Reexamining the Impact of Employee Relocation Assistance on Housing Prices

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Abstract. **In this paper, we reexamine the issue of whether corporate relocation assistance programs for transferred employees significantly affect sale prices of single-family homes. We estimate a hedonic price equation that includes physical housing characteristics, location factors, occupancy status, and type of seller for a sample of 2,441 transactions. Seller types include (a) transferred employees who were given direct relocation assistance, (b) transferred employees who were not given direct relocation assistance, and (c) sellers who were not facing an employment transfer. After controlling for vacancy and tenant occupancy, we find that houses sold by transferred employees who receive direct relocation assistance exhibit no significant price differential, but that houses sold by transferred employees who do not receive direct relocation assistance sell at a discount of approximately 3%.**

Introduction

Employers often assume responsibility for the sale of an employee's residence when that employee is required to relocate for the company's benefit. By purchasing the employee's residence to resell in the open market, the employer alleviates the liquidity constraint faced by employees who could find it difficult to purchase and maintain an additional home during the relocation process. The existence of employee relocation assistance programs of this nature raises questions about whether corporate relocation efforts create a unique submarket within local single-family housing markets, and, more specifically, whether transactions resulting from these efforts exhibit price differentials in comparison to transactions that are not associated with an employee transfer.

Although the notion of market efficiency maintains that identical assets must sell for a "single price," there is conflicting evidence in the literature regarding price differentials in transactions involving corporate relocation programs. In particular, results provided by Turnbull, Sirmans and Benjamin (1990) indicate no systematic price differential in transactions involving corporate relocation efforts, but evidence reported by Dotzour and Levi (1992) shows an approximate 5% discount in corporate relocation housing transactions. This issue has important implications for empirical housing market analysis, where failure to control for ownership structure may result in error from specification bias.

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The lack of a consensus on this issue motivates the present study. We reexamine the issue of whether housing price differentials result from corporate relocation programs using a sample of transactions involving (a) sales by transferred employees who *were* given direct relocation assistance, (b) sales by transferred employees who *were not* given direct relocation assistance, and (c) sales that were not associated with an employee transfer. As in previous studies, the primary question addressed here is whether houses sold by transferred owners who receive relocation assistance exhibit price differentials. Unlike the previous studies, however, we also consider whether price differentials exist for houses sold by owners who faced an employment transfer, but were not provided direct relocation assistance in the manner described above.

Our analysis further distinguishes between transactions involving owner-occupied, tenant-occupied, and vacant houses. Turnbull et al. (1990) recognize that houses occupied by the owner may provide a service flow that is not available to corporate owners and that net holding costs may be higher for vacant properties. Dotzour and Levi (1992) do not distinguish between occupied and vacant houses in their study. Therefore, it is possible that the results reported by Dotzour and Levi (1992) are driven by the occupancy status of the property rather than ownership characteristics.

To reconsider potential price effects arising from corporate relocation programs, we collected a sample of 2,441 house transactions reported by the multiple listing services for Arlington, Texas, between December 1991 and July 1993. The sample includes 50 sales in which the employee received direct relocation assistance (these houses were sold by corporate relocation firms) and 121 sales of houses by transferred individuals who did not receive employee relocation benefits. Of the full sample, 477 houses were vacant during the listing period, and 70 houses were occupied by tenants during the listing period.

Our results indicate no significant price differential in transactions involving transferred employees who received relocation assistance, but suggest that transactions involving transferred employees who did not receive relocation assistance exhibit a discount of approximately 3% in comparison to other houses in the sample. In addition, the results indicate that occupancy status has a significant effect on housing prices. In this sample, houses that are vacant during the listing period sell at a discount of approximately 7% in comparison to occupied properties, and houses that are occupied by tenants during the listing period sell for a discount of approximately 13.8% in comparison to owner-occupied properties.

The next section of this paper describes factors that may affect the minimum prices corporate and noncorporate owners are willing to accept when selling a house. The answer to the question of whether these factors lead to systematic price differentials is an empirical issue. To address this issue, we propose and estimate a hedonic pricing model to identify potential price differentials resulting from ownership structure and occupancy status. The final section presents a summary of our analysis.

