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# Is Accra a Superstar City?

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## Abstract

A recent study of house price behavior in U.S. cities by Gyourko, Mayer, and Sinai (2006) raises questions about so-called superstar cities in which housing is so inelastically supplied that it becomes unaffordable, as higher-income families outbid residents. The authors consider the case of Accra, Ghana, in this light, estimating the elasticity of housing supply and discussing the implications for growth and income distribution.

There is not a great deal of data available to examine trends in Accra, so the authors' method is indirect. First, they use a variant of the traditional monocentric city model to calculate the elasticity of Accra's housing supply relative to those of other similarly-sized African cities. This suggests that housing supply responsiveness is much higher elsewhere. This muted supply responsiveness is consistent with the observed higher housing prices.

Second, they estimate a number of traditional housing demand equations and reduced form equations. Placing a number of restrictions on the equations allows us to infer Accra's housing supply elasticity.

Taken together, our approaches suggest that lower-income families in Accra have such poor housing conditions because the market is extremely unresponsive to demand. Although the outcomes the authors have traced—high housing prices and low quality—are not unusual relative to the other developed country superstar cities, they are extreme. The welfare costs are considerable, so much so that in addition to direct housing market effects, these policies also appear to have potentially significant implications for the achievement of more equitable growth.

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This paper—a product of the Urban Division, Finance, Economics, and Urban Department (FEU)—is part of a larger effort in the department to look at housing problems in developing countries. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [rbuckley@worldbank.org](mailto:rbuckley@worldbank.org) and [amathema@worldbank.org](mailto:amathema@worldbank.org).

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## **Is Accra a Superstar City ?**

**Robert M. Buckley and Ashna S. Mathema**

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## I. Introduction

Over the past 15 years Ghana has been one of the most rapidly growing economies in Sub-Saharan Africa. This growth has been aided immeasurably by Ghana experiencing high levels of remittances, which while difficult to measure undoubtedly exceed development aid and foreign direct investment.<sup>1</sup> These remittances, in turn, have been driven by the country's benign and improving policy environment—one in which the average rate of inflation fell from among the highest in Africa to about 10 percent over the last few years—and the relatively large diaspora of Ghanaians who live abroad.<sup>2</sup> While statistics on how these remittances are invested are not available, a number of articles (Quarthey 2006, Yeboah 2000, and Diko and Tipple 1991), a drive around Accra, and discussions with bankers and developers there, as well as local newspaper accounts, all indicate that real estate investments in the capital city account for a significant share of the high level of gross domestic product received in remittances.<sup>3</sup>

At the same time, housing in Accra has become more expensive, and appears to be increasingly pricing middle- and lower-income groups out of the housing market, resulting in substandard and congested living conditions for a large majority of the city's

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<sup>1</sup> Ghana's remittances, according to Addison (2004), in a Bank of Ghana study, increased sharply over the past 10 years. Remittances are defined as that portion of migrants' earnings sent from the migration destination to the place of origin. As typically measured, and as is done in the aforementioned study, "remittances" refer to monetary and other cash transfers by migrant workers to their families and communities back home. Such estimates are of course difficult to measure, but as Quarthey (2006) indicates, could well be underestimates. As the OECD (2006) shows this is the fourth largest share of remittances in the world for countries with populations in excess of 5 million.

<sup>2</sup> Ghana's average annual inflation rate for the 1980s was 47 percent, almost three times the Sub-Saharan rate of less than 16 percent. For the 1990s, it was close to 30 percent. Estimates of Ghana's diaspora range from 10 to 20 percent of its population. Adams and Page (2003) show the importance of macro conditions and the size of the diaspora as important determinants of the amount of remittances.

<sup>3</sup> See the *Statesman* article on housing in Accra (Jan. 22, 2007). On the use of remittances in Ghana, see Adams (2006) and Quarthey and Blankson (2004). They both detail the generally pro-poor disposition of remittances, and the uses to which the funds are put. In the former case, they show that remittances account for more than 20 percent of the expenditures of the lowest income quintile. However, both estimates are from a time, the latest year being 1998-99, when remittances were a small fraction of the level achieved in recent years. In addition, they are nationwide figures. Quarthey (2006) suggests that housing investments are an important use of remittances.

residents. This pattern suggests a number of possible mysteries: First, given the high and growing level of investments in Accra's real estate, why is it the case that the housing conditions of the poor in Accra are considerably worse than those of the poor in a number of other African cities which have lower incomes, as shown both by Konadu-Agyemang (1990) and our data? And second, is this pattern similar to that observed in the U.S. cities, referred to as "Superstar Cities," by Gyourko, Mayer, and Sinai (2006), in which the growth in the number of higher-income families in cities with inelastic housing supply results in these families outbidding lower-income families, driving up the price of the underlying land? Finally, are these mysteries related? That is, could Accra's real estate boom lead to both deteriorating housing conditions for many, as well as have broader adverse effects on the economy?

While this last question is perhaps the most intractable, it is also the most important as the situation in Accra is by no means an isolated case. Rapid house price escalation has characterized many cities across the world besides Accra, and particularly cities in emerging economies that have achieved higher levels of growth, such as India, China, and the EU-accession countries among others.<sup>4</sup>

This paper attempts to shed some light on these mysteries. It examines the effects policies have on house prices in Accra, showing how these factors adversely affect not only house prices but also the housing situation of the poor and the broader economy.

