

If informal settlement is an emergent property of urban systems in most countries experiencing urban transitions, so is the informal economy. The informal economy is generally understood to include economic activities that lie outside the purview of official regulation, whether because the regulations do not apply or through some combination of weak enforcement and evasion. Its activities include those of unregistered transport services, street venders, food producers and a range of other unregistered enterprises. It includes most waste picking, home help and home-based enterprises. Simply imposing existing formal regulations would put many of these people and enterprises out of business, driving many deeper into poverty. On the other hand, parts of the informal economy are in severe need of reform.

Almost by definition the informal economy is more accessible to poor people, and especially women, who are disproportionately represented in it. Informal enterprises avoid formal registration fees and some taxes, but often pay other taxes, as well as informal fines, and suffer harassment. Similarly, informal enterprises may survive because they do not conform to certain regulations, but they suffer individually or collectively from a lack of appropriate regulations. They also have very little influence over the regulatory environment, which is typically designed with larger and more formal enterprises in mind. In much of the informal economy, individual enterprises – often self-employed individuals operating in a cluster – have poor access to finance, little control over their own innovations, and find it difficult to meet formal standards.

Innovation tends to take a different form in the informal economy (Kraemer-Mbula & Wunsch-Vincent, 2016). As illustrated in Box 2, informal production generally requires very little capital, informal producers are effective at responding to slight variations in the market, and innovations achieved can quickly spread throughout the informal economy as they are easily copied.

Box 2: Insulated jikos (charcoal cooking stoves) in Nairobi

The success of insulated jikos

Ceramic jikos, small charcoal cooking stoves with a ceramic insert, were first produced in Nairobi in the early 1980s. By the mid-1990s they were reportedly being sold for just a few dollars and used in half the urban homes in Kenya, as well as many other charcoal-using homes in Africa. They are still ubiquitous. As with traditional jikos, micro-enterprises produce the insultaed jikos, but due to their ceramic insert it is 20-50 per cent more efficient, and reduces emissions from incomplete combustion by an estimated 20 per cent. This results in significant financial savings for users – a frequently cited estimate is that the reduced fuel costs could save up to a fifth of a household's income[1] – as well as reducing health risks, especially for women and children. In addition to its direct effects, ceramic jikos inspired innovation in rural stoves, with potentially larger impacts on wellbeing.

The technological innovation

Informal micro-enterprises in Nairobi produced the traditional urban jikos. They were very cheap, but also very energy inefficient. Ceramic Thai bucket stoves were known to be far more efficient and also inexpensive, and various international donors and local actors were involved in developing and promoting innovations. A Kenyan team including Maxwell Kinyanjui, often credited as the inventor of the ceramic jiko, took a study tour to Thailand to learn from producers of of bucket stoves. Some of the early efforts to introduce this type of stoce in Kenya focused narrowly on saving fuel rather than developing a stove users would want to use, and on setting up production facilities that could eventually be scaled up.

1 It is not clear whether the insulated jiko has really had much effect on charcoal consumption, as it may have made charcoal cooking more attractive and increased the share of cooking done with charcoal, but it has saved people on low-incomes an enormous amount of money over the years.

The model that Kinyanjui and his team developed, however, was better adapted to local cooking practices and capable of being produced in the informal economy. By understanding the system they could focus on economic savings and consumer features at the same time.

The adoption and spread of the ceramic jiko through the informal system
Attempts to work with independent formal producers were unsuccessful; they were too dependent on project funds, too far removed from the market, unable to drive costs down sufficiently, and perhaps insufficiently convinced that they had a winning product. However, informal producers were not in a position to put time or money into experimenting with new, more efficient models of stove. They did not have the access to finance needed to experiment and test out new models. Even if they did manage to create more efficient stoves, they did not have the wherewithal to expand production. And in any case, if they did come up with a successful new model, others would quickly copy it, leaving the innovators little room to expand production themselves. The work that eventually succeeded in making a breakthrough involved working closely with informal artisans to help them make a ceramic stove that suited labour-intensive informal production and was demonstrably liked by users. Donor funding subsidised innovation costs. The final product emerged after several years of incremental innovation by a wide range of producers, which informal enterprises are well suited to leading to a low-cost version with a large market. In spite of their significant challenges, informal economies are often amenable to the kinds of simultaneous incremental innovation by a wide range of producers that made such emergence possible (Bull et al. 2016).