Price Differentials: Corporate vs. Noncorporate Owners

Relocation assistance programs exist to ease the burden placed on the employee as a result of corporate personnel strategy. Without relocation assistance, a transferred employee could have incentive to sell the current residence at a reduced price in an attempt to free capital, retire outstanding debt, and/or eliminate the expense of main-

taining two houses for an extended period of time. By purchasing the employee's house at market value, the corporation protects the employee's equity investment in the property and generally facilitates the employee's transfer.

After acquiring the property from the employee, the corporate owner then proceeds to sell the property in the open market. An unsettled issue in the literature is whether corporate owners who acquire properties as a result of employee relocation assistance are willing to sell the houses at a different price than typically motivated owners in the local market. Turnbull et al. (1990) derive several arguments that suggest why corporate and noncorporate, nontransferred owners may differ as to the prices they are willing to accept when selling single-family houses. The first two arguments suggest that corporate owners set minimum acceptable prices that are *lower* than those set by typically motivated owners. Further arguments suggest that corporate owners have incentives to set acceptable prices *higher* than those established by noncorporate owners. We consider each of these arguments below.

Holding Costs

Because a nontransferred, noncorporate owner can consume the service flow provided by the house while waiting for an acceptable price, a noncorporate owner may have a lower net cost of holding the house. This implies that corporations, because of potentially higher holding costs, set lower acceptable prices than noncorporate owners who continue to occupy their properties. Of course, this implication is valid only when the corporate-owned house is vacant and the noncorporate-owned house is occupied. When a house is leased to a tenant, the rent compensates the owner, whether corporate or noncorporate, for the service flow provided by the house. However, by leasing the property to a tenant, the owner may introduce occupancy constraints on the ultimate purchaser, thereby reducing the property's marketability.

Tax Treatment of Gains

Second, corporate and noncorporate owners (regardless of transfer status) face tax differentials with respect to any gains from sale. For corporate owners, any gains are taxed at ordinary income tax rates and any losses are deductible. For individuals, capital gains on the sale of a personal residence can be deferred if the taxpayer purchases another residence within two years. If the taxpayer is age fifty-five or over, gains of up to $125,000 avoid taxation regardless of whether another house is purchased. However, losses on personal residences are not tax deductible. The generally favorable tax treatment may allow individuals to set higher minimum acceptance prices compared to those set by corporations.

Selling Expenses and Liquidity Constraints

While both of the above arguments are consistent with price discounts for corporate-owned transactions, other incentives exist that may lead to price premiums for corporate-owned housing transactions. Just as the favorable tax treatment may result in higher minimum acceptance prices for individuals, lower selling expenses may result in higher minimum acceptance prices for corporations. Specifically, corporations may face lower

selling expenses than noncorporate owners through reduced sales commissions. Because of lower selling expenses, corporate owners can implement longer-term marketing strategies and increase the likelihood of a higher selling price. Consequently, corporate owners have an incentive to set higher minimum acceptance prices in comparison to noncorporate owners. As Turnbull et al. (1990) demonstrate, this effect is the opposite of the commonly perceived price discount associated with corporate sales.

Finally, employees who are required to relocate without relocation assistance programs may not be able to purchase another residence in the new location until they sell their current residence. Thus, liquidity constraints may force transferred, noncorporate owners to set lower prices than corporate owners. Indeed, this is the typical situation for which corporate employee relocation assistance programs are designed to resolve. By purchasing the transferred employee's residence, the corporation protects the employee's equity investment and facilitates the employee's acquisition of a residence in the new location.

While the above factors account for potential differences between corporate and noncorporate sellers with respect to the optimal strategy of setting acceptance prices to maximize the sale proceeds net of selling expenses and holding costs, it is not clear that these differences result in "multiple prices" for identical assets. Furthermore, the signs of potential price differentials could be positive or negative, depending on the relative impact of each of these factors. Turnbull et al. (1990) note that the question of *persistent* price differentials between corporate- and noncorporate-owned house transactions is an empirical issue. The next section formulates hypotheses and tests to determine whether these factors result in systematic price premiums or discounts across owner types.

