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Residential Land Price Changes in Mexican Cities and the Affordability of Land for Low-income Groups

Peter Ward, Edith Jiménez and Gareth Jones

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Summary. This research demonstrates that the price of residential land in Mexico declined significantly in real terms during the 1980s. Land prices appear to follow a cyclical trend which tracks Mexico's macro-economic performance. Data derived from advertised plot prices in newspapers, and from a large sample of household interviews conducted in low-income settlements in three intermediate-sized Mexican cities, suggest that, for the poor, real wage levels are the key determinant of changing affordability. The erosion of real wages has led to some decline in affordability, but this has largely been offset by multiple-earning strategies within households through which purchasing power may be maintained.

Introduction

The aim in this paper is to report on residential land price trends in three Mexican cities for the period 1974–90. In the light of trends observed we examine the relative affordability of land acquisition by lower-income groups since the late 1970s. This obliges us to address several contentious issues that confront contemporary land price research, as well as the social impact of recession and austerity programmes upon the poor. Specifically, is the cost of land rising inexorably over time as some analysts would have us believe? Are changing costs putting access to land beyond the reach of the majority? How did the economic recession that Mexico experienced during the 1980s shape land prices and affordability? Although in themselves relatively straightforward questions, they are not easily resolved. Moreover, lack of space in this paper does not allow us to provide a full analysis of the processes which we describe nor a full account of the methodology which we used to gather and analyse our data.[1] Here our concern is to describe the changes in residential land prices that appear to have taken place in recent years, and to identify whether this has had an adverse outcome in terms of the ability of low-income groups to acquire land and housing.

The findings presented here arise from a major comparative research project (Ward,

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1989), developed around the research team and based originally at Cambridge University. Other 'counterpart' studies are being conducted by independent research groups working with a similar methodology in India and Kenya, and it is anticipated that ultimately this will allow us to make an assessment about the extent to which one can generalise about land price trends in different cultural contexts. But this paper deals solely with Mexico, where fieldwork was undertaken over two years in three intermediate-sized industrial cities (Puebla, Querétaro and Toluca). Each city has a modern industrial base; has experienced rapid expansion since the 1960s; is located in the central region of the country and has developed in close association with the Metropolitan Area of Mexico City. Moreover, each has a segmented residential land market structure that is dominated by the private sector. All three cities possess large tracts of community lands established largely during the 1920s and 1930s (*ejidos*) over which peasant communities have agricultural use rights. Individual peasant farmers (*ejidatarios*) are not allowed to sell their land parcels, although they can pass the land on to their heirs. However, although theoretically inalienable, these lands are regularly sold-off either by individual *ejidatarios*, or by their elected leaders (Ward, 1986, pp. 74–75; Varley, 1984). In many cities throughout Mexico, the *ejidal* land has provided the principal medium through which the demand for land for self-help housing has been met. On occasions upper- and middle-income groups have also managed to disestablish these lands for private residential housing estates and for second-home development, but this has usually required presidential or gubernatorial sleight-of-hand, since formal privatisation of part of an *ejido* involves a lengthy bureaucratic process, and has to be considered to be in the public interest (Varley, 1984). (For further details about the various forms in which illegal land development occurs in Latin American cities, see Gilbert and Ward, 1985.) While its political power has declined somewhat in recent years, the peasant-sector confederation (CNC) continues to be a major force within the Institutionalised Revolutionary Party (PRI) which has governed Mexico (at the federal level) continuously for more than 60 years. Since the 1940s, the PRI's influence has been sustained through incorporation of labour, peasant and 'popular' worker groups as separate confederations within the party structure.[2]

One of our principal tasks during fieldwork was to analyse the structure and evolution of the land market for residential purposes among upper-, middle-, as well as lower-income groups. We identified who the principal agents involved in urban real estate were, their composition, rationale, activities, and the legal and illegal ways in which they sought to develop land. We examined the organisation and impact of local and state governments and the overall impact of public-sector interventions upon the operations and dynamics of urban land markets (Ward, 1989). This included interventions such as the authorisations of residential subdivisions, the effects of state-led housing policies, the provision of urban infrastructure, the legalisation of 'clouded' (illegal) land holdings, and the whole organisation of the property and land taxation records in each city. Through our extensive site visits to all neighbourhoods in the city, and detailed interviews with local residents and leaders in a number of low-income settlements, we were able to develop insights about the nature of the residential land development process from the 'top-down' and from the 'bottom-up'—a research strategy that had rewarded us well in our earlier work (Gilbert and Ward, 1985; Jones, 1991).

The land price information presented in this paper derives from two principal sources. First, for the period 1974–89 we collected (vacant) plot prices as advertised in the major local newspaper for settlements which we had visited, and whose socio-economic composition and development history were known to us. These settlements were distributed throughout each city. This source provided us with a large number of

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separate readings in each city (2622 in Puebla, 1504 in Querétaro, and 1061 in Toluca).[3] There are several potential problems with this type of data source which should be mentioned. Newspaper advertisements are the normal medium for land sales through the formal market (i.e. for legally authorised sub-divisions), but land availability in irregular settlements is passed on by word of mouth, through personal visits, etc. Therefore the data are partial, and cover middle- and upper-income residential land. Moreover, they are *bid* prices, not *sale* prices; and in using them we have to make the assumption that the ratio of sale to bid price remains approximately the same over time, and that the trend we subsequently track reflects changes in average prices, and is not heavily distorted by more effective haggling to bring the actual price down in certain locations or at certain times.[4] Also plots may vary, particularly in their size, aspect, intra-settlement location, and the externalities they enjoy, thereby making direct comparison of unitary land prices difficult or inappropriate. In Mexico, however, this last *caveat* is not usually a major problem, since individual developments usually offer one 'standard'-sized plot, and anyone wanting larger plots would usually have to purchase two adjacent plots, or the whole block (both are relatively rare).[5] In addition, our readings are concentrated around the initial phase of settlement commercialisation, when the externalities would be broadly similar for all plots (see note 3).

