Gary A. Dymski

Leeds University Business School, UK

University of California Riverside, USA

✉ G.Dymski@leeds.ac.uk

The Crisis of the Core Seen through the Eyes of the Periphery: A Schelling Model of the Global-South Megacity and the European Crisis

Summary: Adapting Schelling's checker-board discrimination framework, we develop a disequilibrium model to examine growth in two core-periphery settings: global-South megacities and the Eurozone. Regarding megacities, informal sector growth undercuts the government's capacity to fund fully adequate public services. Regarding the Eurozone, an increase in the relative size of the periphery will – under the government's balanced-budget constraint – undercut the provision of public safety-net and infrastructure services. And if low-wage production is initiated in the European periphery, the core is likely to collapse.

"Urbanization is decisive because it is so expensive. The difference between the costs of urban development and rural development does not turn on comparing the capital required for factories and that required for farms. Each of these is a small part of total investment, and the difference per head is not always in favor of industry. The difference turns on infrastructure." W. Arthur Lewis (1977, pp. 39-40).

Key words: Schelling, Core and periphery, Informal-sector, Hernando De Soto, Global-South megacity, European crisis, Disequilibrium.

JEL: C63, C70, E11, E12, O11, O17, P10.

This paper explores the tensions that can arise in growing spatial economies with core and periphery regions. Motivating this exploration is a concern with the challenges of governance and sustainability that are posed by the growth of lower-income, more informal settlements on the borders of higher-income, more formal spaces. Adapting Thomas Schelling's (1971) checker-board model of discrimination, we develop a simple disequilibrium model that pays special attention to the relationship between the demand and supply of public services, and to the location of income-earning and income-generating activities in core and periphery. Arbitrary parameters are assigned and analyzed under different scenarios of informal sector growth.

The point of these simple simulations is to make several points about the dynamics of growth in global-South megacities and in the European Community. Regarding megacities, it is shown that informal sector growth undercuts the govern-

ment's capacity to fund fully-adequate public services. Hernando De Soto's (2000) ideas about using spontaneous urban accumulation in the informal sector to jumpstart sustainable urban growth in a core-periphery setting are not supported. Only continued investment in high-wage, formal-sector tradables production can expand the formal sector as the city itself expands. Regarding the Eurozone, an increase in the size of the peripheral areas whose workers are supplying services to the core will weaken the capacity of the Eurozone to maintain, much less expand, its public services. And if low-wage production is initiated in the European periphery, the core is likely to collapse.

In both cases, these problems of unsustainability can be viewed from two lenses: the viewpoint of the core, whose members have an interest in expanding high-level public services as well as high wage levels; and the viewpoint of the periphery, whose members want access to the income-earning and remittance-generating capacity of the core, not its sustainability. The comparison of the Eurozone's core and periphery to the formal and informal areas within a global-South megacity is a provocation. This comparison, via a "toy model", is motivated by the fact that both spatial areas are comprised of interacting, structurally-differentiated agents, co-existing in unstable disequilibrium settings and not in equilibrium rest states. The aim of using this "toy model" is to show that structural interconnections matter in understanding the linkages between core and periphery growth, and discussions of policy choices regarding either global-South megacities or the Eurozone should take these interconnections into account.

The terms "formal sector" and "informal sector" are both defined here in spatial terms. The formal sector is that portion of any city or region in which: (a) there is a fully functional physical infrastructure; (b) there are in place effective processes governing the construction or alteration of physical structures; and (c) the residents and local business-owners pay taxes on most of their income-generating activities. By contrast, a physical space within the urban periphery is defined as informal if: (a) it has only have a partially functional physical infrastructure (for example, no running water in homes); (b) there is no effective governance of construction activities there; and/or (c) local residents and business-owners pay few or no taxes on their income-generating activities. With these definitions, the formal/informal distinction is a matter of degree, not kind.

Obviously, this definition differs from much of contemporary writing, which associates the "formal/informal" distinction with the level of regulatory oversight or formal protections in credit and/or labor markets. This spatial definition of the formal and informal is immediately applicable to the urban context; but it also maps readily – if with some key differences – to the case of the European nations. There are clear differences among nations in the level of infrastructure, the degree to which building construction is regulated, and the level of compliance with tax laws. The fact that differences along these lines exist among European nations, that these nations are contiguous, and that the growth of the European Monetary Union and of the European Community have been actively debated since these entities' founding suggests that the urban growth/formal-informal problematic can be extended to the case of contemporary Europe.

Section 1 discusses why the link between urban growth and the informal sector is a blind spot in recent literature. Sections 2 and 3 then introduce this paper's formal model and explore its dynamics. These sections explore the problematic of the links between informal-sector expansion and urban growth, using parameters suggestive of a global-South megacity. Section 4 uses this model to reflect on the European economic crisis, shifting the focus from urban growth to regional crisis. Section 5 concludes.

1. Urban Growth and Informalization: Blind Spots in Urban and Development Economics Discourse

How can urban growth be financed and managed when some growth is informal in nature? Prior studies have addressed only subsets of the issues posed by this question. Earlier studies have explored the idea that cities have particular structural features at different "stages" (for example, David Birch 1971), the costs of urban growth (Johannes Linn 1982), governance challenges in urban growth (John D. Kasarda and Edward M. Crenshaw 1991), and spatial spillovers in urban interactions (Steven N. Durlauf 1994). None of these recent discussions of spatial urban growth has examined the problems posed by a growing informal sector. John R. Harris and Michael P. Todaro (1970) suggested a theoretical basis for understanding the growth of urban low-wage areas; they focused on why those migrating to urban centers often fall into dire poverty and unemployment. If a potential migrant's expected income in an urban center – that is, the amount she would earn if she found work, multiplied by the probability of obtaining work – exceeds the rural wage, there is an incentive to migrate to the city. So high unemployment remains a feature of even rapidly-growing developing-world cities in nations with substantial rural populations: the faster and more dynamic is urban growth, the more rural migrants are pulled in.

And informal urban areas, linked to population movements from rural to urban communities, are growing explosively in virtually all large cities in the developing world. In a December 2005 conversation, Aloysio Asti, director of planning at the Brazilian National Development Bank (BNDES), described this phenomenon in Brazil as follows: "If Brazil grows 4%, São Paulo grows 10%; if Brazil grows 0%, São Paulo grows 6%". Harris and Todaro do not discuss informal urban settlements, but it is clear that the population they are describing will be concentrated in such urban places. At present, one of every three urban residents globally lives in an informal area (Mike Davis 2007). According to a recent World Bank estimate, the informal sector accounts for 30% of GDP in the developing world, and 70% of the workers (Vincent Palmade and Andrea Anayiotos 2005, p. 1).

One factor contributing to the growth of informal residential areas is another emerging urban trend: the location of new investment and industrial location in "the "extended urban regions" (peri-urban areas) outside major cities. This spatial trend will account for 40 percent of urban population growth (in East Asia) … over the next 20-25 years." These peri-urban areas are:

> "industrial estates with large perimeter structures and infrastructure networks along with access to a major city for higher level services. Their workers are not commuters

but residents, often migrants from other urban areas and including both highly qualified and less skilled workers as well as migrants from rural areas, all drawn by both the core formal sector jobs and by the spin-off demand for other services." (World Bank 2003, p. 9).

So industry is moving outside the city and paying lower wages than were paid when it was located in the urban core. This World Bank study recognizes the possibility that peri-urban development can lead to "spatial segmentation of population and of jobs" and hence to poverty traps. It thus recommends "a well-integrated internal labor market" and notes that "the peri-urbanization phenomenon also calls for realistic urban management policies that integrate the outer zones with the cities and provide adequate urban services for them" (*ibid.*, p. 9).