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<sup>4</sup> Konadu-Agyemang (1998) traces through the sharp increases in real house prices in Accra since 1980. House prices in India are similarly interesting in terms of external finance, in this case foreign direct investments. In 2005, foreigners were for the first time allowed to invest in Indian real estate. During the next year, housing prices in most major Indian cities skyrocketed, leading the Reserve Bank of India to undertake a study, by Joshi (2006), of whether there was a bubble in housing prices in the country. Of course there is an important issue of fungibility of funds that make it extremely difficult to infer how remittances are ultimately used. For instance, unlike most of the earlier literature, Chami et al. (2005) suggest that remittances may well have a negative effect on growth. We do not focus on such macro-balance questions. Our focus is on the distributional effects of relative price changes and the effects these changes can have on the ability to reallocate resources across space.

Before discussing our results, however, it is perhaps important to note the limitations of data availability and our corresponding efforts to place the limited data we have into what we hope are theoretically rich but simultaneously simple empirical constructs. To this end, in our analysis of the housing market we draw on two rich traditions: First, we rely on models of monocentric cities, about which Mills and Tan (1980, 314) said:

There are few cases in economics in which such a simple theory leads to so many testable implications... [and which is] based on a functional form that can be derived from respectable theory and tested with easily available data.

Second, we rely on development economics more generally, particularly with regard to perspectives on the role played by the housing market in economic growth. In particular, we take as a point of departure the view of Nobel Laureate W. Arthur Lewis (1977, pp. 39-40):

Urbanization is decisive because it is so expensive. The difference between the cost of urban 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.

Thus, while we would not put a great deal of confidence in the statistical significance of our empirical results and their coefficients, we nevertheless believe that our findings are fairly clear and consistent with the literature on development and even Ghana's development agenda, as propounded by Lewis (1954) in his theory of economic development.<sup>5</sup>

Our results are first, that the welfare costs of current sectoral policies are both considerable and regressive; and second, that these policies prevent housing demand increases—as might arise from remittances or improved access to finance—from

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<sup>5</sup> Lewis won the Nobel Prize for his work on development economics. A significant part of this work was undertaken in Ghana's early years of independence where he was the chief economic advisor to Kwame Nkrumah, Ghana's first Prime Minister. See Tignor's (2005) biography of Lewis for a discussion of the development of his theory and his arguments with Nkrumah.

contributing as much to growth as they could if they were not fueling asset price increases. In other words, housing market constraints appear to feed larger price increases because of sectoral policies which constrain the housing market.<sup>6</sup>

This paper is organized as follows: Section II presents a background on Accra's economy and growth trends, and relates it to primary data collected in the low income neighborhoods of Accra and a number of other similarly characterized African cities (Addis Ababa, Nairobi, and Dar es Salaam). We use an equation based on a mono-centric city model that allows broad inferences to be drawn about how elastic a specific city's housing supply curve is relative to other cities, as well as how various policies and natural conditions—such as whether the city is bounded by a coast or not—might affect this elasticity. The main implication of the supply elasticities inferred from this model is that Accra's housing supply elasticity is almost one-seventh that of Dar es Salaam's, about a third of Addis Ababa's, and less than half of Nairobi's.

To develop our empirical evidence further, we follow the approach used by Malpezzi and Mayo (1997) to infer the supply elasticity implied by a reduced form equation of housing market behavior in the four cities. For the limited number of observations we have, the results are remarkably robust, and support our basic hypothesis: that Accra's housing market is highly constrained for lower income families, and has many of the symptoms of “superstar cities.”

Section III presents a brief discussion on how the increase in housing demand, as would be experienced, for example, by a sharp growth in remittances or an improvement in access to finance, could have a strong effect on house prices. As has long been noted, Accra's housing market appears to be a focal point for the investment of remittances.

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<sup>6</sup> See Taylor (2006) for a review of the effects remittances can have on the demand for nontradables like land and the drag that this can have on productivity, p. 9.

However, we do not know the dimensions or scale of these flows. In Section IV, we conclude that an important first step is to develop this sort of empirical information, given the possibility of larger, economy-wide effects.

## **II. Background**

As shown by Adams and Page (2003), the general source of high levels of remittances is the underlying strength of the economy, the credibility of the policy environment, and the size of the diaspora. Such large resource flows imply a belief in the economy that is absent in many Sub-Saharan economies which have been experiencing the opposite phenomenon – capital flight of almost 4 percent of gross domestic product (GDP) per year, again see Collier et al (2004). For Ghana, such resource flows represent an enormous opportunity to sustain and deepen growth. However, these funds are flowing into an economy with a financial system which—due to many years of high inflation and heavy government borrowing—is only now recovering from having been among the more underdeveloped in Africa.<sup>7</sup>

In such a context, significant asset pricing problems can arise, particularly when the single most important investment available appears to be real estate in the capital city, Accra. Such investment demands undoubtedly contribute to higher real estate prices in the city. However, just how high the prices are is surprising. A recent ranking of the cost of living in the 150 most expensive cities in the world—driven in large part by real estate prices—placed Accra 75<sup>th</sup> between Melbourne and Houston, cities in countries with per