Model and Hypotheses

In light of the above discussion and existing empirical evidence, the question considered here is whether persistent price differentials exist between transactions involving sellers who are (a) corporate relocation firms or (b) transferred employees who do not receive direct relocation assistance and sellers who are not facing an employment transfer. For each type of seller, the optimal strategy is to balance the marginal cost of a lower price against the marginal benefit of a faster sale. To test whether there are systematic price differentials across owner types, we propose the following hypotheses.

H_o: Transactions involving transferred employees who receive relocation assistance do not exhibit price differentials in comparison to transactions that do not involve transferred employees.

H_o: Transactions involving transferred employees who do not receive relocation assistance do not exhibit price differentials in comparison to transactions that do not involve transferred owners.

To test these hypotheses, we use a standard hedonic price model following Edmonds (1984) and Rosen (1974) which postulates that the value of a house is a function of its attributes. We model housing prices as a function of physical characteristics, locational characteristics, time on market, ownership structure, and occupancy status using the following hedonic price equation:

$$Selling\ Price = f(X_i, VACANT_i, TENANT_i, TRANSFER_i, CORPRELO_i)\ , \quad (1)$$

where:

X_i = vector of property characteristics, location descriptors, and days on market;
$VACANT_i$ = binary variable indicating vacant properties;
$TENANT_i$ = binary variable indicating tenant-occupied properties;
$TRANSFER_i$ = binary variable indicating that house was sold by an owner facing a job transfer *without* relocation assistance;
$CORPRELO_i$ = binary variable indicating that the house was sold by a corporate relocation company as a result of an employee transfer.

In constructing the dummy variables for *CORPRELO* and *TRANSFER*, the omitted group reflects sales by noncorporate owners who were not involved in an employment transfer.

Data and Statistical Model

The sample data consists of residential transactions in Arlington, Texas, between December 1991 and July 1993. The data were obtained through the Multiple Listing Service (MLS), Properties Sold Database for the city of Arlington. The 2441 transactions represent approximately 64% of all single-family home sales within the city of Arlington during the study period, excluding those not reported through the MLS. The other 36% of the sales reported through the MLS are either foreclosure sales or have incomplete information for the variables used in the analysis.

By reviewing the information contained in the MLS database regarding listing firms, and current ownership status, we identified 50 houses (approximately 2% of the sample) that were sold by corporate relocation companies (seven different firms) as a result of employee transfers and 121 houses (approximately 5%) that were sold by an owner facing a job transfer without relocation assistance. The sales by transferred owners and corporate relocation companies are geographically distributed throughout the city of Arlington. Exhibit 1 shows means and standard deviations (when appropriate) for the data included in the final sample and the two subsamples.

To examine the impact of ownership and occupancy status on the selling price, we estimate the following log-linear OLS regression model.

$$\begin{aligned} \text{Ln}(Selling\ Price) = f\ (&SQFT, AGE, AGE^2, BEDROOMS, BATHROOMS,\\ &GARAGE, CARPORT, FIREPLACES, POOL,\\ &ONESTORY, TIMETREND, VACANT, TENANT,\\ &NORTHWEST, EASTARL, TDOM, CORPRELO,\\ &TRANSFER)\ , \end{aligned} \quad (2)$$

where:

Ln (*Selling Price*) = natural logarithm of sales price;
SQFT = total number of square feet in the house;
AGE = number of years since the house was constructed;

Exhibit 1
Descriptive Statistics: Means and Standard Deviations

	Full Sample	Sales by Corporate Relocation Firms	Sales by Transferred Owners Not Receiving Relocation Assistance
N	2441	50	121
Selling Price	94,529	87,982	89,451
	(51,506)	(40,544)	(35,366)
SQFT	1,880	1,889	1,846
	(646)	(761)	(545)
AGE	14.7	14.3	10.2
	(10.2)	(9.08)	(8.0)
BEDROOMS	3.3	3.4	3.2
	(.54)	(.64)	(.48)
BATHROOMS	2.2	2.2	2.2
	(.60)	(.57)	(.49)
GARAGE	.95	.94	.98
	(.22)	(.24)	(.13)
CARPORT	.02	.00	.01
FIREPLACES	.95	1.02	1.02
	(.45)	(.32)	(.30)
POOL	.12	.04	.06
ONESTORY	.82	.88	.79
TIMETREND	10.41	10.64	10.35
	(5.06)	(4.91)	(5.20)
VACANT	.20	.48	.11
TENANT	.03	.00	.02
NORTHWEST	.25	.28	.12
EASTARL.	.28	.32	.42
TDOM	125.31	130.80	120.64
	(137.40)	(132.44)	(123.49)
CORPRELO	.020	NA	NA
TRANSFER	.050	NA	NA