What then to do about the fact that an ever-higher percentage of people are living in areas with inadequate safety-net services and with inadequate infrastructure? As a recent study by the United Nations Conference on Trade and Development - UNCTAD (2002) warned, growing informality can lead to poverty traps. The 2005 World Bank analysis cited above blames government regulation and taxes: "What are the root causes of informality? Overly stringent and expensive government regulations in the labor, product, and land markets, and an ever increasing tax burden imposed on an ever shrinking formal sector" (Palmade and Anayiotos 2005, p. 2).

These authors suggest that the cure lies in reducing regulations, reducing taxes, increasing access to credit, and improving public sector governance. Further, "mak(ing) government land available for private development … and … privatiz(ing) utilities … would have the double advantage of generating the funds needed to develop infrastructure while lowering the price of formal land" (*ibid.*, p. 2). Yoshiaki Azuma and Herschel Grossman (2002) support this argument by proposing a formal model in which producers shift from formal to informal status when the burden of taxes grows too heavy relative to firm capacity.

These recommendations fit hand-in-glove with the recommendations of De Soto in his *The Mystery of Capital* (2000). This book, "a must-read for liberal and neoliberal reformists" (Efraín Gonzales de Olarte 2001, p. 275), poses the question, "Why does capitalism thrive only in the West, as if enclosed in a bell jar?" (De Soto 2000, p. 5). His answer is:

> "The poor inhabitants of these nations – five-sixths of humanity – do have things, but they lack the process to represent their property and create capital. They have houses but not titles; crops but not deeds; businesses but not statutes of incorporation. It is the unavailability of these essential representations that explains why people who have adapted every other Western invention ... have not been able to produce sufficient capital to make their domestic capitalism work. ... This is the mystery of capital" (*ibid.*, pp. 6-7).

He describes the new megacities of Sao Paulo, Manila, and elsewhere as a new industrial revolution, a transformation from life on a small scale to life on a large scale.

> "The fundamental problem for non-Western nations is not that people are moving to urban centers, that garbage is piling up, that infrastructure is insufficient, or that the countryside is being abandoned. All of that happened in advanced nations. Nor is the problem simply urban growth. ... The primary problem is the delay in recognizing ... a

new class of entrepreneurs with their own legal arrangements ... no one notices that the real cause of the disorder is not population, or urban growth, or even a poor minority, but an outmoded system of legal property." (*ibid.*, pp. 73-74).

In sum, for the World Bank, privatization, tax reduction, and fewer regulations are the key to reducing informalization. And for De Soto, providing titles in property to those occupying informal, ownerless tracts of land in urban peripheral zones will unlock higher levels of economic growth.

Both perspectives ignore several key factors. They ignore the relationship between cost and infrastructure need that W. Arthur Lewis (1977) emphasizes in the quotation excerpted above. They forget the fact that adequate infrastructure and safety-net services are necessary for the health and welfare of new urban residents, will not be provided by the private sector, and are costly. For example, an empirical study of Egypt, Bangladesh, Indonesia, and Pakistan found that settling an average family in these nations' cities had a marginal cost three times higher than in rural areas (Harry Richardson 1987). This leads these analysts to give no attention to the interactions between public services, wage levels, tax revenues, and industrial location. This, in turn, leads them to overlook a crucial issue: the potential for loss of political legitimacy and responsiveness in the unfolding dynamics of developing-world urban growth. That is, if one is contrasting the growth prospects of one urban configuration (the peri-urban region) with the problematic aspects of another (the sprawling megacity), the economic forces at work in increasingly informalized megacities also need careful attention. The model developed below reflects one initial effort to take on the problems that arise because of multiple interactions between structurally differentiated areas.

2. A Schelling Model: Spatial Disequilibrium with Formal and Informal Sectors

In 1971, Schelling proposed a model that used a checkerboard to demonstrate how racial hostility could lead to racial segregation. In Schelling's world, every agent occupies a square within a grid, and can move freely to any unoccupied square. His model, in which the agents are cellular automata behaving according to a predetermined decision algorithm, was an early precursor of contemporary complexity theory.

Note: Initial position with segregated B and W agents.

Source: Author.

Figure 1A Schelling Segregation Model

W	W	W		
W	W			
W		B	B	B
		B	B	B
		B	B	B

Note: Solution with W-agent aversion to B agents.

Source: Author.

Figure 1B Schelling Segregation Model

We adapt Schelling's approach for use here. Consider the Schelling Model 1 shown in Figure 1A. There are two types of agent, W and B. B agents are indifferent about the "racial" composition of the squares surrounding their locations; but W agents gain utility by avoiding proximity to B agents. With free agent movement about the board, the solution in Figure 1B readily emerges. Of course, the initial positions of B and W agents here are chosen deliberately: the B agents occupy a space resembling an American "inner city" and the W agents, "suburbs" contiguous to that inner city. The story suggested here is that W agents, all else equal, would prefer to be in "exurban" areas remote from the urban "inner city" if this provides some social separation from B agents. A new study of troubled "inner suburbs" in American cities has documented urban-growth patterns of precisely this sort (Robert Puentes and David Warren 2006).

Schelling's checkerboard immediately suggests an urban milieu, and as such invites further refinement when attention turns from Schelling's emphasis on the dynamics of racial segregation to other questions, such as the spatial interaction of a core and periphery in either a city or a region. Here we make the following adaptations, initially for a city: (1) the city consists of occupied squares, either formal (F) or informal (I); (2) the city grows through time; (3) expanding the formal portion of the grid – converting either an open or an informal square into a formal square – involves large fixed costs; (4) households can move costlessly onto any I-square (though they may have to pay rent once there).

		I	I	I
	I	F	F	F
	I	F	F	F
	I	F	F	F

Note: F = formal sector, I = informal sector.

Source: Author.

Figure 2A Spatial Model of a City or a Region

[I]	[I]	I	I	I
[I]	[I]	I	I	I
I	I	F	F	F
I	I	F	F	F
I	I	F	F	F

Note: F = formal sector, I = informal sector.
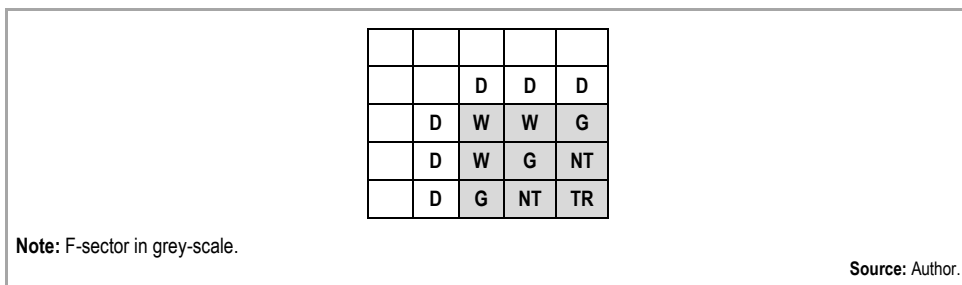
Source: Author.
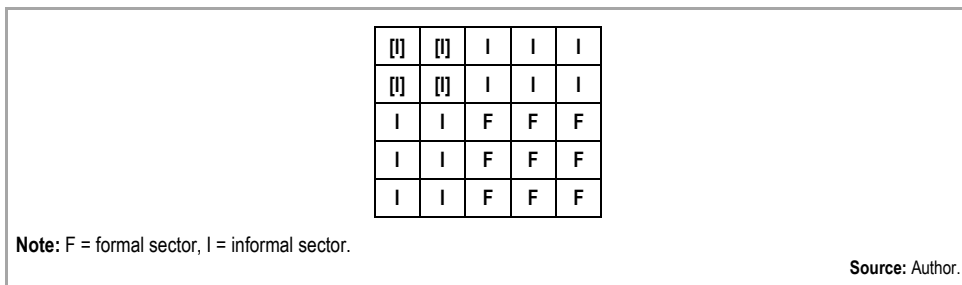
Figure 2B Spatial Model with Growing *I* Sector

An initial position for an F-square/I-square city is set out in Figure 2A. The motivation of the model developed here is to explore some of the possible implications of a growing informal sector: in the example given in Figure 2B, of an informal sector that grows first to 12 squares, and then to 16? Formal squares have a full set of municipal services, and informal squares do not. So it is tempting to say that purely I-square growth is not "socially optimal". But, for whom? Does this growth generate some economic tensions, in that some urban sectors gain and others lose? To answer such questions, we add some mathematical structure to this model.