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<sup>7</sup> According to a commonly used measure of financial sector development, in 2004 Ghana's financial depth was one-fifth the average Sub-Saharan figure, and was lower than that of countries with lower per capita income levels. However, significant improvements in the banking sector have been realized as shown by the recent performance of all banks in meeting prudential capital adequacy requirements and two-thirds of them exceeding these requirements by a significant margin. For more on Ghana's financial depth, see Honohan and Beck (2006).



capita income, even on a purchasing power parity basis, more than ten times higher than Ghana's.<sup>8</sup>

In other countries such rapid house price increases have been identified as the likely culprit for both the problems of housing affordability and an inability to exploit many of the most productive employment opportunities, besides the Gyourko et al (2006) study of superstar cities, see Glaeser and Gyourko (2003) and Green et al (2006) for the U.S., Cheshire and Sheppard (1989) for the U.K, and Malpezzi and Mayo (1997) for Korea and Malaysia. Williamson (1988) also provides a discussion of these effects during England's Industrial Revolution as well as for developing countries generally. Moreover, in a country like Ghana, where one city may account for 20 percent or more of GDP, it would not be surprising if housing cost increases in that city alone could affect the country's growth rate.<sup>9</sup>

**Evidence on Housing Costs and Conditions in Accra.** Housing costs in some of Accra's lower income neighborhoods are considerably lower than they are in Accra's exclusive neighborhoods. But then, so too are the income levels. To get a sense of how housing conditions in Accra affect households with different income levels it is necessary to either make detailed surveys of conditions across the city, or to compare Accra's low-income housing conditions with those of similarly situated households in other cities. Because of data availability we choose the latter approach. This approach has the added

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<sup>8</sup> The rankings are from *Global Cost of Living Rankings 2006/7* by Finfacts: Business and Finance Portal. The per capita income comparisons are from the *World Development Indicators, 2006*. As for the cost of real estate, a recent World Bank study (2007) indicates that the rents of Class A offices in Ghana are 40 percent higher than the average for 10 other Sub-Saharan countries, Table 9, p.48. Of course the recent increases in utility costs, related to the country's energy problems, contribute to these costs. Nevertheless, even with adjustment for this effect the costs noted remain relatively high, as the discussion of rental payments in the text will show.

<sup>9</sup> This assumption about Accra's share of GDP would seem to be conservative as the Greater Accra area has a population of almost 15 percent of the national population and incomes there are considerably higher than elsewhere as discussed later. Below we explore the channels through which these prices increases could affect growth.

advantage of benchmarking Accra's experience with those of a number of other similarly-sized large cities in Sub-Saharan Africa. We compare the housing situation of inner city low-income neighborhoods in Accra with similar areas in Nairobi, Dar es Salaam, and Addis Ababa.<sup>10</sup>

As shown in Table 1, the mean and median expenditure on housing and services in Accra is much higher than that of similar expenditures in the other cities, yet the housing conditions in Accra are of lower quality and quantity. That is, while the residents of Accra pay much more for housing services, they get considerably less, paying, for example, a much higher share of the household income for some services, such as sanitation. Moreover, not only are costs high, the payment form is onerous. It is not unusual, for instance, for renters in Accra, who account for almost two-thirds of all households in the city, to have to make up-front payments of three years of rent, suggesting an extremely tight housing market.<sup>11</sup>

Our survey results are also consistent with more general Census findings on urban housing conditions in Ghana, and a large body of literature on housing conditions in the city. These findings indicate that urban residents in Ghana live in highly dense areas: average room occupancy is high at more than three persons per room, with more than 45 percent of families living in a single room. Each plot houses several families (more than one-third of the plots covered in our study contain five to nine separate households) often—more than 40 percent of the time—living in what is termed compound housing,

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<sup>10</sup> The data were gathered across the four cities between 2004 and 2006 (see Mathema, 2004, 2005, 2006a, 2006b, 2007). In each case, the surveyed households were located in contiguous, low-income central city communities. The differences in the income levels of the surveyed households were similar to the differences in the national per capita income levels across countries, suggesting that the surveys covered the same general part of the income distribution. The four cities have populations from 2 to 3 million people, making them 4 of the 10 largest cities in Sub-Saharan Africa. The populations also tend to rely on similar levels of population served by basic services such as water and sanitation. Finally, the modal split in transportation—e.g., the share of the population using public transport, and walking—is quite similar.

<sup>11</sup> Gulyani (2006) shows that rent levels in Nairobi's slums while expensive are considerably lower than Accra's.

see Korboe (1992) for a definition and discussion of the importance of this structural arrangement in Ghanaian housing consumption decisions.

This sort of housing deprivation and cost is unusual because, as shown in Table 1, the per capita income in Accra is considerably higher, ranging from two to almost three times the level of incomes in the other cities. Such higher incomes should translate into consumption of higher levels of housing services, but in fact, the opposite is happening. Indeed, for the observed result to occur—i.e., higher levels of income and lower levels of housing services—requires that Ghanaian families must be unable to use their higher incomes to access better housing as would be expected. It suggests, in other words, that the policy impediments in Accra must be much more severe than they are in the other cities.