Note: standard deviations of the continuous and the discrete, nonbinary variables are shown in parentheses.
Source: Computed by the Authors from sample data

BEDROOMS = number of bedrooms;
BATHROOMS = number of bathrooms;
GARAGE = number of parking spaces available in the garage;
CARPORT = 1, if property has a carport; or 0, otherwise;
FIREPLACES = number of wood burning fireplaces;
POOL = 1, if property has an inground pool; or 0, otherwise;
ONESTORY = 1, if house is a one-story house; or 0, otherwise;
TIMETREND = number of months from December 1991 (date of sale);
VACANT = 1, if house is vacant; or 0, otherwise;
TENANT = 1, if house is rented; or 0, otherwise;
NORTHWEST = 1, if house is located in northwest Arlington; or 0, otherwise;
EASTARL. = 1, if house is located in east Arlington; or 0, otherwise;

TDOM = number of days on the market;
CORPRELO = 1, if house is sold by a corporate relocation company; or 0, otherwise;
TRANSFER = 1, if house is sold by an individual who has been transferred; 0, otherwise.

The variables *CORPRELO* and *TRANSFER* are used to test our hypotheses regarding price differentials associated with employee transfers (with and without relocation assistance, respectively) in comparison to transactions that do not involve employee transfers.

Empirical Results

Estimating the log-linear model described above using the 2441 observations provides the results shown in Exhibit 2. The model explains approximately 87% of the variation in the selling price for this sample of MLS transactions. Sixteen of eighteen variables in the model are significant at a 5% or better level of confidence.

The results indicate that inground pools, garages, fireplaces, square footage, one-story houses, a location in Northwest Arlington, and the number of bathrooms have a positive association with the selling price of houses in the sample. Variables indicating property age, vacant properties, tenant-occupied properties, properties located in East Arlington, and individually owned properties where the owner has been transferred without relocation assistance, have a negative association with sales price. The time trend variable is significant and positive, demonstrating increasing selling prices over the study period. The insignificant variables include *CARPORT, BEDROOMS, TDOM*, and *CORPRELO*. Variance inflation factors are provided to detect the severity of multicollinearity in the independent variables. Following Neter, Wasserman and Kutner (1985), a maximum variance inflation factor in excess of 10 suggests that multicollinearity may be unduly influencing the estimates. In this model, the maximum variance inflation factor is 8.561. In addition, the variance inflation factors for the key variables in this study (*VACANT, TENANT, CORPRELO*, and *TRANSFER*) are close to 1.0 and, therefore, do not indicate multicollinearity.

For this study, the results of most interest center on any relationship between selling price and the variables *VACANT, TENANT, CORPRELO,* and *TRANSFER*. The coefficient estimates for *CORPRELO* and *TRANSFER* directly test the hypotheses for price effects related to the ownership types. We include the variables *VACANT* and *TENANT* to control for occupancy status of the house at the time of sale.

The coefficient for corporate-owned property, *CORPRELO,* is insignificant, indicating there is no price effect associated with sales by corporate relocation firms. This result supports the findings reported by Turnbull et al. (1990). The evidence that there is a single market price for houses sold by relocation firms and those sold by individual owners not facing a transfer does not dispel the arguments either for or against price effects in corporate-owned housing transactions. Rather, we can only conclude that, if these arguments are valid, they counteract one another to result in a neutral overall impact on the price of housing.

The insignificant coefficient on *CORPRELO* contradicts the results of Dotzour and Levi (1992), who show that houses sold by a corporate relocation firm sell at a discount.