Formal Structure

This model has the same formal logic as a simple Keynesian multiplier or urban input-output model (these come to the same thing, as Gary A. Dymski 2004 shows). A set of distinct economic units interact in a variety of product and service markets. Their economic activity is governed by an injection of demand by offshore units (that is, by the sales of the city's tradable sector) and of government expenditure. The government is required to maintain a balanced budget. This is accomplished by adjusting tax rates period over period. Mathematically, this model takes the form of a simulation. Some of the details of this model are presented here. The remainder of this model's technical details and the simulation model itself are available from the author.

		D	D	D
	D	W	W	G
	D	W	G	NT
	D	G	NT	TR

Note: F-sector in grey-scale.

Source: Author.

Figure 3A City or Region with Spatially Distributed Activities: Baseline Case

		D	D	D
		D	D	D
D	D	W	W	G
D	D	W	G	NT
D	D	G	NT	TR

Source: Author.

Figure 3B Harris-Todaro (H-T) Scenario 1: Growing Periphery Labor

We define two categories of urban space, formal and informal, and five types of agents who occupy urban space. Formal spaces (F-squares), which receive a full set of governmental services, are identified in this and other graphics by a grey background. Figure 3A demonstrates the spatial grid across which these agents and these activities are distributed. In one F-square is TR, a firm that produces tradable goods sold to offshore units, and that employs three wage-workers, W. In two spaces are NT units, stores that sell non-tradable goods (consumables and durable goods) to all units who live in the urban grid. Worker (W) agents occupy three squares and are employed by the TR unit. Government (G) employees occupy three squares. On the periphery of the formal-sector grid are domestic-service (D) workers in informal spaces (I-squares).

Now onto cash flows. Table 1 summarizes some of the cash-flows and ratios for several illustrative scenarios, which unfolded here. Initially, we describe a baseline scenario (shown in Figure 3A above). The TR firm pays the three W units it employs at the rate of 1 per period, and earns 3 per period after making these payments. G units too are paid 1 per period. Taxes may be levied for three purposes. First, every occupied space requires a safety-net government expenditure. The level of safety-net need varies directly with the proportion of the urban grid that consists of I-squares; here the formula is (I-squares/F-squares)*(0.25). Second, every occupied F-square (in Scenario 1 above, nine of the 15 initial occupied spaces) generates 0.10 of public infrastructure-maintenance costs per period. Third is the public construction cost of converting occupied I-squares into F-squares: this potential "tax need" is 0.2 per converted I-square. Whatever level of government expenditures is selected, this revenue is obtained via a flat-rate tax levied on the incomes earned by F-square occupants. In this model, the spatial "formal sector" is paralleled by a labor-market divide: F-square occupants have occupations that are "on the government's books" and that are assessed income taxes; I-square occupants are not assessed income taxes.

There are three categories of consumption expenditure: consumable goods, domestic services, and rent. Every unit (both I-square and F-square) buys 0.25 of goods from a NT unit each period; and every F-square occupant spends 0.3 for domestic-service work by a D worker. NT expenditure flows are divided equally by however many NT units exist; and similarly for D units. In effect, D workers may have less than full-time work, and may work at more than one I-square. D-workers' income levels in any period depend on the ratio between the number of I-square residents and D-workers. The higher this ratio in any period, the higher the income of

Table 1   Statistics for Scenarios Shown in Figures 3A-6B

Statistic	Figure number:			
	3A	**3B**	**4A**	**4B**
F-square population	9	9	13	9
I-square population	6	12	8	16
G, W-workers' pre-tax wage	1	1	1	1
D-workers' wage (no taxes paid)	0.45	0.23	0.49	0.33
G, W-worker after-tax, after-expenditure, balance: with infrastructure taxes included	-0.05*	-0.35*	0.035	-0.165*
With infrastructure taxes excluded	0.083	-0.08**	0.096	0.019
After-tax TR-unit earnings on F-squares	2.50	2.20	5.58	5.38
After-tax NT-unit earnings on F-squares	1.83	2.28	2.86	3.16
Can taxes support infrastructure spending?	yes	no	yes	no
Per-capita FS tax rate	0.40	0.43	0.32	0.33
Per-capita city GDP	1.03	0.81	1.44	1.25
Remittances/D worker	0.2	-0.025	0.238	0.075
IS share of income (%)	17.5	15.9	12.9	12.5
IS remittances/city GDP (%)	7.8	-1.8	6.3	2.9
IS share of urban space (%)	40.0	57.1	38.1	40.0

Statistic	Figure number:			
	5A	**5B**	**6A**	**6B**
F-square population	9	9	9	6
I-square population	12	16	16	19
G, W-workers' pre-tax wage	1	1	1	0.37
D-workers' wage (no taxes paid)	.33	0.254	0.36	0.27
G, W-worker after-tax, after-expenditure, balance: with infrastructure taxes included	-0.35*	-0.55*	-0.55*	-0.51*
With infrastructure taxes excluded	-0.08**	-0.19**	-0.19**	0.02***
After-tax TR-unit earnings on F-squares	2.20	2.00	2.00	4.26
After-tax NT-unit earnings on F-squares	0.96	1.01	1.01	1.38
Can taxes support infrastructure spending?	no	no	no	1.56
Per-capita FS tax rate	0.43	0.54	0.54	N/A***
Per-capita city GDP	0.81	0.81	0.93	0.88
Remittances/D worker	0.08	-0.09	0.035	-0.055
IS share of income (%)	31.4	34.6	51.2	50.0
IS remittances/city GDP (%)	2.5	-12.0	3.25	-1.9
IS share of urban space (%)	57.1	64.0	64.0	76.0

Note: In scenarios denoted by a (*), taxation for both safety-net and infrastructure services will cause negative net balances for W-agents. In scenarios denoted by a (**), taxation for safety-net services alone leads to negative net balances for W-agents. In the scenario denoted (***), W workers have been informalized and no longer pay taxes.

Source: Author.

D-workers, and *vice versa*. In the baseline scenario (Figure 3A), a total of 2.7 is paid for D-services; this results in per-period income of 0.45 for each D worker. Land rent is also paid. Initially, only F-square workers pay rent, totalling 0.10 per period. For

simplicity, all squares are owned by the two NT units, who split the receipts from land rent.

In this model, the marginal cost of urbanization depends on whether it is being occupied as an F-square or an I-square. The F-square requires an incremental increase in public expenditures to finance the cost of infrastructure on the new square and to support safety-net expenditures for its new resident. The requirement that the budget be balanced means that taxes must be raised as well; and since infrastructure is costly, the new F-square cannot finance itself.