**Table 1. Income, Housing Costs and Conditions in Select African Cities**

		Income per capita per month (USD PPP)	Expenditure on housing and services USDPPP	House condition rating (1-5)	Sanitation rating (1-5)	Water rating (1-5)	Floor area per person (m <sup>2</sup> )	Exp on house as % of income	Exp. on housing + services as % of income	Exp. on sanitation as % of income	Exp. on water exp. as % of income
<b>Accra</b>	<i>Mean</i>	***240	49.1	*2.5	2.7	2.8	***4.6	*5.9	**22.1	***5.0	7.4
	<i>Median</i>	186	33.8	3.0	2.0	2.0	3.0	0.2	19.7	3.9	5.8
<b>Addis Ababa, Nairobi, Dar es Salaam</b>	<i>Mean</i>	83	13.6	2.7	3.2	2.8	6.1	9.5	21.9	0.1	8.4
	<i>Median</i>	46	7.2	3.0	3.0	2.0	5.0	0.6	14.3	0.0	5.1

\*\*\* Difference in means statistically significant at 1 percent level

\*\* Difference Statistically significant at 5 percent level

\* Difference statistically significant at 10 percent level

Note: Ratings of 1-5 for housing, water, and sanitation are defined in the Annex.

One way to think about the range of policy factors that could affect supply has been developed by Green, Malpezzi, and Mayo (2005) based on the work of Mayer and Somerville (2000). They provide a clever summary equation, based on the mono-centric city model, that allows broad inferences to be drawn about how elastic a specific city's

housing supply curve is relative to other cities, as well as how various policies and natural conditions—such as whether the city is bounded by a coast or not—might affect this elasticity.

Equation 1 suggests that housing supply elasticity,  $\eta$ , is a function of: city population size,  $n$ , and a density factor  $\phi$ . It is also affected by a discount rate,  $i$ , the city's population growth rate,  $g$ , transportation costs,  $k$ , and the price of housing,  $P$ , at a fixed point in the city.

$$\eta = [2/(\phi\sqrt{n})] [(i-g)/k] P \quad (1)$$

The intuition underlying this equation is that the important factors affecting housing supply elasticity can be broken down into components. That is, the terms in the first bracket on the right hand side measure the size of the city, which, in turn, determines the distance from the city border to its center. In the second bracket is the city's expected growth rate relative to the discount rate,  $(i-g)$ , divided by the cost of commuting,  $k$ . These factors account for how the city's growth will affect the value of a property as well as the discount rate that affects the valuation of the future price increases due to city growth. Finally, all these factors are scaled by the price of a housing unit that is similarly situated in the different cities.

One can argue about the affects and relative magnitudes of the various policies on relative supply elasticities, including policies possibly not included, such as land market restrictions or lack of property rights, or topographical conditions, such as Accra's being a coastal city with a resulting inability to grow in all directions unlike Addis Ababa and Nairobi. Nevertheless, the results in Table 1, and particularly the much higher house prices, lead us to expect the elasticities for the other cities to be considerably higher than is the case in Accra. We examine this hypothesis by using equation 1 as a schema to

consider how variations in policies would be expected to affect the housing elasticities in the various cities. The equation makes sure that all the important and interactive factors involved in an abstract model of city development are explicitly treated, and it can be crudely estimated with a minimum amount of aggregate data. That is, we use the equation to consider how basic aggregate statistics about each of the cities would affect their relative supply elasticities.

To do this, we make use of the results of two recent studies of transport costs in African cities, see World Bank (2002) and (2005), and other city-wide level data on the four cities. Based on this model we can also infer how much Accra's policies have affected the housing supply curve relative to the aggregate estimate. Table 2 reports on our estimates of the various components of equation 1 and the corresponding estimate of the relative housing supply elasticity in each of these cities.<sup>12</sup>

**Table 2. Components of Housing Supply Elasticity**

	Housing Price ratio (p)	Population (n)	Density persons/km <sup>2</sup> (φ)	Pop. growth rate (g)	Transport cost USD PPP (k)	$\eta = [(2/\phi) \sqrt{n}(25-g)/k]$
Addis Ababa	0.43	2,973,004	5506	0.033	21.02	1.25
Accra	1.00	1,981,000	10708	0.034	87.77	0.43
Nairobi	0.63	2,940,911	4300	0.036	51.16	0.94
Dar es Salaam	0.25	2,809,000	2017	0.045	14.38	2.83

In a mono-centric model such as the one implied by equation (1) one important factor affecting the supply elasticity is that fact that Accra, unlike Nairobi and Addis Ababa, cannot expand in all directions. Like Dar es Salaam, and many of the U.S.