Exhibit 2
Regression Results: Dependent Variable = ln (Selling Price)

Coeff.	Coeff.	Std Error	Signif. Level	VIF
Intercept	10.460	.039		
SQFT	.403 E-3	.101 E-4	**	3.815
AGE	−.019	.959 E-3	**	8.561
AGE^2	.159 E-3	.199 E-4	**	7.643
BEDROOMS	−.011	.008		1.836
BATHROOMS	.102	.010	**	3.317
GARAGE	.076	.019	**	1.697
CARPORT	.021	.031		1.521
FIREPLACES	.048	.001	**	1.749
POOL	.124	.011	**	1.120
ONESTORY	.032	.010	**	1.451
TIMETREND	.002	.662 E-3	**	1.010
VACANT	−.070	.009	**	1.047
TENANT	−.138	.020	**	1.027
NORTHWEST	.134	.009	**	1.380
EASTARL	−.103	.009	**	1.324
TDOM	.420 E-4	.246 E-4		1.023
CORPRELO	−.037	.026		1.020
TRANSFER	−.031	.015	*	1.025
Adjusted R^2	.873			
F [19, 2421]	929.31		**	

Note: Double asterisks indicate significance at 1% or better; single asterisks indicate significance at 5% or better.
Source: Computed by the Authors from sample data

The Dotzour and Levi study does not distinguish between occupied and vacant houses. When our model is rerun using the same data, except that *VACANT* and *TENANT* are omitted, the coefficient for *CORPRELO* is significant at a 10% level and negative, implying a discount to corporate-owned housing of 4.6%, a result that is comparable to the approximately 5% discount observed by Dotzour and Levi. These results illustrate the importance of controlling for occupancy status in the model.

The parameter estimate for *TRANSFER* indicates that properties owned by individuals facing an employment transfer without direct relocation assistance sold for an average of 3.03% less than other homes in the sample. The resulting *t*-statistic indicates that this parameter estimate is significant at the 5% level and provides evidence for rejecting the hypothesis that transactions involving transferred owners who do not receive relocation assistance do not exhibit price differentials. When occupancy status is not controlled, the coefficient for *TRANSFER* is still negative, but significant only at a 10% level. The results for *TRANSFER* imply that liquidity constraints faced by a transferred individual (who is not benefitting from a relocation-assistance program), influence the prices that these individuals accept for their houses.

The importance of controlling for occupancy status has already been demonstrated. Selling price discounts are associated with both vacant and tenant-occupied houses. The evidence suggests that the loss of the service flow of housing, as associated with vacant

properties, results in a discount of 7% on the selling price. For leased properties, where the owner sacrifices marketability and direct control over the maintenance of the quality of the house, the estimated discount is even larger, having a magnitude of 13.8%.[1]

Summary and Conclusions

The purpose of this article is to empirically test whether house prices in transactions involving employment transfers exhibit price differentials. In particular we distinguish between transactions in which the employee receives employee relocation assistance and those in which the employee does not receive relocation assistance. Using a large sample of single-family house sales from the Arlington, Texas area, we fit a log-linear hedonic price equation to test for price differentials.

With regard to our hypotheses, we conclude that there is no price differential between corporate relocation sales and houses sold by owners who were not facing an employment transfer. Properties sold by transferred owners who were not provided employee relocation assistance, however, sell at a discount of approximately 3%. The significant discount in these transactions is evidence of the financial benefits provided to employees who have access to these programs.

The results of this study indicate that houses owned by individuals who have been transferred without relocation assistance, vacant houses, and tenant-occupied houses may sell for "multiple prices." While the results do not provide sufficient evidence to conclude that the housing market is inefficient, they do provide guidance for using these properties as comparable sales in the appraisal process. To the extent that these discounts are measurable and predictable, these types of transactions can be used as comparable sales with appropriate adjustments.

Note

[1]We also tested the *TENANT* and *VACANT* variables on the sample of properties that did not involve corporate relocations or transfers (n=2270). The results are not substantially different from those shown in Exhibit 2. In the subsample, we find significant price discounts of 6.4% for vacant properties and 12.6% for tenant-occupied properties.

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