This scenario then follows Rémy Prud'homme's (1973) approach to the costs of urbanization fairly closely; he specified these costs as follows: "(i) private costs borne by the marginal inhabitant (e.g. purchase of a new home) or firm (construction of a new plant); (ii) external costs borne by all inhabitants and firms as a result of the presence of the newcomers (e.g. lengthening of work-home trips because of increased congestion, aggravation of air or noise pollution); and (iii) public costs borne by some kind of government (e.g. provision of new roads, construction and operation of additional schools)". Prud'homme notes that costs in category (ii) are non-pecuniary. These costs are ignored here.

Table 1 shows sectoral balances for W- and G-agents after they have paid for rent and consumption under two premises: first, when they pay taxes at a rate that would support both public safety-net and infrastructure services; second, at a rate that would support only public safety-net services. Note that with one exception – the scenario accompanying Figure 4A – agent balances are negative under the higher level of taxation. This level of taxes is not viable; these agents' cash-flows must be greater than zero for sustainability. Under the lower level of taxes, agent balances are still not positive in some cases; in these cases, the sustainability of public services generally is jeopardized.

Assuming that I squares are *not* formalized, the baseline scenario entails an aggregate income of 15.45, with a portion used for consumption (6.45), a portion for taxes (2.4), and a portion set aside as savings (6.6). The *per-capita* sector balances show that after all consumption (NT, D) and tax expenditures, the TR unit has a net balance of 2.08, each NT unit a net balance of 1.40, each W and G unit a balance of 0.83, and each D unit a balance of 0.2. The result here is very close to a Kaldorian model in which capitalists save and workers do not. A difference here is that one class of workers (D) saves more than another (W and G) even while making a lower wage. W and G units are trying to get ahead financially; D workers send some of their earnings home to rural communities as remittances.

Behavior in this model is incompletely specified. Intermediate costs are ignored, as is depreciation. We do not specify how agents' savings are used, when positive savings arise. And while the income side of the model is set out in full, the investment portion of the implicit "investment-savings" balance is not filled in. Further, the agents are automata, and the objective function of the government sector has not been identified.

Nonetheless, this arbitrary framework permits us to evaluate different growth scenarios for an economy populated by diverse agents, distributed across space, with interlaced interactions. It highlights several pressure points: (1) the impact of the

number of informal-sector workers and the demand for their labor services on income flows, in different industrial/commercial scenarios; (2) the fiscal relationships between a growing informal sector, the need for government services, and tax rates on urban residents who pay taxes; (3) the economic and spatial balances between the spatial informal and formal sectors in the context of urban growth. The next section analyzes these pressure points for a city with a center and a periphery.

3. Reconsidering Harris-Todaro and De Soto Urban Growth

As noted, the Harris-Todaro model reproduces the basic result from Lewis's 1954 article on unlimited supplies of labor: migration to the city will occur when workers' expected return from urban labor exceeds that from rural labor. Migration ceases when the returns from urban and rural work – net of transactions costs – are equalized. This result is shown in Figure 3B.

Six more migrants arrive in Figure 3B. This impacts D workers' wage rate. Since D workers share the fixed expenditure sum available for domestic service, the doubling (from 6 to 12) in the number of D workers seeking employment means that D-workers' incomes fall 50%, from 0.45 to 0.23. This shifts remittance flows by I-sector residents from positive to negative (0.2 to -0.025). We do not pursue the implications of this shift for the number of I-sector residents; but this result does suggest that rural-urban migration may be governed not by the marginal urban-rural wage gap (as in the Harris-Todaro model) but by the marginal level of remittance payments.

So one core result here is that the more migrants come from the countryside, the less the income earned by those living in informal areas, as the available fixed demand for their labor is spread across more I-square workers. In effect, these I-square residents are partially employed – sometimes they are idle, sometimes they are working. This was exactly the situation found in a World Bank-sponsored survey of lower-income Brazilians about their banking and economic activity in 2002; see Anjali Kumar (2005), especially pages 168-196.

Needed tax revenue climbs, as more public safety-net spending is required (with six new urban residents, it rises from 0.1 to 0.125 per square). Infrastructure-construction need grows too; but the cost of public financing of such construction has become more unaffordable. In the baseline scenario of Figure 3A, undertaking "urbanization" – that is, converting all I-squares into F-squares – would have required *per-capita* tax rates of 0.4, and left W and G workers with -0.05 cash flows; now, with 3 more I-squares to urbanize, the required *per-capita* tax rate of 0.55 would leave W and G workers with severely negative cash flows of -0.35. So the infrastructure tax is not imposed. In any case, since taxes are levied on all F-square residents, tax rates rise from 0.40 to 0.43. This turns W and G units' income-expenditure balances from positive to zero; now workers do *not* save. Net income falls for the TR unit also due to the increased tax rate (note that the TR unit does not hire I-sector residents, but pays a fixed wage to W workers). NT units' after-tax incomes climb from 1.83 to 2.28, since they are selling more goods to more residents. This result differs slightly from the Lewis model (Charles P. Kindleberger 1988, p. 20); there, capitalists hire newly migrating workers; here, some capitalists sell to them.

		D	D	D
		W	W	TR
D	W	W	W	G
D	D	W	G	NT
D	D	G	NT	TR

Source: Author.

Figure 4A H-T Scenario 2: Growing Tradeable Sector

D	D	D	D	D
D	D	W	W	TR
D	W	W	W	G
D	D	W	G	NT
D	D	G	NT	TR

Source: Author.

Figure 4B H-T Scenario 3: Growing Tradable and Periphery Labor Sectors

So the shift from Figure 3A to 3B involves a spatial transformation of the metropolis: from a primarily F-square city bordered by informal outskirts, to a primarily I-square space with an F-square inner core. Now let us consider how the situation in Figure 3B would change if formal-sector tradable production expands. For simplicity, suppose a new TR firm with the same revenue structure and labor demand (that is, three W workers, earning incomes of 1 each) moves into the city. This is H-T Scenario 2, shown in Figure 4A. All four units are located in I-squares. The income flows generated by this new production are sufficient to support urbanization (conversion into F-squares) for all four squares they occupy; however, it is still not possible to convert *all* I-squares (specifically, the eight I-squares occupied by D workers) into F-squares. W and G workers have positive net savings, and wages and remittances climb dramatically for D workers.

Clearly, these high D earnings and remittance levels will attract more migrant workers. Suppose, as in H-T Scenario 3 (Figure 4B), that four additional D workers move to the city, making it a 5x5 grid. The immediate effect is to reduce D workers' wages from 0.49 to 0.33. and it is now impossible to finance any further urbanization of I-squares. *Per-capita* income falls, from 1.44 in Figure 4A to 1.25 in Figure 4B. The economy's momentum is slowed again due to the resurgent growth of the informal sector, and its resumed growth relative to the formal sector.
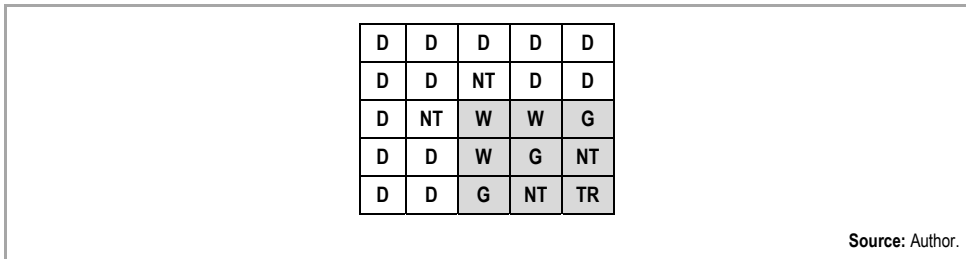
De Soto I-Square "Entrepreneurship" Scenarios

We now return to the situation as it was in Scenario 3B – that is, periphery expansion, but without any growth in tradable production. Here, we follow De Soto's vision and imagine that new entrepreneurs arise in the informal sector. In De Soto Scenario 1 (Figure 5A), two NT units emerge in I-squares. De Soto points out that I-

square residents may often have the cash-flow to start businesses, but not the collateral; hence they are blocked. We may suppose that two I-square residents who were already in place in the transition from a 6-square to a 12-square area have started businesses; in effect, they have accumulated savings and used them for this purpose, rather than sending them all to home communities as remittances.