<sup>12</sup> The empirical implementation of equation 1 is relatively straightforward, except as regards transportation costs, k, and the discount rate, i. For the former, we relied on the studies noted in the text to compute estimates of the cost of commuting. Our approach follows that suggested by Hamilton and Mills (1984). As for the discount rate, because, as shown in Honohan and Beck (2006), mortgage finance is almost completely absent in all 4 cities, even if the other cities have somewhat more developed financial sectors, we assume that all borrowers face a discount rate of 25 percent.

superstar cities, Accra is bounded by a coast, restricting the supply of land for a given distance to the central city, implying that for a given population transport costs increase and supply elasticity declines. Thus, topography matters. However, as we show below, it does not dominant policy as the other coastal city, Dar es Salaam, has the highest estimated supply elasticity. Of far more importance are the range of development controls and restrictions, and property rights ambiguities that prevent land development.

For example, problems with land administration in Ghana have long been noted, and could certainly be significantly improved upon, see among others Gough and Yankson (2000). To cite just one example, large holdings of public lands characterize much of Accra, reducing the supply of this already very expensive good, thereby also increasing  $k$  and lowering housing supply elasticity. Further, by creating minimum standards—of plot sizes for new housing, for example—that exceed what most people can afford, the regulations have, in effect, created a very high floor price on new housing, as well as much less dense development at the periphery, thereby placing an implicit tax on those who must then commute greater distances. Changing these land use regulations could have highly beneficial effects on both housing prices and commuting costs.

Perhaps as important is the inflexibility in redeveloping the city's existing stock of housing. Throughout the world, it is this fixed capital stock that provides most housing services. But in Accra this stock has rarely been recycled into taller buildings in correspondence with the greatly increased value of the land and expanding city boundaries.<sup>13</sup> For the most part, there are no unambiguous legal titles to much of the existing stock of housing; hence, it is very difficult for a private investor to step in, despite the high potential for profits from redevelopment of prime property in the densely

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<sup>13</sup> See the discussion in *The Statesman* January 25, 2007 for a discussion of the situation in Accra, and Wheaton (1998) for an analysis of the strong effects that city size and congestion can have on inner city land values and the demand for high rise structures.

populated city core. In other words, due to property title ambiguities in the central city, Accra has at least one of the important characteristics of Gyourko et al's superstar cities – “these markets do not allow for increasing density through construction,” p. 3. As a result the existing housing stock is considerably less responsive to demand and as shown by Angel et al (2006), Accra's land area has been growing very rapidly, increasing  $k$  in equation 1 and thereby lowering elasticity.<sup>14</sup>

The main implication of the supply elasticities inferred from our reliance on equation 1 is that they indicate that Accra's housing supply elasticity is almost one-seventh that of Dar es Salaam's, about a third of Addis Ababa's, and less than half of Nairobi's. But in order to judge just how elastic or inelastic these relative measures are, we need to have empirical evidence on the cities' supply elasticities or at least the elasticity of one of the cities, estimates which are constrained by data availability. We can, however, follow the approach used by Malpezzi and Mayo (1997) to infer the supply elasticity implied by a reduced form equation 2 of housing market behavior in the four cities. Under this approach we first estimate a housing demand equation of the form:

$$R = \alpha_0 + \alpha_1 Y + \alpha_2 HH + \alpha_3 HH^2 + \varepsilon \quad (2)$$

where  $R$  is the log of rent,  $Y$  is log of income,  $HH$  is household size, and  $\varepsilon$  is an error term. This specification can be viewed as a traditional logarithmic owner and renter demand equation which closely follows the approach used by Malpezzi and Mayo (1987) in their review of studies of housing demand in 16 countries. The model is clearly a very simple one and Malpezzi and Mayo (1987) provide considerable detail on both its

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<sup>14</sup> It is of course very difficult to measure the relative effectiveness of various land management institutions both within and between countries, as shown by Pande and Udry (2005) in their discussion of land use in a number of African economies. One of the advantages of the approach in equation 1 is that the factors included are endogenous to institutions and growth, so that judgments about the relative quality of institutions can be ignored.

weaknesses as well as its surprisingly strong performance relative to much less parsimonious approaches.

Based on this model, we estimate the housing demand equations for owners and renters in the four cities, reported in first two equations in Table 3, i.e., equations 3.1 and 3.2. We also report the results from two other equations in the table, i.e., equations 3.3 and 3.4. These latter equations are reduced form estimates that also take supply factors in each city into account by including dummy variables for the other cities.<sup>15</sup> As our earlier discussion indicated, we expect the policy regimes in the other cities to be relatively more enabling than Accra's. Consequently, we expect the signs of the other city dummy variables—what might be termed supply shifting variables—to have a negative relationship with our dependent variable, rents.<sup>16</sup> In the end, our model is clearly very simple, but nevertheless, as described in Malpezzi and Mayo (1987), it is firmly rooted in traditional estimates.

**Table 3. Explaining Housing Rents and Prices**

Dependent variable: Log of household expenditure on housing and services				Intercept	Log of income per capita	HH size	HH size square	Dummy variable Addis Ababa	Dummy variable Nairobi	Dummy variable Dar es Salaam
3.1	Owners	N=49	<i>Coefficient</i>	3.04	0.53	-0.07	0.00			
		Adjusted R square=0.36	<i>T statistic</i>	5.72	4.97	-0.62	0.46			
3.2	Renters	N=28	<i>Coefficient</i>	1.04	0.72	0.24	-0.01			
		Adjusted R square=0.63	<i>T statistic</i>	1.85	6.14	1.93	-1.34			
3.3	Owners	N=49	<i>Coefficient</i>	3.05	0.65	0.03	-0.01	-1.09	-1.12	-1.21
		Adjusted R square=0.74	<i>T statistic</i>	8.29	7.85	0.36	-0.65	-3.62	-5.18	-7.10
3.4	Renters	N=28	<i>Coefficient</i>	2.21	0.63	0.33	-0.02	-1.14	-1.37	-1.41
		Adjusted R								

<sup>15</sup> See Annex 1 for definitions, descriptions, and summary statistics for all the variables in the table.