Partly in order to overcome the bias towards middle- and upper-income sub-divisions expressed through newspaper advertisements, we gathered data from a second principal source—household questionnaires in low-income settlements which gathered general socio-economic information as well as details about the costs of their individual land purchase, and, where applicable, follow-on costs associated with subsequent plot servicing, securing permits and authorisations, regularisation (legalisation of 'clouded' title), and so on. Some 17 low-income settlements were surveyed across the three cities, and we sought to survey at least 50 owner households in each neighbourhood, all of whom had bought a vacant plot without any construction upon it. Most (but not all) would have arrived in the period soon after the settlement's development, but the manner of acquisition could vary and while most bought from the original land developer or *ejidatario*, occasionally the purchase was made by buying from a former non-resident owner (called a *traspaso* in Mexico). Application of the questionnaire was undertaken by the authors, and the selection of households within each settlement was undertaken randomly according to standard procedures. The settlements included both *ejidal* and non-*ejidal* sub-divisions, as well as two sub-divisions which had been developed privately (but illegally) and targeted at better-off working-class and at middle-class groups (Albarrán in Toluca, and Satélite in Puebla—hence the higher average plot prices in these two settlements which are displayed in Tables 2b and 2c). Thus a key element of our survey strategy was to elicit 'hard' data about the full array of costs associated with various stages and procedures whereby a plot is acquired—even where this is done illegally. An important objective was to maximise the number of readings both spatially and across time, in order for meaningful conclusions to be drawn about overall trends, and in order to identify important differences between various types of land development in what we consider a single, but segmented, land market (see also Fitzwilliam, 1991). Of course, these data were not consolidated into a single data set, but were only aggregated and analysed according to that particular segment of the land market of which they formed a part. A series of controls were established in order to ensure comparability between the various types of settlement. The latter were usually disaggregated by resident income group, and by type of land development (private sub-division or *ejidal* land). Land prices were converted to constant *pesos* using the consumer price index, as were other fees and regularisation charges. The

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first half of the following analysis, therefore, is a systematic analysis of changing real land acquisition costs for different income levels in each city, as well as a comparison of aggregated costs for similar types of low-income settlement across the three cities.

Land Price Trends in Mexico

The existing literature on land price trends in developing countries argues almost exclusively that land prices are rising (although it is not always clear whether these are real or nominal land price increases). For example, Evers (1976, p. 782), when writing about Asian cities, noted that "population increase and other social processes have intensified the pressure on urban land and led, in the 1970s, to a wave of land speculation and spiralling land prices". This 'skyrocketing' of prices is widely perceived to be a normal consequence of market economies, including those of Latin America (Geisse and Sabatini 1982, p. 162). In São Paulo land prices appear to have increased dramatically between 1968 and 1974 (Haddad, 1982). It is certainly true that nominal land prices have risen in Latin American cities, but whether this also represents an increase in real terms, allowing for the effect of inflation, is not always made clear. Indeed, there are major methodological difficulties associated with many of the studies that inform this received wisdom. Often the methods adopted have been confused and imprecise. 'Apples' are compared with 'pears', most usually by taking areas whose social composition, spatial location at the time of formation, and/or mode of land development are entirely different. The selected time horizons are often too short (to pick out genuine trends), or are chosen selectively in order to illustrate *a priori* conclusions. Some researchers have even persisted in analysing nominal (as against real) prices that take no account of inflation (see Jones, 1991, pp. 131–138 for a detailed review of these shortcomings). In short, much of the body of existing research is sloppy, especially given the complexities associated with accurate land and property price investigation, which requires the researcher to pick a cautious path through a statistical minefield that otherwise may explode into spurious conclusions (Fitzwilliam, 1991).

Some Mexican researchers have been particularly guilty in this respect. We recalculated Legoretta's (1983) data on nominal (unadjusted) land prices for a range of petroleum cities, as well as for Castañeda's (1988) data for Mexico City peripheral areas. In contrast to the arguments of each author to the effect of a sharp rise in land prices, our recalculations produced a broad 'flatness' and even a significant decline in land price trends over time, which totally belie the pattern and conclusions that they drew (Jones, 1991, p. 140). Legoretta (1983) argues that land prices have risen in smaller Mexican cities and that this is due to the intervention of increasingly sophisticated social agents to appropriate land rent. Our studies also contradict this latter point, but that is not an issue for resolution in this paper. Here our concern is to demonstrate the facts which indicate that, in real terms, land prices have not witnessed a dramatic increase—not even in the rapidly expanding petroleum cities of southern Mexico or in the Metropolitan Area of Mexico City (see also Hiernaux, 1991; Gilbert and Varley, 1991, p. 93).[6]

Similarly, earlier work by one of us (in Gilbert and Ward, 1985), suggested that although land prices in three Latin American cities appeared to be rising in real terms, the increase was not dramatic. Indeed, the evidence for 'tightening' land markets was largely circumstantial, and was best illustrated by other variables such as declining plot size and by delayed entry into ownership, rather than by a marked rise in the unitary price of land. In that work, we expressed some surprise that declining supply was not translated into rising prices as we had expected, and as received wisdom would have had us believe. We suggested that hidden variables, market imperfections in price-setting, and other considerations probably accounted for the lack of a sharp

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upward trend in prices given the growing scarcity of land. Whatever the cause, we urged caution not to jump to conclusions about the inevitability of land price increases. Very recently we have begun to observe the beginnings of a broader acceptance that land prices may be falling in real terms (Gilbert, 1991; Dowall and Leaf, 1991). Moreover, it is now recognised that periods of economic recession and austerity can have a sharp negative impact upon land prices. Thus, while during certain phases of economic buoyancy and expansion prices may be observed to rise appreciably, it is important to take a sufficiently long-term perspective if the overall trend is to be accurately discerned. If cut-off points are inappropriately drawn, or the time span is too short, then one may get a misleading impression about the trend, and about the direction in which real prices are actually moving.

We believe that a 15-year period is just about long enough for us to begin to gauge the pattern of land price trends in these three cities, and our data suggest several important findings. First, it would appear that since 1974 land values have followed a broadly cyclical path. The cost of land rose steadily in the late 1970s, peaked early in the 1980s, and declined sharply thereafter. The data presented in Figure 1 (a–c) show the newspaper-advertised average plot prices for middle- and upper-income settlements in each city displayed over time. Although not displayed here, the individual settlement land-price trajectories also move in a similar direction, but inevitably in these cases the disaggregated data are less complete for the full period. There is also evidence of a sharp upturn in the late 1980s which suggests that the new administration of President Salinas (1988–94) and the process of economic recovery may be leading to a resurgence of confidence and renewed buoyancy of the residential land market (see Jones *et al.*, 1993). This cyclical pattern emerges consistently across the three cities, although Toluca also demonstrates a sharp rise in 1977, and the decline since 1981 is less pronounced. In short, our newspaper-advertised data suggest that prices in the mid 1980s were broadly similar to those a decade earlier, with a rise and a fall in between. Similar work to our own by Siembieda (1991) in the city of Guadalajara points to a broad 7-year cyclical pattern of 'troughs' and 'peaks' in real land prices since the 1940s, and which he tentatively links with national economic performance and the regular 6-year change-around associated with the nature of fixed-term, non-renewable presidential administrations in Mexico. Our own inclination is not to emphasise the political disjunctures *per se*, but more the way in which these are translated into the macro-economic performance of each administration (see Jones *et al.* 1993).