		D	D	D
		NT	D	D
D	NT	W	W	G
D	D	W	G	NT
D	D	G	NT	TR

Source: Author.
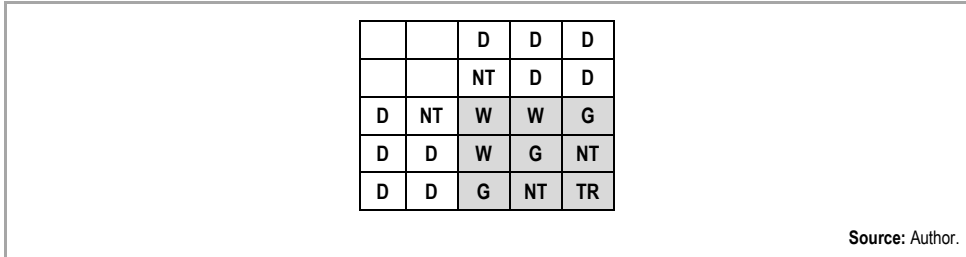
Figure 5A De Soto Scenario 1: No Ownership of Periphery Land

D	D	D	D	D
D	D	NT	D	D
D	NT	W	W	G
D	D	W	G	NT
D	D	G	NT	TR

Source: Author.

Figure 5B De Soto Scenario 2: Rent Charged for Occupying Periphery Land

Table 1 illustrates the dramatic impact of this entrepreneurial growth on the economic prominence of the informal sector. The salient comparison in Table 1 is between the scenarios depicted in Figures 3B and 5A; note in particular the IS gains in the column for Figure 5A. We assume that the four NT stores now divide in equal shares the consumer-good business previously enjoyed by just two stores. Since consumption prices are assumed fixed (either because they are competitive or because they reflect oligopolistic cooperation by the sellers), and since consumption spending is constant for each urban resident, it is a matter of dividing consumption rent among more claimants. This has a huge impact on the contribution of I-square earnings to city GDP: from 15.9% in the Figure 3B scenario (in which all I-square residents provided domestic service) to 31.4% in that for Figure 5A. The situation of D workers receives a boost too: by assumption, the new NT providers hire D workers' services (and in opening an NT store, reduce the available D-worker supply). So remittances per D-worker, which were negative in the Figure 3B, are now positive. And finally, whereas all capitalist and proto-capitalist (NT/TR) accumulation was done in F-squares, now 39.4% of this accumulation occurs in the I-square periphery.

In sum, the overall city GDP is not affected, nor is much of the formal sector; but the informal sector suddenly emerges as an engine of accumulation. But since it is assumed here that D-workers convert any net earnings into remittances, this accumulation occurs outside the city.

In reflecting on De Soto's model here, we have an opportunity to incorporate a piece of the informal-sector entrepreneurship puzzle that represents a blind spot in his work: land rent. His assertion (De Soto 2000) that there are billions of dollars in unmeasured capital in a given country, which could fuel a democratic entrepreneurship revolution if rights in land are assigned to those who occupy but do not own that land, fails because it does not differentiate between two situations. One is the case in which a new occupant moves to a new I-square and builds a house without interference from pre-existing social relations. A second case exists when a migrant moves into an I-square – or even builds a home there – that is already incorporated into informal webs of social control and "ownership". De Soto emphasizes only the first case in stating the case for democratic informal-sector driven entrepreneurship. In his view, all that is required is to "set up a tent or shelter ... and thus stake out a physical claim (because a legal one is unavailable)" (De Soto 2000, pp. 194-195).

But it is the second case that is more important, and that undermines any potential for democratic entrepreneurship through liberation of the informal sector. De Soto does acknowledge this case in his 2000 book (p. 85), citing the well-developed housing rental arrangements in favelas as evidence of how well informal markets respond to housing demand. But De Soto is wrong about the implications of this situation.

We now add land-rent to Scenario 5A. Rents frequently exist in informal urban spaces, and the ownership and level of rents varies substantially. For simplicity, here we suppose that NT units "own" occupied I-squares, and earn a per-period rent of 0.075. The two NT units split the available rents equally. If rent is added to the 21-occupant city of Scenario 5A, the primary impact is that remittance payments by D-workers fall (from 0.08 to 0.005); and accumulation by the I-square NT units climbs. If four more D-workers move to the city, completing the 5X5 urban grid as in Scenario 5B above, the results are more dramatic. D-workers' wage rate falls from 0.33 to 0.24, and D-workers' cash flow turns negative (-0.09 per period). Meanwhile, the share of I-square activity in city GDP rises to 34.6%, in urban space to 64%, and in capital accumulation to 46.7%.

This situation is not sustainable for D-workers. This is significant, for it is precisely the D-workers who would be proto-enterpreneurs in De Soto's "no rent" configuration. This point bears reflection for other reasons as well. Neither is the situation sustainable for the W and G workers who live in F-squares. A discussion of what might follow is deferred to next scenario.

There is both symbiosis and conflict between NT and D units in the informal sector. On one hand, the NT units "provide" spaces that D-workers need to undertake urban income-earning activities, at a lower cost than F-squares spaces (in Scenario 5B, just 0.025 less); meanwhile, I-square NT units derive advantage from these rents. On the other hand, rent payments are zero-sum transfers from D-workers to I-square NT units. And both units are caught in the broader structural contradictions of urban structure. In the scenario shown in Figure 5B, as indeed in that shown in 3B, remittances would be negative even if I-square rents were zero; the structural problem is that the surplus of D-workers has driven their wages below their reproduction cost (even without counting in rent). In this case – with NT units controlling rents – they

actually have an incentive to restrict the size of the city's settled informal zone. But because they lack at least some (if not all) police powers, they have no way to implement such controls. The broader point here is that as long as Lewis' unlimited supply of labor exists, drawn by the lure of remittance payments, stable capital accumulation in the informal sector is an impossibility.

W-IS	W-IS	D	NT	D
W-IS	TR-IS	NT	D	D
D	NT	W	W	G
NT	D	W	G	NT
D	D	G	NT	TR

Source: Author.

Figure 6A Informal-Sector Production Scenario

W-IS	W-IS	D	NT	D
W-IS	TR-IS	NT	D	D
D	NT	W-IS	W-IS	G
NT	D	W-IS	G	NT
D	D	G	NT	TR

Source: Author.

Figure 6B Race-to-the-Bottom Production Scenario

Informal-Sector Production

We now go a step further in the structural articulation of the informal sector. Suppose now that an informal factory operation makes the tradable good. We assume this I-square TR unit has the same price and requires the same number of workers (three) as does the F-square TR unit. However, it doesn't pay wages of 1 per W worker; it pays a wage equal to 0.10 more than is earned by domestic-service (D) workers.