<sup>16</sup> We use the same definitions for rents and net imputed rents as do Malpezzi and Mayo (1987), i.e. household expenditure on housing and services.



For the limited number of observations which are spread out over two tenures and four cities, the results are remarkably robust. The explanatory power of the demand equations is strong, with adjusted  $R^2$  in the range of 0.36 to 0.63, and the signs for all of the variables as expected, with almost all of the 14 coefficients in the two specifications significant at the 5 percent level.<sup>17</sup> In addition, previous work suggests a number of other expectations about the size of the coefficients of the various variables, which are also fulfilled, such as the income elasticity of housing demand in equations 3.1 and 3.2 ranging from 0.5 to 0.7 for owners and renters, respectively.<sup>18</sup>

Similarly, in equations 3.3 and 3.4, the variables also have the expected signs, and in this case, all of the additional variables are also statistically significant. Further, the statistical significance of the other variables and the overall equation improve with the adjusted  $R^2$  increasing to 0.86. In addition, in the latter two equations we place an additional expectation on the findings which is that household size should have a more significant affect on rent levels for renters than it does for owners; this expectation is also fulfilled.

This finding warrants some explanation. We expect household size to be a larger consideration for renters for a number of reasons. Perhaps the main one is the adverse selection problem that can affect rental decisions, as described by Basu and Emerson (2003). According to their analysis, landlords attempt to discriminate between tenants based on household characteristics so as to minimize the costs of tenancy. Having more children is likely, one would think, to imply greater maintenance and upkeep costs for the

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<sup>17</sup> We report only one of the specifications. A simpler one that did not include the square of household size was also estimated with results similar to those reported above.

<sup>18</sup> The other expectations are with respect to the coefficients for household size and its squared term. In addition, the intercept is expected to be positive.

landlord, and has, according to Malpezzi and Mayo (1987), been more frequently found to be a significant variable in renter rather than in owner demand equations. In addition, Korboe (1992) suggests that in Ghana, owners are subject to cultural obligations that cause them to accept even distant relatives to live rent-free in their houses. Mabogunje (2007) makes a similar argument for other African cities, and Konadu-Agyemany (1991) has an interesting discussion of how these sorts of obligations affect housing choices in Ghana. Consistent with this result, the most recent Census data indicate that some 22 percent of Ghanaian families do not pay any rent at all. Unlike owners, renters are under no such obligations. Hence, it is more likely that family size has a significant effect on rents paid; consistent with our findings.

These overall results, as well as the coefficients on the dummy variables, support our basic hypothesis: the Accra housing market is, at least for lower income families, much more constrained.<sup>19</sup> In order to get a sense of how much less responsive, we first combine these estimates of income elasticity with previous empirical findings regarding the price elasticity of housing demand to infer an estimate of the underlying overall supply elasticity, as depicted by equation 4.

$$\eta = \alpha_2/\gamma_1 + \alpha_1 \quad (4)$$

where  $\alpha_2$  is the income elasticity of demand as estimated in equations 3.1 and 3.2,  $\gamma_1$  is the coefficient on income in equations 3.3 and 3.4, and  $\alpha_1$  is the assumed price elasticity of housing demand. Plugging in the estimates for income elasticity from our estimated demand equations, and an estimate of a price elasticity of -0.5, based on the literature, yields an overall supply elasticity estimate of about 0.3 for owners and 0.7 for renters. At

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<sup>19</sup> We attempted to examine whether the dummy variables affected the slope of the supply curve rather than shifted it. However, our estimates were limited by the degrees of freedom. In terms of the effects on low income families recall from footnote 10 and the related text that our surveys are of lower income families in each of the cities.

first glance, these are highly inelastic supply curves, similar to those found by Malpezzi and Mayo (1997) for Malaysia and Korea's restrictive housing markets, and considerably lower than even the lowest U.S. estimates found by Green et al (2006).

However, first glances can be a bit deceiving because this elasticity figure represents a synthetic estimate of the overall supply elasticity for the four cities. While this sort of aggregation is of course impossible as the cities are by no means contiguous or part of the same market, the measure is, in many ways, similar to estimating a national housing supply curve as done, for instance, by Poterba (1991) among others.