Secondly, the data suggest that the cyclical pattern is especially marked in middle-and upper-income sub-divisions in each city, but were also apparent when combined data curves were produced for household survey information drawn from low-income neighbourhoods such as private sub-divisions and *colonias populares* (Figures not reproduced here). With the important exception of Querétaro (where prices are much lower and quite erratic over time), it is also a clear feature for *ejidal* land in each city. Our specific analysis of individual low-income settlements showed considerable atomistic variation which, unsurprisingly, could best be explained in relation to local factors. But the overall trend confirms the cyclical pattern.

A third major observation is that, *prima facie*, prices in middle-income and élite sub-divisions appear to be much more macro market-driven and respond more consistently in the expected direction with less likelihood of local perturbation. Illegally-generated settlements show a greater inconsistency but, when the data for low-income settlements are combined, land prices also move broadly in a similar direction as the wider market. This suggests that other social factors may also determine price-fixing in irregular settlements, thereby mitigating to a certain extent the overriding effect of the wider market. These may include a lower sensitivity to

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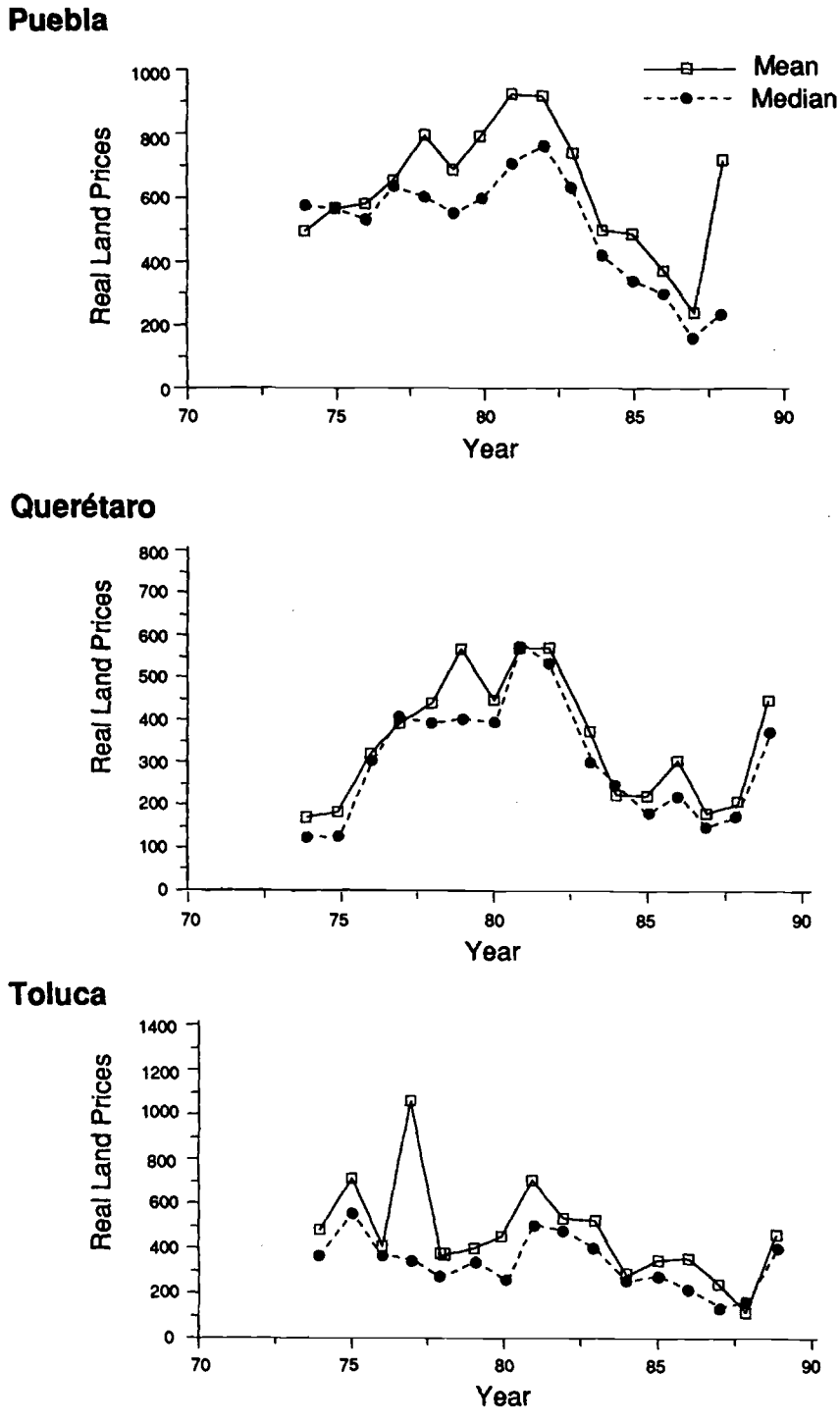

Figure 1. Real land price trends using advertised plot prices for Puebla, Querétaro and Toluca.

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price-setting by low-income residents and land agents than their more experienced middle-income and formal real estate counterparts. Also, we found evidence that non-monetary considerations enter the negotiation process relating to land transactions among the poor. Sometimes this included another good in part exchange (a car, a gas cooker and, in one case, a suit of clothes!). Also, simply knowing the vendor personally, or having a mutual friend would result in a lower than market price being struck. Finally, the overall power and level of organisation of the principal actors involved in the land development process shapes the coherence of performance of the illegal land market. Where the *ejidal* sector is relatively strong and well represented through the CNC and in the local branch office of what used to be the Agrarian Reform Ministry, then one can expect a systematic and less atomistic application of market bidding.[7]

Within the confines of a paper such as this, we can only provide a brief account for the trends which we have described. It would appear that macro-level economic considerations set alongside the attractions of alternative investment returns relative to land are paramount. Specifically, factors such as the national and regional economic buoyancy, sustained and/or rising real wages, low real interest rates, combined with the limited alternative investment opportunities during the late 1970s and early 1980s are likely to fuel investment in land, and did so until the crisis hit. (At that time, the Mexican Stock Exchange (*Bolsa*) was very small. Banks had been nationalised in 1982 and former dollar accounts frozen and converted to *pesos*.) Thereafter, austerity, a loss of confidence, capital flight, rising oil prices and interest rates all undermined domestic demand. This led to the decline in land prices and the dramatic slowdown in market activity. Moreover, contrary to the received wisdom, land has not represented a good or safe investment during rapid inflationary periods such as 1980–88, and year-on-year real price variations during the 1980s were negative (until late in the decade). Many small investors saw better pickings elsewhere, and sold-off the vacant plots they had bought as a speculative investment and sometimes even sold their homes, in order to invest in the then rapidly expanding Stock Exchange (Jones *et al.*, 1993). In their hurry to sell and to get into the *Bolsa*, prices were depressed still further since often they had to offer plots at 'knock-down' prices if they were to move them quickly. Having lost money on their land investment, they caught a second 'cold' once the market crashed in 1987 and sharply eroded or wiped out the value of their portfolios. But it is important to emphasise that this practice was limited to small-scale land holders (people who had obtained several plots), and that large-scale land holders and developers did not usually make the same mistake. They rarely sought to switch investments, but preferred to sit tight and to wait for the market to pick up again.