This shift has a number of profound effects. First, the I-square TR unit becomes the highest income-earner in the city. The locus of capital accumulation shifts from F-square to I-square activity – now two-thirds of such accumulation occurs in the informal sector. This assumption is extreme and perhaps unrealistic – any new factory significant enough to compete head-to-head for overseas markets with established factories would, at the least, pay taxes if not pay prevailing wages; however, we leave this assumption as is here to create an unadulterated contrast between informal and formal sectors. Second, the share of I-square activity in city GDP rises to 51.2%. Third, remittance flows by D-sector workers are restored. The transformation of four I-squares from D-worker occupants to other economic purposes leaves D-workers with positive cash-flows (and remittances).

This situation exerts immense pressures on F-square W and G worker/residents. W and G worker/residents felt these same pressures in the scenario depicted in Figure 3B. With 16 I-square residents, the tax rate on F-square units equal

to 0.54. But after making other expenditures (including domestic service), these units are left with net negative cash-flow of -0.19.

In effect, the "solid middle class" of the old city is driven into bankruptcy by the demands of the public fisc, the need to keep up life-style, and the inflexibility of consumption-good prices. This statement is obviously an artifact of assumptions made in assembling this model, but it may ring true with some of the pressures now at work in at least some developing-world cities.

The net negative cash-flow solution is infeasible. One possibility is that the NT and TR units on I-squares pay taxes, as their F-squares counterparts do. This change would reduce the tax rate from 0.54 to 0.41; but W and G units on F-squares would still have negative cash flows of -0.058. A second feasible solution is to cut public services to some portion of the population. For example, safety-net public services might stop at the F-squares' edge; in times of need, city residents living in I-squares would have to engage in mutual aid, rely on I-square capitalists (or their enforcers) for assistance in times of need, or migrate back to the countryside. This solution is shown in Figure 6A. Circumscribing public services in this way would reduce the required tax rate to 0.26, and leave F-square W and G workers with positive cash-flows of 0.09. So the problem of the economic sustainability of the formal-sector middle class is resolved by withdrawing the umbrella of government social protection from 64% of the population.

Race-to-the-Bottom Production

The final scenario considered here is the case in which the F-square TR capitalist reduces his workers' wages to the same level as are paid to the workers at the I-square TR factory. So these workers' wages are cut from 1 to 0.46. It follows that F-square W-workers can no longer afford domestic service. The consequences are profound. The first impact of this cut would be on D-workers' wages. With less demand for their services, these would fall to 0.27. This makes these workers' remittance flows negative (-0.05).

But the wage cut for D-workers means a wage cut for W-workers too. If F-square W-workers are still counted among taxpayers, the required tax rate on F-square residents will be 0.54. Even after laying off their D-workers, F-square W-workers have negative net cash-flows (-0.51); G workers' net cash-flows (not having laid off their D-workers, but still earning salaries of 1) are also negative, -0.19. The TR capitalists' incomes are the highest for any of these scenarios.

Clearly, this situation is also unsustainable. Consider just one possibility, shown in Table 1 – that safety-net public services now stop at the formal city's edge. Further, the space of the formal city is shrunk by a third – the three F-square blocks on which W-workers live are informalized. These three workers, like their counterparts who live in the city's northwest periphery, pay no taxes and receive neither infrastructure-maintenance nor safety-net protection from the government. The share of the informal sector in the city rises to 76%.

Conclusions for Center-Periphery-Differentiated Urban Growth

The point of this model is to evaluate the pressures that different urban growth scenarios place on the residents and businesses of a spatially uneven city. It is shown first

that when more workers seeking informal-sector work migrate to (and construct new dwellings on the periphery of) the city, the initial impact on the formal-sector workers who directly or indirectly employ them is positive – the cost of the services they provide decreases. However, a dilemma is posed: if these workers' new residential areas (and the families living therein) are included in the city's formal-sector growth planning, net tax burden may rise more than is feasible given the large cost of infrastructure construction; but if this is not done, the character of the city changes.

Whether enterprise creation improves this situation depends on what sort of businesses are created, and what wages they pay: contrary to De Soto, all enterprise is not created equal. Only if the new businesses produce tradable goods is there a possibility of both expanding the number of well-paid workers and the spatial extent of formal infrastructure. This result, in turn, requires that the influx of workers willing to work for any wage in any sector not be too great. If the success of a given city attracts too many migrants in newly formed informal areas, the possibility of continual formal-sector growth collapses. The expansion of enterprises providing non-tradables, unaccompanied by that of enterprises manufacturing tradables, is almost certain to lead to this collapse. And if the increase in the number of urban workers earning (or willing to accept) low wages makes it feasible to pay lower wages to workers in the tradable sector, the shrinkage of the formal sector is also a likelihood.

Whether these futures for the city are interpreted in a positive or negative light depends on the perspective of the viewer. From the viewpoint of a migrant worker for whom the city is an instrument for sending remittances home to family members living elsewhere, the erosion of the city's formal structure is of little concern. But for those who live in the formal city and want to preserve the full range of safety-net public expenditures and the adequacy of urban infrastructure – the growth of the urban periphery is problematic. This growth threatens the loss of governmentality, the loss of income security, and ultimately the loss of the urban way of being as it was previously experienced. The existence of land rents on informal land only complicates this scenario, as it creates a source of wealth that is more likely to expand informal- than formal-sector employment and urban expansion.

4. The European Monetary Union from a Core-Periphery Growth Perspective

We now adapt this analysis to the case of the Eurozone and the expansion of the European Monetary Union. Note first that the framework developed in Section 2 can be made to fit the European situation. The European nations are physically contiguous, and can they be divided into "more" and "less" formal spaces. The formal/informal distinction is defined here, as noted in Section 1, on the basis of infrastructure/public services adequacy, regulation of structural construction, and tax compliance. Direct comprehensive national rankings for these factors do not exist. However, available evidence suggests that all these factors are variable across Europe, and that these indicators of informality are highly correlated for any nation.

Andrea Dall'Olio et al. (2013) find that the level of regulatory effectiveness and infrastructure are both important determinants of European productivity, with the

former being more important than the latter. Benno Torgler (2011) also highlights the links between democratic governance, regulation, and tax compliance.

Next consider tax compliance, a literature reviewed by Mohd Rizal Palil and Ahmad Fariq Mustapha (2011). Ahmed Riahi-Belkaoui (2004) has produced an index of tax compliance for a number of European countries: he finds that Northern Eurozone member nations have higher rates of tax compliance than Southern Eurozone member nations and "candidate" member nations.

One identifying element of the model developed above is that tax payment is less in informal areas with fewer public services. This implies that tax compliance and the size of the shadow economy should be inversely correlated – precisely the finding of James Alm and Torgler (2006) for Europe and the United States. Friedrich Schneider (2005), in turn, estimates the average size of the shadow economy at 41% in developing economies, 38% in transition economies, and 17% in OECD economies; and he goes on to observe, "An increasing burden of taxation and social security contributions are the driving forces of the shadow economy" (Schneider 2005, p. 598). Further, in a study of 30 European countries, Bruno Frey and Torgler (2006) show that tax compliance varies directly with tax morale and with the "quality" of public institutions.