When this overall supply elasticity is combined with our estimates of relative elasticities, the results imply that Dar es Salaam's much greater supply elasticity is indeed the case. It is on the order of about 1.5 to 2.0, not unlike estimates for the U.S., see Topel and Sherwin (1988). On the other hand, they also indicate that Accra's housing supply elasticity is lower than the highly inelastic Asian results noted earlier.<sup>20</sup> One way to think about this result is that if Accra could increase its supply elasticity to the level of Dar es Salaam's, the 20 percent increase in per capita income realized in Ghana over the past seven years would have had virtually no effect on house prices (rather than causing them to increase by 5 percent).<sup>21</sup> In other words, in Dar es Salaam's supply-responsive market, this sort of increase in demand would have had no noticeable effect on house prices. According to this perspective, at least part of the observed increase in house prices in Accra is in effect a regulatory tax on housing supply which redistributes wealth from largely poorer renters to the owners of real estate. While the estimated welfare losses

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<sup>20</sup> The elasticity measure for Dar es Salaam comes from multiplying the overall aggregate elasticity measure that we estimated with equation 2 by the city's relative measure, i.e., the results in Table 2, or  $0.7 * 2.8 = 2$ .

<sup>21</sup> The price increase is estimated by using the income increase since 2000 and the elasticity estimates for price, income and supply elasticity used in equation 4. We then differentiated house prices with respect to income.

associated with such a tax on the residential real estate component would not be great, on the order of 0.4 percent of GDP, they would still be more than double the size of the city's budget.<sup>22</sup>

In addition, this regulatory tax almost certainly reduces productivity by slowing the ability to migrate to more productive jobs in the city. This result seems likely for two reasons. First, as shown by Brueckner (1990) among others, the gap between urban and rural incomes is one of the fundamental determinants of urban growth. In Ghana, this gap is not only very large, more than 60 percent, it has also been increasing over time. So too is the income gap between households in Accra and other cities, which is 20 percent.<sup>23</sup>

Moreover, Aryeetey et. al. (2004) show that at the same time that the income gap has been growing, urban growth has been slowing to a surprisingly low level, more than 30 percent lower than that of more urbanized neighboring countries, and more than 35 percent lower than the rate in two of our comparator cities.<sup>24</sup> At Ghana's somewhat lower level of urbanization, as shown by Williamson (1988) and Brueckner (1990), the opposite would be expected, even more so since the income differential between cities and the countryside has been increasing. That is, one would expect that urban growth should be

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<sup>22</sup> This calculation assumes that Accra accounts for about 20 percent of Ghana's GDP and that Ghana follows typical patterns of wealth holdings to GDP ratios of about 1.7 times as much housing/wealth as GDP, see Goldsmith (1984). It ignores the other fixed capital stock in the city which also confronts this regulatory tax. In this case, the 5 percent transfer to residential real estate property owners embodied in the price increase would be equal to 5 percent of  $1.7 * GDP * 0.2$ , where the last term stands for Accra's share of GDP, or all together, about 1.7 percent of GDP. Applying the crude deadweight loss formula,  $1/2\eta$ , where T is the tax rate, and using the previously assumed price elasticity would result in a loss of about one quarter of that amount, about 0.4 percent of GDP. Because Ghana's GDP is approximately \$6 billion, this translates into a \$24 million deadweight loss. The 2004 budget for the city of Accra was \$10 million.

<sup>23</sup> Of course some significant but unknown share of these higher nominal incomes are offset by higher living costs, and particularly higher housing costs. Nevertheless, it is instructive to compare it to similar gaps in other times and places. Williamson (1988), for example, reports that the urban-rural wage gap for unskilled relatively homogeneous male workers in England during the Industrial Revolution was about 33 percent. Squire (1981) estimates a similar figure for developing countries at over 40 percent.

<sup>24</sup> Ghana's urban growth rate is 30 percent lower than Senegal's, Cote d'Ivoire's, Cameroon, and Nigeria's. On the growth rate for the other comparator cities see Table 3. Ghana's urban growth rate between 1990-2003 was one-third lower than that of the average of the 24 Sub-Saharan African countries considered by Kessides (2006) even though its share of urban population is close to the average figure.

higher than that of countries which are already more urbanized, which is clearly not the case. This slowing of the urbanization process can lead to significant reductions in productivity and in costly misallocation of resources.<sup>25</sup> Williamson (1986), for instance, shows that the deadweight losses implied by the misallocation of resources in nineteenth century England with its much smaller gap may have exceeded 3 percent of GDP.

### **III. Housing Demand Increases and Housing Prices**

Cumulatively, then, Accra's supply elasticity is much lower than the comparator cities. Its elasticity is perhaps even lower than the highly restricted markets Malpezzi and Mayo (2001) documented in Korea and Malaysia 15 years ago. Based on this result we find support for the argument raised at the outset that an increase in housing demand, as would be experienced, for example, by a sharp growth in remittances or an improvement in access to finance, could have a strong effect on house prices. Can we say anything more than this? Do we, in fact, find that housing market regulations and land administration policies in Accra create the sorts of price pressures on non-tradables that Taylor (2006) suggests may be a drag on productivity? While data limitations prevent an unambiguous answer to this question, we can use the basic model to at least provide a qualified perspective on how much remittances might have mattered for resource allocation and distributional questions.

For example, as a thought experiment, consider the effects that further improvements in the provision of housing finance could have on the Accra real estate market. One way of thinking about the effects of this sort of changed economic environment in terms of equation 1 would be to differentiate  $\eta$  with respect to  $i$ , showing

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<sup>25</sup> The increase in urban unemployment would seem to contradict this argument. However, in a city with so much informal sector activity this variable is extremely difficult to measure with any accuracy.

that  $d\eta/di < 0$ , and inferring by how much the improvement in access to finance would affect, in the first instance, housing demand, and in the second, the supply elasticity of housing.