In low-income land developments the macro-economic behaviour is also important, but here the key determinant of land price fluctuations appears to be principally one of wage levels. During the austerity programmes of 1982–88, wages declined (especially the statutory minimum wage) and land prices dropped accordingly. Also the continued (illegal) supply of land through the *ejidal* sector made land freely available. We will return to the implications of declining wage levels and lower land prices later in this paper.

The Absolute Price of Residential Land

It is important to gauge how the absolute price of land varies both between cities and between segments of the land market. Analysing and explaining absolute land values is likely to shed light upon the determinants of prices and the extent to which these are socially derived by the interventions of different groups, or whether these are determined by location and rent that may be derived from different land-use functions. Where absolute land values in different segments of the residential land market are sharply differentiated, then this is likely to

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shape the degree of socio-economic heterogeneity that exists in any given neighbourhood, and the possibilities for mobility between populations in different segments of the market. Other things being equal, and in the absence of concerted state action to redress imbalances, where absolute land prices are sharply differentiated, then *segregation* between low- and middle-income groups is likely to be greater, as will be intra-neighbourhood *homogeneity*. Thus far, however, few researchers have analysed the relationship between land values and issues of urban segregation and residential mobility in less developed countries.

In terms of élite and upper-income subdivisions, absolute land prices are broadly comparable in each city, although the average cost is slightly lower in Querétaro (see Figure 1). As one would expect, there are important variations between settlements which reflect a variety of factors—social *cachet*, distance from the city centre, and the level of social mixing versus exclusivity that has evolved or been created. These variations tend to undermine any consistent pattern from emerging when we sought to map land value changes at 4-year intervals from 1974 onwards. In particular, the opportunity for low-income populations to acquire *ejidal* land or land in former villages now incorporated into the urban area (*pueblo* cores), has meant that settlements with high-value land and those with low-value land may be in close proximity to each other. Nor does land appear to be greatly valorised over time (through urban development and state intervention), and this also reduces the expected differential between current and past peripheral land. Although land at the periphery is cheaper than that nearer the centre, it is not always markedly so. When we came to map land prices in each city for different time horizons, we found that relatively low-cost land was often available at a variety of locations, and not just at the periphery. Nor was the city centre consistently in the highest land price category. In our view, the price of land is more likely to be determined socially according to tenure, the type of development and the social class, rather than spatially according to any distance-decay function of land-use outwards from the city centre.[8]

When the absolute prices of residential land for low-income segments of the market are examined we can observe how, somewhat paradoxically, those contexts in which low-priced land is freely available may actually *accentuate* spatial and social inequality. In Tables 1–3 we show the average (trimmed mean $[T\bar{x}]$[9] unitary price of land for each of the settlements studied, and the city average (trimmed $\bar{x}$ bottom line) indicates that the land prices in low-income areas are roughly similar in Toluca and Puebla, as Tables 2 and 3 demonstrate, but are very much lower in Querétaro (Table 1). Thus the differential with middle-income land prices is more marked in the latter city. We discovered also, that there is likely to be greater social heterogeneity *within* neighbourhoods in Puebla and Toluca. This has led to lower levels of spatial and social segregation in these two cities than in Querétaro, where we are dealing with a highly segmented market, in which the poor (and the very poor) have had relatively easy access to low-priced land, but where there is little or no possibility for mobility into the middle-income sub-divisions. In Puebla and Toluca on the other hand the possibility of filtering exists, although much more likely is the process of downward raiding by lower-middle-income households, who trade off a larger plot and/or the opportunity of a higher dwelling-to-land ratio in an irregular and unserviced settlement than they would expect to achieve for their money in a serviced sub-division. But the greater absolute poverty and the greater distribution of poor households in Querétaro irregular settlements makes plot purchase by middle-income groups virtually unthinkable (see also Ward, 1993). Another factor is that Querétaro experienced an over-expansion of the middle-class residential land market which generated a greater supply of plots. This, in turn, has led to a slightly lower unitary price of land than in either Puebla or Toluca, and most middle-income households are able to shop around for a plot they can afford:

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they do not need to consider raiding into a lower-class settlement as might their counterparts in the other two cities. This, too, intensifies the differential between the lower and uppersegments of the land market.

Although Querétaro land prices are much lower for low-income settlements, the overall price increases, somewhat, once one takes into account the additional costs associated with regularisation (legalisation of 'clouded' titles), and other costs of papers such as full titles, certificates of occupancy (*constancias*) which are given out in some *ejidal* settlements, as well as various other costs associated with state interventions (sundries and taxes)—compare the rows in Tables 4–6. But, notwithstanding this slight narrowing between the differentials observed, unitary land prices and plots in Querétaro remain relatively low. We explain the lower absolute cost of land in Querétaro as primarily an outcome of the historical weakness of *ejidatarios* and their allied interest groups (the CNC—see note 2) in that city, and the relative strength of the so-called popular sector (the CNOP/UNE). This balance of forces has meant that the PRI has enjoyed good and conflict-free relations with the irregular settlements, while the state and municipal governments have had far greater success in achieving land regularisation and servicing programmes than has been the case in either Puebla or Toluca where peasant groups have proved better able to resist state interventions that might undermine the land development interests of their followers (the *ejidatarios*).[10]

Land Affordability for the Poor

Many of the methodological difficulties associated with the analysis of land prices and land price trends are compounded further, once one begins to make an accurate judgment about whether land is becoming more or less affordable over time. There are several ways of representing unitary land costs relative to an ability to pay:

(1) against the minimum wage or other standard wage line;
(2) against actual wages (individual and/or household) derived from questionnaire analysis;
(3) against a basket of basic commodities; or
(4) against price rises in other arenas (building materials, house-building cost indices, and so on).

In our analysis we decided to make an assessment against earnings, using the minimum wage and actual wages as our benchmarks.

The principal assumption built into using these (or other) bases of comparison or 'benchmark comparators', is that their relative value is somehow constant over time. Under certain conditions this is not an unreasonable assumption. Where one is dealing with a statutory minimum wage which explicitly aims to ensure a baseline subsistence income then the value will be maintained providing, of course, that the state regularly intervenes to adjust the minimum wage in order to protect its purchasing power. The validity of the assumption is also enhanced in less developed countries by the fact that the profile of individual worker earnings tends to be relatively flat over time, since there are relatively limited opportunities for promotion, salary increments, and so on, which would significantly raise an individual's wage and purchasing power as he or she got older. In circumstances where these assumptions apply, one may successfully measure temporal variations in the independent variable (land cost) against the stable dependent variable (salary) in order to assess changing affordability against wages rates. However, many households have more than one wage-earner, and one cannot make any assumptions about affordability measured against *household* incomes—a point to which we return below. In Mexico enhanced earnings are more likely to accrue as a result of life-cycle changes or as adjustments are made to the household structure—both of which raise the number of potential workers (and salaries) in any given household (Roberts, 1989; Chant, 1991; González de la Rocha, 1991).