Lessons
Success required a strategy of recognising the strengths of the informal economy and compensating for its weaknesses. Rather than creating a stove in a laboratory and giving a producer the specifications and equipment to make it, much of the design was adapted to the skills of informal metalworkers and the ceramics were simplified. Once it was picked up within the informal economy, a continuous process of incremental innovation and adaptation drove the price down and adapted stoves more closely to users' needs.

Source: Adapted from Kammen, 1995

5. Applying a market systems approach in cities in rapid urban tranistion

The specific features of cities have implications for the way that market systems practitioners understand urban systems and implement their programmes, from initial selection of market systems that are relevant to target groups' economic livelihoods or basic needs, to analysis of the core market exchange and supporting rules and functions, to programme implementation and results measurement. Given the high degree of interconnectedness and the dynamic nature of urban systems, with unforeseen (and unpredictable) side effects of actions, complexity-informed analysis should favour demonstrating how patterns emerge over making assumptions about which systemic features cause which other features. It also suggests an iterative and participatory approach to constructing and mapping urban systems, in dialogue with system actors.

Table 1 sets out rules of thumb for a market systems approach in rapidly urbanising cities. The top part of the table (elaborated in section 5.1) conveys what distinguishes a systems-based approach from more conventional urban interventions to help disadvantaged groups. It draws heavily on the Manila Water and Kenyan jiko examples summarised above. Many of these general rules of thumb will be familiar to market systems practitioners as common principles of working in systems. The bottom half of the table (elaborated in section 5.2) applies the

learning to rapidly urbanising countries in particular. Simple rules are no substitute for deep understanding or extensive and varied practical experience, however, and these are a set of heuristics rather than a 'how to' guide. Not all of these rules will be relevant on every occasion.

Table 1. Rules of thumb for a market systems approach	
In urban systems	Try out experimental changes, build on successful outcomes and learn from "failures"
	Promote small actionable changes that, given the way the market systems are working, may lead to large-scale, enduring and desirable changes
	Avoid piloting changes whose replication depends on markets that will not support them
	Promote changes in business models that will align them with more desirable outcomes, or desirable changes in technologies/operations that will align them with business models
	Consider all of the potentially important effects of the changes, not just the targeted ones
	Identify and address remediable market, public and civil society failures
In rapidly urbanising countries	Work to enhance beneficial urban agglomeration effects and reduce congestion effects
	Promote changes that respond to the revealed capacities and needs of disadvantaged urban groups, including especially low income women and migrants
	Develop interventions based on understanding the strengths and constraints of urban informal producers
	Increase the influence of (organised) groups of informal settlement residents and informal economy workers on the regulations they must live and work by

5.1 Rules of thumb for a market systems approach in urban systems

Try out experimental changes, build on successful outcomes and learn from 'failures'.
The complexity of urban systems, and the contrast between actual urban dynamics and the dynamics of the idealised planned city or market city make it particularly important to take an adaptive and experimental approach. Limited forms of experimentation and adaptation are evident in the examples of Manila Water and the jiko stoves. The Manila market was divided into two concessions, which itself created a natural experiment. The far more successful concession adopted a community-based model, which involved what were in effect trials of many different forms of community organisation, to get the water the final distance from collective water meters to the recipient households. The insulated charcoal jikos were first tried out in a more conventional formal enterprise, but it was only when a model was adapted to the operating procedures of informal metalworkers, and to the needs of the users, that success was achieved.

Promote small, actionable changes that, given the way the market systems are working, may lead to large-scale, enduring and desirable changes in markets.
This rule of thumb is easier to endorse than to follow. It is easier to see in retrospect that getting informal metalworkers to collaborate in producing insulated jikos suited to local cooking practices could lead to large-scale, enduring and desirable changes. However, a solid understanding of the strengths and weaknesses of informal market systems and the potential for scale is critical. It is unlikely to be a coincidence that the project leader who pioneered the improved jiko was known for his willingness to engage with artisanal workers and his respect for them.

Avoid piloting changes whose replication depends on markets that will not support them.
As a corollary to the previous rule of thumb, it is important to avoid piloting changes that can only achieve their desirable outcomes by being so costly or demanding that the markets will not bear them without unrealistic levels of public support. When the insulated jikos took off, it was because a prototype had become affordable, and over the course of a few months saved money

for households. When Manila Water engaged with community-based organisations to go the last mile, the price was actually higher than for a normal household connections – which understandably provoked objections – but it was cheaper than the prevailing alternatives in informal settlements.