A further identifying element of the model is the balanced-budget requirement. European nations in the Eurozone (or those hoping to enter) are subject to strict requirements regarding budget deficits; while not zero, and not always met, these conditions are largely captured in the constraints imposed on the above model. The above model also suggests that the budget-balance requirement may make it difficult to meet all expenditure demands. Here Fabrizio Balassone and Daniele Franco (2000) have made the case, by pointing out that Eurozone rules mitigate against member nations being able to adequately invest in public infrastructure. In any case, Bergljot Barkbu, Jesmin Rahman, and Rodrigo Valdés (2012) argue that growth in Europe now demands expenditure on infrastructure, good regulation, and confidence in governmental leadership (which will encourage tax compliance).

Two other defining characteristics of the model developed above are that it operates under the threat (or promise) of expansion, and that this expansion may be problematic insofar as it involves adding more informal units. Here too the European situation fits. It was established even before the inauguration of the Eurozone that cross-border trade within Europe was endogenous to the size of the Eurozone and thus impossible to specify in advance (Jeffrey Frankel and Andrew Rose 1997). Frankel (2008) has gone on to argue that Eastern European nations might want to wait before joining the Eurozone, because joining would have larger effects on trade than previously thought. In turn, Harry G. Broadman et al. (2004) assert, in a representative World Bank study, that the incorporation of South Eastern European nations into the core of the European (and global) economies will depend on their arrangements for governance and on the quality of their institutions.

Reinterpreting Figures 3A-6B: Applying the Model to the European Crisis

This match between the premises of the model developed above and the European crisis is sufficiently close that we can reinterpret the scenarios of urban growth set out in Figures 3A-6B from the European-crisis perspective.

We begin with Figure 3A. The nine cells in the southeast corner of this figure represent the Northern European "core" countries within the Eurozone: a tradable good is manufactured, formal-sector workers are paid good wages, and a substantial public sector regulates and distributes. The remaining boxes can be interpreted as Southern European nations within the Eurozone. They have weak infrastructures and low safety-net guarantees; and they have workers who are paid less than workers in Northern Europe, and who are willing to migrate to Northern Europe to sell their labor services. These I-squares can also be interpreted as offering vacation services, including second homes, to Northern European residents. These I-squares do not pay taxes. Northern-European taxpayers can afford to extend the safety-net to these I-squares, but not to convert them to F-squares.

Figure 3B can be interpreted as an increase in the number of candidate member-nations whose residents are migrating to Northern Europe worksites or that are offering vacation services to Northern European residents. The key question is whether these additional squares of D-workers (that is, these additional nation-states) can be accepted into Eurozone membership with safety-net and infrastructure expenditures included. Table 1 makes clear that they cannot be accepted – member-states' formal sector workers can afford neither safety-net nor infrastructure services for all 12 D-squares that are seeking entry. It should be noted that the urban-growth scenario embodies the assumption that there are fiscal transfers from core to periphery. This is not an accurate description of current arrangements; it is troubling to note that problems emerge in this reinterpreted scenario even in the case that the Eurozone did allow fiscal transfers.

Figure 4A, H-T growth with a growing tradable sector, sets out a high-wage industrial expansion scenario. If the original TR-square was located in Germany, this construction of an addition TR-square inside the Eurozone now shifts the possibilities for the expanded scenario shown in Figure 3B. The number of W-workers doubles, as four formerly D-squares shift into formal-sector employment and their home spaces are provided with both safety-net services and infrastructure. The Eurozone is here on its way to a periphery of reduced size and an expanded core. What makes it possible here is TR investment somewhere within the Eurozone. The prospect of a Eurozone with equalized wages and living conditions appears within sight.

However, Figure 4B shows what happens when more candidate nations rush to the open door. In this scenario, an additional four D-squares queue up to provide labor or vacation services to the Eurozone core. The result, as in the discussion above, is that an expansion of infrastructure beyond the Eurozone proves impossible; safety-net services can be expanded to these additional peripheral regions' workers, but no more than that. The sharing of income streams among more mouths makes it impossible to have a uniform zone. This shows one contradiction in the Eurozone situation. The premise of peripheral areas' inclusion in Eurozone economic activities is the lower-cost labor they are able to offer. But if this labor-offer is unaccompanied by increased investment in tradables production at the same time, the only prospect is for a two-level Europe.

The two De Soto scenarios shown in Figures 5A and 5B can be succinctly summarized. Most of what was said about these two scenarios above goes through

here. They represent the spread of non-tradables provision without any expansion of tradables production. The effect in the context of the Eurozone is to expand the attractiveness of participation in Eurozone service provision for D-square (peripheral) countries. However, the tax burden increases on W- and G-workers (the middle class) unless public service provision to the periphery is curtailed.

The above discussions of the globalized production and race-to-the-bottom scenarios of Figure 6A and 6B also apply here very directly. The location of one or more TR-production facilities outside the Eurozone core and paying periphery-level wages – the Poland and perhaps the Turkey cases – has numerous impacts. For D-square workers in the periphery, remittance payments flows increase; things are better. However, increasing pressure is felt by the "solid middle classes" of the Eurozone core. Their tax rates rise as the cost of maintaining government services in the context of an expanding periphery falls more heavily on their shoulders.

The end of the story, as in the Figure 6B scenario, is the collapse of W- and G-workers' higher wages as globalized low-wage production overtakes the core of the Eurozone. The upshot is that the Eurozone's public-service provision shrinks; infrastructure can no longer be maintained, and safety-net services are increasingly precarious. As above, the Eurozone can be viewed, from the lens of lower-income countries, as a temporary means of augmenting cash flows through worker remittances and service provision to Euro core countries; eventually the hollowing out of European wages will bring about the collapse of the core. Alternatively, the Eurozone can be seen from the perspective of its core members as a threatened zone for high-income, high-public-service life. Preserving these characteristics of the Eurozone core requires investment in tradable production capacity at a rate faster than the rate of expansion of the Eurozone's candidate periphery areas. Investment in non-tradables will not resolve this problem, but instead will simply alter the shape and timing of the Eurozone's ultimate flip from a core-periphery system to a global periphery.

5. Conclusions

In sum, this paper has used a structural-interaction approach to explore some contemporary dilemmas posed by informal-sector-driven urban and regional growth. The results obtained have suggested that: (1) continuing growth of the periphery (whether D-sector workers or candidate member-nations of the Eurozone) may, in the absence of offsetting factors, lead to tax revolt and/or the exhaustion of the fiscal capacity of the (urban or Eurozone) core; (2) these dynamics readily generate scenarios in which the formalization of informal/peripheral areas is not fiscally supportable, and under which the space of the reproducible formal-sector/core area shrinks; (3) the informal sector/periphery can quite readily become an alternative center of accumulation, creating profound questions of governance and political legitimacy as the fiscal basis of public services funded by the core/formal-sector area is rendered more fragile; (4) the spread of informal sector/lower-wage production to the entirety of an urban area whose public service and infrastructure levels are premised on workers earning "middle class" wages, will destroy the possibility of sustaining an urban or regional core area.

These results have been generated by an arbitrarily-parameterized, disequilibrium simulation model which incorporates an expanding informal area (an increasing number of areas willing to provide guest workers or services for the core). This expansion puts pressure squarely on middle-class formal-sector residents – unionized workers and public-sector workers – in either the developing-world metropolis or the Eurozone core. This sector is either driven into bankruptcy, into tax revolt, or into the informal sector in the model developed here. While pressures work themselves out far more subtly in the world of experience than in this paper's artificial world, some parallels might be imagined.