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Table 1. The cost of land purchase relative to incomes in Querétaro

Settlement	$T\bar{x}$ plot size (sq m) [mode]	Corr. size by cost	$ 1978 constant $T\bar{x}$ price of 1 sq m [*N*]	1989 prices (October): Tx of total sq m bought with			
				1 minimum weekly wage 1978	1 minimum weekly wage	$\bar{x}$ head household income (week)	$\bar{x}$ household income (week)
Peñuelas	323 [200]	−0.41	71.1 (50)	8.9	4.2	7.5	11.6
Bolaños	198 [200]	−0.27	24.2 (50)	26.0	12.3	21.1	29.0
Echeverría	160 [160]	0.10	6.1 (47)	103.3	48.9	69.0	120.7
San José Olvera	260 [250]	−0.21	50.0 (50)	12.6	6.0	13.4	19.1
Menchaca	493 [200 & 400]	−0.27	23.8 (50)	26.5	12.5	21.5	33.4
Querétaro	293	−0.114	34.7 (247)	18.2	8.6	16.2	22.8

Note: see endnote 9 for a description of the "trimmed mean" ($T\bar{x}$)

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Table 2. The cost of land purchase relative to incomes in Toluca

Settlement	$T\bar{x}$ plot size (sq m) [mode]	Corr. size by cost	$ 1978 constant $T\bar{x}$ price of 1 sq m [N]	1990 prices (July): $T\bar{x}$ of total sq m bought with 1 minimum weekly wage 1978	1 minimum weekly wage	$\bar{x}$ head household income (week)	$\bar{x}$ household income (week)
Oxtotitlán	276 [200]	−0.18	223.6 (49)	3.2	1.2	2.97	4.2
San Buenaventura	218 [200]	−0.04	299.3 (50)	2.4	0.9	2.4	3.0
Seminario	188 [200]	−0.02	255.0 (49)	2.8	1.10	2.1	2.6
Progreso	191 [100 & 200]	−0.02	148.4 (16)	4.8	1.78	3.9	6.5
Universidad	518	−0.29	162.0 (9)	4.4	1.63	5.1	7.4
Albarrán	240 [240]	0.014	691.0 (20)	1.0	0.38	2.3	2.4
Toluca	238	−0.067	268.0 (192)	2.7	1.0	2.5	3.3

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Table 3. The cost of land purchase relative to incomes in Puebla

Settlement	$T\bar{x}$ plot size (sq m) [mode]	Corr. size by cost	$ 1978 constant $T\bar{x}$ price of 1 sq m [*N*]	1988 prices: $T\bar{x}$ of total sq m bought with			
				1 minimum weekly wage 1978	1 minimum weekly wage	$\bar{x}$ head household income (week)	$\bar{x}$ household income (week)
La Loma	271 [320]	−0.27	167.0 (57)	4.4	1.8	2.0	2.8
Santiago Momoxpa	715 [1250]	−0.37	44.8 (42)	16.4	6.6	10.8	14.8
Ampliacíon Reforma	324 [variable]	−0.17	118.6 (35)	6.2	2.5	2.8	3.6
Villa Posada	281 [200]	−0.27	209.0 (48)	3.5	1.4	1.8	2.6
Satélite	160 [160]	−0.18	776.0 (49)	1.0	0.4	0.7	0.9
Coatepec	120 [120]	−0.04	236.0 (63)	3.1	1.3	1.5	1.9
Puebla	259 [180]	−0.1	233.0 (251)	3.1	1.3	1.7	2.3

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Table 4. Additional charges associated with land acquisition and modal total costs for each settlement in Querétaro

Settlement	$\bar{x}$ cost of a modal-sized plot 1978 $	Average additional costs for papers, legalisation, sundry charges and taxes in constant 1978 $ *pesos* and (number of readings)					Total cost of modal plot in 1978 $ *pesos* and (number of 1978 weekly minimum wages)
		$ paid for *titulo*	$ paid for *constancias*	$ paid for legalisation	$ paid in sundries	$ paid in taxes	
Peñuelas	14 220	3446 (17)	—	—	—	197 (5)	17 863 (28.4)
Bolaños	4840	2710 (7)	—	1938 (22)	249 (7)	369 (12)	10 106 (16.0)
Echeverría	976	—	—	2613 (45)	472 (12)	309 (18)	4370 (6.9)
San José	12 500	—	—	2219 (42)	233 (31)	120 (11)	15 072 (24.0)
Menchaca	4760	—	—	5943 (37)	629 (15)	138 (7)	11 470 (18.2)
	9520						16 229 (25.8)
Querétaro		3212 (24)	—	2994 (146)	301 (68)		

Weekly minimum wage in 1978 = $630.
'Sundries' includes additional second or even third payments for papers, plans, bribes, certificates, etc.

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Table 5. Additional charges associated with land acquisition and modal total costs for each settlement in Toluca

Settlement	$\bar{x}$ cost of a modal-sized plot 1978 $	Average additional costs for papers, legalisation, sundry charges and taxes in constant 1978 $ *pesos* and (number of readings)					Total cost of modal plot in 1978 $ *pesos* and (number of 1978 weekly minimum wages)
		$ paid for *titulo*	$ paid for *constancias*	$ paid for legalisation	$ paid in sundries	$ paid in taxes	
Oxtotitlán	44 720	—	1649 (8)	—	—	136 (7)	46 505 (65)
San Buenaventura	59 860	—	—	—	—	—	59 860 (84)
Seminario	51 000	—	1871 (17)	—	—	—	52 871 (74)
Progreso	29 680	—	1180 (9)	—	—	—	30 860 (43)
Universidad	nd	—	—	4648 (9)	—	—	nd
Albarrán	165 840	3744 (10)	—	—	—	—	169 584 (238)

Weekly minimum wage in 1978 = $714.
'Sundries' includes additional second or even third payments for papers, plans, bribes, certificates, etc.