Similarly, if remittances are anything like the level they appear to be, then they would have an effect on both housing demand and supply elasticity like that of lowering financing costs. Such effects would certainly help create more housing and importantly, related jobs. At the same time, however, they would also contribute to significant house price increases, and in so doing, almost certainly contribute to slower migration into the city.

While much more detailed empirical analysis is needed, our results suggest that Accra's housing market has many of the symptoms of "superstar cities." It certainly has an inelastic housing supply and topographical restrictions on how it can develop; it also seems to be experiencing an inflow of higher income families—from the diaspora—who appear to find other Ghanaian cities less than perfect substitutes for Accra; and finally, it has very high house prices. It should come as no surprise, therefore, that Accra is suffering many of the problems that affect superstar cities.

#### **IV. Conclusions**

As has long been noted, Accra's housing market appears to be a focal point for the investment of remittances. However, we do not know the dimensions or scale of these flows. Hence, an important first step is to develop this sort of information. Nevertheless, even without it, our results point to a policy regime that could weaken Ghana's ability to achieve the higher, more equitable rates of growth pointed to by *Vision 2020* and the

*Noguchi Statement.*<sup>26</sup> If a very inelastic housing supply is constraining the positive effects of possible rural-urban migration on growth, as appears to be the case, then Arthur Lewis's concern with the high cost of urbanization may well be constraining growth. In other words, the price effects of policy-induced reductions in supply elasticity can have significant effects on resource allocation and income distribution.

Further, the policy-constrained housing market may also contribute to expectations of further capital gains on housing investments in Accra that could divert private investment to housing rather than other sectors that could, for instance, help increase Ghana's manufacturing base. Finally, by increasing the housing costs of the poor, they also limit the ability of these investments to further the large gains in poverty reduction that have been realized in Accra. Certainly, the possibility of larger, economy-wide effects warrants more detailed empirical analysis of these effects.

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<sup>26</sup> The first is a statement by the Government of Ghana on its economic vision for Ghana, calling for policies that will allow it to break into higher levels of growth with a "Golden Age for Business" perspective. The latter is a statement by a group of 40 Ghanaian economists who met in 2001 to discuss how Ghana might achieve macro stability, growth and poverty reduction. See Aryeetey and Kanbur (2004).

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## ANNEX: DATA AND DEFINITIONS

**Table A1. Rating of Housing and Services  
and Summary Statistics**

### **House condition (physical structure)**

1. Very poor	Unlivable - Needs to be demolished and rebuilt
2. Poor	Temporary construction, structurally deficient, needs major improvements.
3. Needs improvement	Structurally deficient/ mixed const. materials (kuccha/ pukka), but <u>improvable</u> on-site
4. Fair	Predominantly perm. construction; needs minor improvements
5. Good	Permanent construction (indoor kitchen and toilet); no need for improvements.

### **Plot condition (accessibility)**

1. Very poor	Located in a hazard zone/ not upgradable (needs resettlement)
2. Poor	Only pedestrian access (no emergency access)
3. Needs improvement	Off the road, but has emergency access
4. Fair	On a secondary or tertiary unpaved road
5. Good	Has vehicular access (paved road)

### **Water Access Rating**

1. Very poor	No piped water source (only well, river, spring etc)
2. Poor	Purchased from vendor or neighbors
3. Needs improvement	Shared or community standpipe
4. Fair	Own connection + purchase (due to poor water supply)
5. Good	Own connection (on plot-- indoor or outdoor)

### **Sanitation Rating (Toilet)**

1. Very poor	None (use bush, beach etc.)
2. Poor	Public toilet with exp.>4% of income OR "Semi-flush"/unhygienic pit latrine shared by >10 HHs
3. Needs improvement	Hygienic pit on plot, shared by <10 HHs
4. Fair	Public toilet with exp.<4% of income
5. Good	Flush toilet connected to septic tank or sewer

**Table A2. Summary Statistics (from household survey data)**

<b>Country</b>	<b>City</b>	<b>Income per capita (USD PPP)</b>		
Ethiopia	<b>Addis</b>	overall	<i>mean</i>	50
			<i>median</i>	35
		renters	<i>mean</i>	54
			<i>median</i>	32
		owners	<i>mean</i>	34
			<i>median</i>	46
Ghana	<b>Accra</b>	overall	<i>mean</i>	240
			<i>median</i>	186
		renters	<i>mean</i>	308
			<i>median</i>	201
		owners	<i>mean</i>	217
			<i>median</i>	172
Kenya	<b>Nairobi</b>	overall	<i>mean</i>	107
			<i>median</i>	45
		renters	<i>mean</i>	69
			<i>median</i>	37
		owners	<i>mean</i>	153
			<i>median</i>	46
Tanzania	<b>Dar</b>	overall	<i>mean</i>	77
			<i>median</i>	61
		renters	<i>mean</i>	164
			<i>median</i>	176
		owners	<i>mean</i>	57
			<i>median</i>	49