We have reached this conclusion by building a model that eliminates the blind spot that has caused many authors in the development literature – celebrating the work of De Soto – to embrace the idea that pushing the government out of the way will "flip" informal-sector growth to formal-sector growth. This blind spot, of course, is the failure to recognize that public-service and infrastructure provision is costly. It must be financed; and if financed by taxes, there are contradictory pressures that cannot all be resolved. De Soto's blind spot renders him blind to the public sector's problem of maintaining legitimacy and its capacity to govern, whether in the global-South metropolis or in the Eurozone.

This model has also unearthed some possible tension between two uses of the city or region, and especially its informal areas: as a locus for the collection of remittance payments, or a locus for the accumulation and reinvestment of capital. In effect, surplus once earned can be transmitted elsewhere or retained locally. The former use of surplus implies minimal concern with the long-term reproducibility and infrastructure of the city; the latter use requires it. This tension between extending the boundary of the city or region to wring out the last dollar of remittance, and restraining that boundary so as to put a floor under urban rents and declining wage and revenue levels, emerged in the model developed here. The only way to ease this tension, in the model developed here, is via investment in high-wage, tradable-goods production.

To create more options than this for resolving growth contradictions would require other models, in which the balanced-budget requirement is relaxed, and in which worker incomes are not so arbitrarily fixed. The point of this exercise has been to show that the complex forces operating on structured spatial economies must be acknowledged – and not eliminated by simplifying assumptions – in models that attempt to understand the dynamics of cities or regions with core and periphery areas. The structured disequilibrium world demands structured disequilibrium analytical frameworks.

References

Alm, James, and Benno Torgler. 2006. "Culture Differences and Tax Morale in the United States and Europe." *Journal of Economic Psychology*, 27(2): 224-246.

Azuma, Yoshiaki, and Herschel Grossman. 1992. "A Theory of the Informal Sector." National Bureau of Economic Research Working Paper W8823.

Balassone, Fabrizio, and Daniele Franco. 2000. "Public Investment, the Stability Pact and the 'Golden Rule'." *Fiscal Studies*, 21(2): 207-229.

Barkbu, Bergljot, Jesmin Rahman, and Rodrigo Valdés. 2012. "Fostering Growth in Europe Now." International Monetary Fund Staff Discussion Note 12/07.

Benabou, Roland. 1993. "Workings of a City: Location, Education, and Production." *Quarterly Journal of Economics*, 108(3): 619-652.

Birch, David. 1971. "Toward a Stage Theory of Urban Growth." *Journal of the American Institute of Planners*, 37(2): 78-87.

Broadman, Harry G., James Anderson, Constantijn A. Claessens, Randi Ryterman, Stefka Slavova, Maria Vagliasindi, and Gallina A. Vincelette. 2004. *Building Market Institutions in South Eastern Europe: Comparative Prospects for Investment and Private Sector Development.* Washington, DC: The World Bank.

Coulibaly, Souleymane. 2012. "Rethinking the Form and Function of Cities in Post-Soviet Countries." Policy Research Working Paper 6292.

Dall'Olio, Andrea, Mariana Iootty, Naoto Kanehira, and Federica Saliola. 2013. "Productivity Growth in Europe." Policy Research Working Paper 6425.

Davis, Mike. 2007. *Planet of Slums*. London: Verso.

De Soto, Hernando. 2000. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

Durlauf, Steven N. 1994. "Spillovers, Stratification, and Inequality." *European Economic Review*, 38(3-4): 836-845.

Dymski, Gary A. 2004. "Sraffa in the City: Exploring the Urban Multiplier." In *Growth, Distribution, and Effective Demand: Alternatives to Economic Orthodoxy – Essays in Honor of Edward J. Nell*, ed. George Argyrous, Mathew Forstater, and Gary Mongiovi, 220-238. Armonk, New York: M. E. Sharpe.

Frankel, Jeffrey, and Andrew Rose. 1997. "Is EMU More Justifiable Ex Post than Ex Ante?" *European Economic Review*, 41(3): 753-760.

Frankel, Jeffrey. 2008. "Should Eastern European Countries Join the Euro? A Review and Update of Trade Estimates and Consideration of Endogenous OCA Criteria." Faculty Research Working Paper RWP08-059.

Frey, Bruno, and Beno Torgler. 2007. "Tax Morale and Conditional Cooperation." *Journal of Comparative Economics*, 35(1): 136-159.

Gonzales De Olarte, Efraín. 2001. "Hernando De Soto's Mysteries." *SAIS Review*, 21(1): 275-282.

Harris, John R., and Michael P. Todaro. 1970. "Migration, Unemployment and Development: A Two-Sector Analysis." *American Economic Review*, 60(1): 126-142.

Henderson, Vernon. 2002. "Urbanization in Developing Countries." *World Bank Research Observer*, 17(1): 89-112.

Kasarda, John D., and Edward M. Crenshaw. 1991. "Third World Urbanization: Dimensions, Theories, and Determinants." *Annual Review of Sociology*, 17(1): 467-501.

Kindleberger, Charles P. 1988. "W. Arthur Lewis Lecture: The Lewis Model of 'Economic Growth with Unlimited Supplies of Labor'." *Review of Black Political Economy*, 16(3): 15-24.

Kumar, Anjali. 2005. *Access to Financial Services: A Study.* Washington, DC: The World Bank.

Lewis, Arthur W. 1954. "Economic Development with Unlimited Supplies of Labour." *The Manchester School*, 22(2): 139-191.

Lewis, Arthur W. 1977. "The Evolution of the International Economic Order." Research Program in Development Studies Discussion Paper 74.

Linn, Johannes. 1982. "The Costs of Urbanization in Developing Countries." *Economic Development and Cultural Change*, 30(3): 625-648.

Orozco, Manuel. 2003. "Worker Remittances in an International Scope." http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=35076501.

Orozco, Manuel. 2004. *The Remittance Marketplace: Prices, Policy, and Financial Institutions*. Washington, DC: Pew Hispanic Center.

Palil, Mohd Rizal, and Ahmad Fariq Mustapha. 2011. "The Evolution and Concept of Tax Compliance in Asia and Europe." *Australian Journal of Basic and Applied Sciences*, 5(11): 557-563.

Palmade, Vincent, and Andrea Anayiotos. 2005. *Rising Informality.* Washington, DC: The World Bank.

Prud'homme, Rémy. 1973. "Costs and Financing of Urban Development in France." *Urban Studies*, 10(2): 189-198.

Puentes, Robert, and David Warren. 2006. *One-Fifth of America: A Comprehensive Guide to America's First Suburbs*. Washington, DC: The Brookings Institution.

Riahi-Belkaoui, Ahmed. 2004. "Relationship between Tax Compliance Internationally and Selected Determinants of Tax Morale." *Journal of International Accounting, Auditing and Taxation*, 13(2): 135-143.

Richardson, Harry. 1987. "The Costs of Urbanization: A Four Country Comparison." *Economic Development and Cultural Change*, 35(3): 561-580.

Schelling, Thomas. 1971. "Dynamic Models of Segregation." *Journal of Mathematical Sociology*, 1(2): 143-186.

Schneider, Friedrich. 2005. "Shadow Economies around the World: What Do We Really Know?" *European Journal of Political Economy*, 21(3): 598-642.

Torgler, Benno. 2011. "Tax Morale and Compliance: Review of Evidence and Case Studies for Europe." Policy Research Working Paper 5922.

United Nations Conference on Trade and Development - UNCTAD. 2002. *The Least Developed Countries Report 2002: Escaping the Poverty Trap*. New York and Geneva: UNCTAD.

World Bank. 2003. "Urban Poverty in East Asia: A Review of Indonesia, the Philippines, and Vietnam." Urban Development Working Paper 11.