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Table 6. Additional charges associated with land acquisition and modal total costs for each settlement in Puebla

Settlement	$\bar{x}$ cost of a modal-sized plot 1978 $	Average additional costs for papers, legislation, sundry charges and taves in constant 1978 $ *pesos* and (number of readings)					Total cost of modal plot in 1978 $ *pesos* and (number of 1978 weekly minimum wages)
		$ paid for *titulo*	$ paid for *constancias*	$ paid for legalisation	$ paid in sundries	$ paid in taxes	
La Loma	42 251	—	—	4380	—	—	46 631 (63)
Santiago Momoxpa	28 090	—	—	8737	—	—	36 827 (50)
Ampliación Reforma	33 445	—	—	—	—	—	33 445 (46)
Villa Posada	52 250	—	—	—	—	—	52 250 (71)
Satélite	124 160	—	—	—	—	—	124 160 (169)
Coatepec	28 320	—	—	—	—	—	28 320 (39)

Weekly minimum wage in 1978 = $735.

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But in Mexico, as elsewhere, recent changes undermine any assumptions that one may, in the past, have been able to make about stable real statutory wage levels. The purchasing power of the minimum wage has been downgraded by government policy (as have all wage levels) since 1982, as part of Mexico's austerity programme. There has been a 45 per cent decline in the real minimum wage since 1982 with especially sharp erosion in 1982 and 1986/87 (see Figures 2a–2c). Although the minimum wage provided a more or less accurate and widely adopted baseline salary for many workers until the late 1970s, and it was adhered to by firms, this is no longer the case. Most firms today pay *more* than the statutory minimum, which is widely recognised as being well below the market rate and below the minimum required for subsistence.[11] Thus one cannot assess affordability in terms of a comparison of the units of land that the minimum salary would buy during the 1970s with the units it would buy in the 1980s.

Nonetheless, in our analysis we first sought to identify how much land a low-income earner could expect to have bought in terms of the real 1978 unitary price of land against the minimum wage as it was in 1978—i.e. when it was set at a realistic baseline level. This provides us with one basis for comparison between cities for the late 1970s. Secondly, we have expressed land acquisition costs in terms of the proportion of the total head's wage and the total household income at the *moment of our survey* (between 1988 and 1990, depending on the city). Total household income was taken to include the earnings of the head and the spouse, second jobs, contributions from other members, rents from lettings and so on. It does not represent the total earnings of all household members, but rather the disposable income made available to the household for consumption purposes. In this way we hope that the use of real (actual) wages, as well as that of the total household income, will provide us with an alternative (albeit different) criterion with which to compare purchasing power during the late 1980s. Thus although one may now compare affordability for the two broad time horizons, effective interpretation hinges upon whether each of the measures accurately reflects reality. We believe that they are sufficiently close to make comparison meaningful. In order to check this, we reviewed the structure of household earnings among the poor during the late 1970s. Specifically we re-analysed a major database (see Gilbert and Ward, 1985) gathered from some 550 households across six irregular settlements in Mexico City in late 1978 and early 1979. At that time the increased ratio of the *head of household's* wage and the *total household* income over that of the statutory minimum was 1.2 and 1.6 respectively. This compares in the late 1980s with a comparable ratio of 1.5 and 2.3 in Querétaro; 2.1 and 2.8 in Toluca; and 1.4 and 1.8 in Puebla—considerably higher in all cases.[12]

Thus, if one accepts the proposition that the real value of the minimum wage in 1978 approximates the value of the head's average wage in 1988 and 1989, then one can begin to make an assessment about how affordability may have changed over time. Of course, this also assumes that expenditure patterns remained broadly similar through the 1980s and that households continue to prioritise expenditures in much the same way as before; and there is some evidence to suggest that, in order to cope with austerity, households are obliged to revise their budgets and consumption towards other basic essentials and away from land and housing costs (González de la Rocha, 1991, p. 121). This, too, must be taken into account, but unfortunately our data do not allow us to make any weighting adjustments to take account of possible changing consumption patterns.

In Tables 1–3 we display our findings relating to land purchase for each of the settlements. In the first column after each settlement we give the average plot size in terms of the 'trimmed' average (see note 8), as well as the modal plot size (i.e. the most uniform plot size that a large number hold—usually the majority in Mexico). As one may

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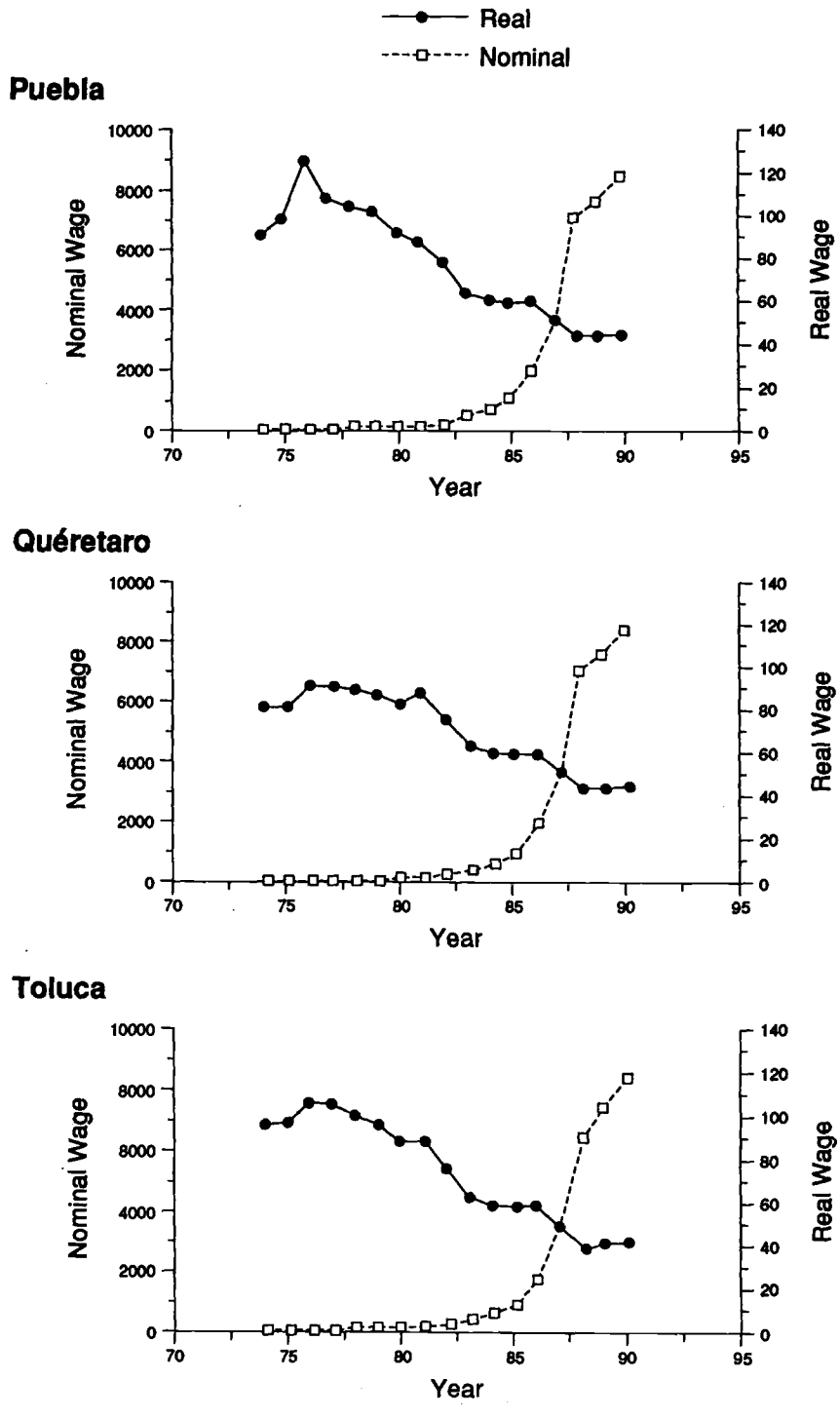