Promote changes in business models that will align them with more desirable outcomes, or desirable changes in technologies or operations that will align them with existing business models.
One of the market-based means of creating big impacts with small changes is to bring successful business models into better alignment with the production of desirable outputs. The jikos and Manila Water are examples of this, the jiko example involving the creation of more desirable jikos that fit the business model of informal stove producers. The financial investment required for the relatively large technological leap of designing hybrid metal/ceramic jikos was secured outside of the informal sector, and there are good reasons to think the leap would not have been made within the informal sector. Close engagement with the informal workers continued until they had a jiko design that the informal workers could make and sell without access to finance, costly capital equipment, large production facilities or other major shifts to their business model. This relatively close alignment then allowed production to increase and supported the incremental improvements typical of informal enterprises which slowly drove the price down. Manila Water, on the other hand, ascribes its success in extending water services in informal settlements to efforts to align its business model so as to make such extension economically viable. That is clearly an oversimplification. For example, the state also eased restrictions on serving areas with informal tenure, while civil society groups innovated and built capacity to act as intermediaries. Collective water meters enabled a per unit water price to be included in the tariff. Manila Water's business model and the technologies and procedures were adapted to each other.

Consider all potentially important effects of the changes, not just the ones targeted. Interventions in complex systems often have unintended side effects, and markets will often take up changes that were not those intended. While these cannot all be predicted, in designing a market system intervention it is important to consider what these might be. In the case of the jikos the intended change was to reduce charcoal consumption, but the more clearly achieved changes were to reduce costs for the users and to reduce exposure to harmful pollutants. However, the improved jikos may have made charcoal cooking more attractive and therefore increased the share of cooking done with charcoal, and perhaps even the amount of charcoal consumed. In the case of Manila Water, the outcomes of the concessions were clearly uncertain – the success of the East-side concession was more than matched by the failure of the West-side concession, where a particularly low bid was followed by a particularly poorly performing utility. In Manila Water's concession, the community organisations initially played a very important role, and increased civil society capacity was presented by some as an important outcome of the new model. Later, however, it transpired that many of the community organisations and local entrepreneurs were being put in an awkward position between the company and the informal settlement residents, and community organisations were largely circumvented, with household meters replacing the community meters.

Identify and address remediable market, public and civil society failures.
One could interpret the large increase in the share of households in Manila with water available at their homes as an example of the co-production of water services by private enterprise (the private operator of the concession to supply water to part of Manila, selected on the basis of a competitive bid), the state (which owns the piped water system and set up the competition) and civil society (community-based organisations that received funding to supply water to households). One could argue that each played to its strengths, compensating for the failures of the others: the state regulator compensating for the monopolistic tendencies of private utility operators, the private operator compensating for the bureaucratic tendencies of public providers, and the community-based organisations compensating for the tendencies of public and private providers to disregard informal settlements. But in identifying institutional failures, it is best not to draw too sharp a distinction between different sectors, and instead to look at their combined as well as individual strengths and weaknesses.

5.2 Rules of thumb for a market systems approach in rapidly urbanising countries

Work to enhance beneficial urban agglomeration effects and reduce congestion effects.
Cities benefit from what are termed agglomeration economies, and suffer from congestion. However, the potential benefits of agglomeration do not all emerge spontaneously, and the costs of congestion vary considerably depending on how different urban actors respond. Piped water and sewer systems, for example, are used to overcome congestion problems, while taking advantage of agglomeration economies. They are less necessary in rural areas, where, with lower densities, simpler decentralised water and sanitation technologies often suffice; and less costly in urban areas, where returns to scale and proximity can make networks of pipes and sewers a comparatively efficient means of conveying water to households and removing wastewater. As the Manila example illustrates, it is a challenge to get market systems that involve such networks to function fairly and efficiently, but the rule of thumb still holds: successful interventions tend to be those that build on the advantages of urban agglomeration and counter its burdens. Roads and public spaces are also critical tools in enhancing urban agglomeration and reducing congestion, and can transform how urban market systems operate. They also quite literally 'shape' cities, if not always in the manner intended, with new roads often seeming to create their own 'new' traffic. However, efforts to intervene in urban (market) systems to enhance urban agglomeration and reduce congestion are central to good urban planning and need to be part of urban market systems approaches.