Figure 2. Real and nominal minimum salaries in Puebla, Querétaro and Toluca.

observe, the modal plot size in low-income settlements tends to be around the 200 sq m mark. Our data suggest that there has been *no significant reduction* in plot size purchased during the 1980s, even though this would have been one way of circumventing declin-

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ing affordability. As expected, there is a negative correlation between unit costs of land and overall plot size (column 2 of Tables), indicating that a unit of land costs less on larger plots (see Tables 1–3), but the coefficients are not high. As was noted earlier, however, in all three cities there were marked variations in the unitary cost of land in different low-income settlements as well as in the modal plot size. This suggests that low-income residents generally have some opportunity to select cheaper settlements, or those which offer a variation in plot sizes, and which would cost less in absolute terms.

The remaining columns of Tables 1–3 contain the average cost per sq m which we discussed earlier, followed by the average (trimmed mean) amount of land that could be purchased assuming the different earning parameters already described (minimum wage, head of household's wage, and total household income). Having identified the principal assumptions and data analysis difficulties relating to affordability, we are now able to return to the original question. Has land acquisition become more costly and more difficult during the 1980s, despite the sharp decline in land prices? Taken at face value the answer would be yes: the amount of land purchased for a statutory minimum wage in 1978 compared with that of 1989/90 has declined by between one-half and two-thirds in most cases (Tables 1–3). At first glance, the data indicate a very marked deterioration in levels of affordability. But this would be grossly misleading given our earlier point that the real statutory minimum wage levels in 1978 and 1988/89 are no longer comparable.

We have established that a more appropriate benchmark for comparison with the *minimum* wage in 1978 is the *head's* average wage in 1988 and 1989. When the data are compared in this way, the decline in affordability is marginal except in Puebla where it has been cut to almost half its 1978 level. In Querétaro and Toluca, however, the amount of land purchased for one minimum weekly wage in 1978 is very similar to that acquired for one average (trimmed mean) head of household's income in 1989/90 (see Tables 2 and 3). But again we must be cautious, since even in 1978 there was always a small increase in the ratio of average head's earnings over the statutory minimum (around 20 per cent according to our findings reported above). Allowing, too, for minor shifts in consumption patterns away from housing, we conclude that affordability of land purchase as informed by *real* (i.e. actual) wage levels in these two cities probably deteriorated during the 1980s by between one-quarter and one-third. In Puebla it has declined by around one-half.

One of the ways in which households have responded to this relative decline in purchasing power is to raise the disposable income available to them—a finding which, as we have noted, is also underscored by other researchers. Taking into account average total household incomes in 1988/89, and the much greater significance of multiple-contributors in the late 1980s than a decade earlier, our data suggest that in Toluca and Querétaro the affordability of land purchase did not deteriorate significantly (see Tables 1 and 2). But in Puebla there was a decline of around one-third (Table 3). However, a *caveat* should be inserted here, that not all households are in a position to expand their earning power through family extension, or by having the spouse, sons or daughters work. Especially vulnerable are young nuclear families (Roberts, 1989), many of whom must postpone the move from rental to ownership until they are in their mid 30s (Gilbert and Varley, 1991).

Several important conclusions arise from our analysis. First, although affordability has declined, the decline has *not been dramatic*, with the exception, perhaps of Puebla, where the land-to-income ratios have almost halved. Nonetheless, the extent to which land purchase remains affordable to the poor has come about by the decline in real

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Table 7. Form in which land acquisition payments were made in each city

	Querétaro		Toluca		Puebla	
	Percentage	Number	Percentage	Number	Percentage	Number
Outright: (single payment)	52	(107)	40	(70)	38	(83)
Multiple payments	34	(70)	32	(56)	39	(86)
Deposit and payments	14	(28)	28	(50)	23	(51)

Source: Questionnaire surveys 1988–90.

land prices; and through adjustments to the household earning capacity. Moreover, in each of the three cities it appears that the decline in affordability has been more marked in private sub-divisions than in *ejidal* areas, where our interviews revealed that price-fixing was less rigorous. Thus the rising level of production of *ejidal* land in Mexican cities, and the nature of price-setting which may take account of social factors, as against purely market forces, have also assisted in making available land at affordable prices.

A second conclusion is that for the poor in particular, access to land is primarily a function of real income. Given that land price profiles tend also to be flatter in low-income relative to middle-income areas, affordability for the poor is likely to be largely a function of salary fluctuations, rather than a mixture of both real earnings *and* real land price variations.

Thirdly, there appears to be little evidence that other adjustments are being undertaken in order to alleviate declining affordability. The trend towards smaller plot sizes or plot-sharing in 'compound' arrangements between separate but kin-related households is a feature that has been described for owners in Mexico City (Gilbert and Ward, 1985). However, in all three cities the large majority of plots were occupied by a single family, although of course this may change in the future if the market tightens and if it becomes more difficult to enter for formal owners (*de facto* or *de jure*). For middle-income groups, a shift towards smaller plots, condominium-style developments, or downward raiding of plots in irregular settlements, appear to be mechanisms of adjustment that may be used in order to sustain the affordability of dwelling acquisition. Often, too, these adjustments are supported by developers and/or by the public sector—for example, through preferential interest rates for condominiums, which has been one way in which some limited protection against the crisis has been extended towards the middle-income groups.

For low-income households, plot vendors have been reluctant to make available extended repayment facilities to ease families' ability to buy. Most households pay (or are obliged to pay) outright. The last thing many plot vendors wanted was to see the value of a deal eroded by inflation, and hence they insisted upon outright payment or a small number of instalments. But here, too, the playing-field is far from level between the cities. Although there is some indication in our data that where land costs are higher, then the proportion of outright payments is lower (see Table 7 for Toluca and Puebla), the instalments are not particularly facilitative—despite being called *facilidades* (Table 7). Somewhat ironically, instalments are spread to a greater extent in Querétaro (where land is much cheaper) than they are in Puebla or in Toluca (where it is relatively expensive). In Toluca, for example, 81 per cent of instalments were made in less than 12 separate payments, and often (over one-half) in three separate payments—usually at monthly intervals. Therefore, we also conclude that it is more difficult to get into the land market in Toluca and Puebla because land prices are higher; instalments are few and unlikely to be spread over time; and because during inflationary periods there

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is greater insistence that payments be made outright (*al contado*). This underscores our earlier finding that the irregular settlement populations in Toluca and Puebla tend to be less poor, and more socially mixed than their Querétaro counterparts.