Promote changes that respond to revealed capacities and needs of disadvantaged urban groups, including in particular low-income women and migrants.
Take the example of housing markets. In rapidly growing cities, especially those growing much more rapidly than local elites would like, poor groups tend to be especially poorly served by land- and location-related markets. Poorly served informal settlements are particularly disadvantageous for women, who bear most of the labour and health-care burdens of service deficiencies, such as inadequate water and poor sanitation. Poorly located settlements can also make it difficult for women when they are trying to combine paid work with a substantial care responsibilities in and around the home. However, relying primarily on restrictive regulations to prevent poorly served or located settlements from being developed is likely to harm those who depend on them, by reducing the supply of affordable housing or shifting it into informal settlements. On the other hand, changes that increase the supply of affordable, suitable land or housing can improve the position of poor groups. This may include preparing in advance for the expansion of the city at the periphery (Angel 2015), and the densification of low-income residential areas nearer the centre (Hasan, Sadiq and Ahmed 2010). One of the most successful urban programmes for housing-deprived urban groups, the Baan Mankong programme in Thailand, explicitly acknowledged that poor people are on the 'demand side' of the housing equation, with an urgent motivation to resolve land problems and a powerful drive to find decent housing for their families (Boonyabancha 2009). They encouraged people to seek empty land for low-income housing, provided there was support from government authorities, in effect changing the manner in which part of the urban land market operates.

Develop interventions based on understanding the strengths and constraints of urban informal producers.
When informal market systems emerge in cities, their superficial disorder and failure to conform to formal plans and regulations often puts those who depend on them at odds with the authorities. There may be cases where the problem is that informal operators are not bearing the public costs of their activities, and efficient and fair regulations are simply not being enforced (because of low state capacity and/or corruption). On the other hand, informal market systems often arise in response to deficiencies in formal systems: informal water vendors emerge where the piped system is failing or absent; informal public transport systems emerge where the formal public transport fails to go or is overloaded; informal waste pickers emerge where valuable materials are not otherwise being recycled; informal traders emerge where formal markets are not oper-

ating well. The insulated charcoal jikos began to succeed after those promoting them engaged constructively with the urban informal economy; and Manila Water began to move towards higher water coverage rates after engaging more constructively with urban informal settlements and organisations that support them. More generally, high levels of informal-sector activity often signal underlying problems, but the suppression of these activities often makes matters worse. A market systems approach needs to try to get at, or at least understand and engage with, underlying problems.

Increase the influence of (organised) groups of informal settlement residents and informal economy workers over the regulations they must live and work by.
Urban markets are conditioned by politics and institutions. Low-income urban groups tend to be poorly represented in these processes and poorly served by urban markets; better organisation among low-income communities and informal workers to engage more effectively with urban authorities, should result in changes to the rules such that these markets operate better for the poorest. Federations of the urban poor, mostly rooted in women's savings groups, are at the centre of one of the most influential international networks of people disadvantaged by urban land- and location-related markets, Slum/Shack Dwellers International. Locally, such groups organise to improve access to land, shelter and related services (Satterthwaite and Mitlin 2014), and try to develop improvements at the community level that can be scaled up to their cities' informal settlements generally. Their ways of working have been replicated from country to country and city to city, though the extent to which they have altered the urban markets where they operate is unclear. Similar processes are being developed through partnerships of NGOs and organised informal workers such as WIEGO (Chen et al. 2016; PRIA 2013, 2014).

6. Conclusions

Understanding urban context is important to market systems diagnosis and intervention design. Cities have specific features that should influence the way market systems programmes are designed and implemented. Agglomeration effects – leading to efficiency, negative and positive spill-overs, pollution and crowding – and the urban land nexus are core features that help to explain how cities arise and how they continue to develop. The informal sector and informal settlements frequently emerge as a result of the way in which rapid urban transition is managed in many countries. Informal urban markets are effective at revealing the capacities and needs of disadvantaged urban groups, and offer new partners or opportunities for market systems practitioners to work with, but bring their own challenges. This paper offers a framework to understand these key features of cities and a series of rules of thumb, backed by examples, to support the response of market systems practitioners.

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