Conclusion

Several important and perhaps controversial findings have emerged in this paper. First, we have demonstrated that land prices in Mexico are not steadily increasing, but demonstrate a cyclical pattern which is closely tied to the state of the macro-economy. Land prices declined significantly in real terms during the 1980s, but appear to be rising sharply again since 1988/89. Secondly, the absolute price of land and the segmented nature of informal land markets in Mexican cities may have an important influence upon levels of intra-neighbourhood heterogeneity and city-wide processes of social segregation—but not in the expected direction. Cities with lower absolute land prices (i.e. easier access) may be more segregated than those with higher land prices. It appears that the differentials in absolute prices between low- and middle-income segments of the land market are most crucial in determining the propensity for inter-settlement mobility, and the degree of mixing of the lower-middle classes and better-off working classes. Thirdly, despite the marked drop in land prices during the 1980s, the ability of the poor to buy land has declined due to the erosion of wages under austerity programmes. Where the decline in land affordability has been arrested this is due to household adjustments in order to multiply income sources and to raise the level of disposable income. However, not all families are able to achieve this, and those that cannot are particularly vulnerable to changing land price to wage ratios. Finally, we have demonstrated that there is an important social component in the fixing of absolute land prices in low-income irregular settlements, and that there are continuing opportunities for the poor to acquire land on former *ejidos*. In Mexico this has facilitated access at relatively low cost, and in part is a reflection of the imperfections and variations in price- setting by social agents involved in *ejidal* land sales. We hope that these data, and the conclusions we derive from them, may offer a basis for a more informed discussion of some of the key issues associated with land prices and affordability.

Notes

1. A full account of the research and of the methodology is still being prepared and will be published as a book in 1994. Readers interested in learning more about the methodological issues relating to the analysis of land and housing issues should see the papers by various authors in Jones and Ward, 1993 (forthcoming).
2. These three confederations are the *Confederación de Trabajadores Mexicanos* (Labour Sector), the *Confederación Nacional de Campesinos* (Peasant and Agrarian Sector), and the *Confederación Nacional de Organizaciones Populares*, now known as UNE (the acronym has no significance) and which covers settlement and local interest groups, small-scale enterprises and workers, school-teachers, etc. As the country has urbanised, so the CNOP has gained influence, often at the expense of the CNC.
3. The principal local newspaper was consulted for every third month (starting in March), and readings were taken for the first and third week (in order to avoid recording several consecutive daily advertisements for the same plot during a single week). Fewer advertisements in Toluca required us to expand the sample by an additional four months. Advertisements almost always offered the following information: location (settlement); size of plot; the total land price or land price in square metres; and details of telephone number and/or address. If one of these elements was absent then the reading was ignored. We also set aside readings for plots larger than 1000m^2, since these represented land parcels for future sub-division, rather than actual house plots. Given that we were dealing with vacant plots without any construction, most settlements generated their largest number of readings in the early years after their coming onto the market. Although readings for vacant plots in those settlements also occurred several years later (by which time other externalities would influence the

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asking price [services, location, *cachet*, etc.]), these readings were few and far between, and their inclusion would not distort the overall analysis which we offer.

4. In none of the cities in which we worked was it usual for prices to be advertised in US dollars. Only in border cities such as Tijuana, Ensenada, and El Rosario, and occasionally in Mexico City is it common to find house and land prices being advertised in dollars. This might affect land price trends since rapid inflation requires regular resetting of prices when land is advertised in *pesos*, whereas the stability of the perceived dollar price might generate less frequent adjustments and lower volatility and variability in price setting. It would be interesting to compare trends in a city in which prices are regularly set in dollars, in order to make an assessment of the independent effect that this may have upon overall price trends.
5. The point is that even if a purchaser negotiated a special 'deal' and lower unitary rate for an extra-large plot, it would not have appeared in the newspaper advertisement as a large plot. If it was advertised as larger than 1000m^2, then it would be excluded from our analysis (see note 3).
6. Another study in Mexico City which also used advertised sale prices in several middle-income neighbourhoods found that prices increased by between 2.6 per cent and 6.5 per cent per annum over a 30-year period (Makin, 1984, p. 296). In the middle-class neighbourhood of Del Valle, for which the record was most complete, the increase was 4.3 per cent per annum over the whole period, and 2.8 per cent annually between 1970 and 1981. This suggests a steady, rather than a sharp, increase in land values over time.
7. It is too early to say how far President Salinas' reform of Article 27 of the Constitution—which makes possible the privatisation of the *ejido*—will shape land price trends in this particular segment of the market. Certainly, one would expect prime *ejidal* land to be open to middle-income and élite residential sub-divisions in ways that were not possible before. Potentially large tracts of land may now come into a part of the market from which they were formally excluded. This may depress overall land prices, although the unitary price paid for *ejidal* land now may rise to take account of the new-found clientele and ability to dispose legally of their land parcels.
8. See Ward (1993) for a comparative account of the inner cities in Latin America, and for a discussion of the very sharp differences in demand that have 'stunted' their gentrification and re-activation, at least when compared with the UK and US experience.
9. The trimmed mean is a means of 'cleaning' the data by removing the top and bottom 5 per cent of values in order to exclude spurious readings prior to calculating the mean. Thus it provides a more representative average reading.
10. There are alternative explanations for the higher degree of intervention observed in Querétaro. One reason is the greater possibilities that exist for state intervention and cost recovery given the much lower cost of land in that city—i.e. people could afford the costs of intervention. A second reason is that the local state is more efficient and better informed about contemporary urban policy. However, we found no evidence that the latter was the case. Rather, our historical analysis of the social groups tied to the development process suggests that it was probably the lack of powerful *ejidal* interests in Querétaro that allowed the state the relatively free hand, and which was denied the authorities in either Toluca or Puebla.
11. It is especially important that anyone undertaking fieldwork in Mexico understands that many workers will often still declare that they earning the 'minimum', but by that they mean the lowest wage-band that the firm *actually pays*. It is necessary, therefore, to obtain details of actual earnings.
12. González de la Rocha's study for Guadalajara also shows that while the incomes of male heads of households deteriorated by 35 per cent in real terms between 1982 and 1985, *total* domestic incomes decreased by only 11 per cent. This recommends our strategy to find alternative (and more realistic) comparators for the 1980s.

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