Determinants of the Prices of Bare Forestland and Premerchantable Timber Stands: A Spatial Hedonic Study

Daowei Zhang, Li Meng, and Maksym Polyakov

Abstract: In this study, we examine the determinants of market prices of bare forestland and premerchantable timber stands in Southwest Alabama and Southeast Mississippi. Applying a spatial hedonic pricing model to forestland sale data from 2001 to 2007, we find that road access, topography, land productivity, and population density are the main determinants of bare forestland prices, whereas land productivity, potential for higher and better uses, and age of plantation are determinants of premerchantable timber stand prices. In particular, the value of a premerchantable stand increases along with the age of plantation by $56 per acre per year and compared with a tract with only one use in timber production, an identified higher and better use makes its value increase by $736 per acre or 45%. FOR. SCI. 59(4):400–406.

Keywords: premerchantable timber stand, bare forestland, land valuation, hedonic pricing model, spatial error model

Foresters and financial analysts are often asked to conduct valuations and appraisals on timberland. The term *valuation* describes the procedure for finding an investor's value of an asset, whereas *appraisal* is the procedure for finding its market value—the price it could be expected to fetch if offered for sale (Zhang and Pearse 2011, p. 84). These terms, however, are sometimes used interchangeably. In practice, timberland is typically valued as the sum of three components: mature timber, premerchantable timber, and bare land. In some cases, a fourth component, the potential for other complementary uses such as hunting leases or an alternative uses such as a residential housing site, may be considered separately or as part of the bare land.

Whereas mature timber has a market value that is fairly easy to determine if estimated timber volume and market stumpage prices are known (Straka 2007), valuing bare land and premerchantable timber components is more complicated. The bare land portion of the premerchantable stands may be valued using information on sales of similar timberlands or neighboring agricultural lands, or using the theoretical Faustmann formula that produces a land expectation value. The premerchantable timber component has traditionally been valued by using either the replacement cost approach, which compounds past reforestation costs to the age of the stand, or the income approach, which discounts projected future incomes from the stand to the current age of the stand. Both approaches use a specific interest rate. When these two approaches are used together, by linking the past silvicultural costs and future income of the stand using the reforestation investment's own internal rate of return, they become a hybrid approach called the internal rate of return approach (Zhang and Pearse 2011, p. 91). The combined value of the bare land and the premerchantable timber on it is then the total value of a premerchantable stand.

However, to the best of our knowledge, there is no refereed article that has used the comparable sales approach or hedonic pricing approach to value premerchantable timber stands. This is partly because there are not enough comparable sales of premerchantable timber stands in a given region and because the variables needed to be controlled for in such a study are not available. Yet, arguably, the hedonic approach is the often used approach in valuing real estate and the most accurate approach because it is based on market transactions. After all, the value of an asset is the price for which the asset could sell in a market that has willing and informed sellers and buyers. Further, unlike the replacement cost and income approaches that often only provide an estimate of the value of premerchantable timber, using the hedonic approach can generate an estimate of the value of both premerchantable timber and land simultaneously. Finally, given the facts that private timberland ownership dominates many regions of the United States and that more than 30% of timberland in the country contains premerchantable timber (Straka 1991; Smith et al. 2009, p. 181), there is a need for testing whether the hedonic approach can be applied in valuing premerchantable timber stands, some of which may be just bare lands. The increase in number of sales in premerchantable timber stands in some regions of the United States in the recent decades has made such a study possible.

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The purpose of this article is to apply the hedonic pricing approach to value premerchantable timber stands. We intend to fill in the gap in the literature and identify the strengths and weakness of using the hedonic approach to value premerchantable timber stands. To this end, we have approached a consulting forester in Alabama and obtained 111 sales of premerchantable stands in Southwest Alabama and Southeast Mississippi between 2001 and 2007. We then use a spatial hedonic pricing model to explore the factors influencing the prices of bare land and premerchantable timber stands. Our results show that the hedonic pricing model can be used to value premerchantable stands in places where adequate market transaction data exist. The next section describes our conceptual method, followed by model specification and data. The final sections present our results and conclusions.

Methods

The hedonic pricing model is a reduced model of supply and demand of a good or service in a market. For example, the supply of premerchantable timber stands in a region can be expressed as

$$Q = f(P, \text{supply factors}) \tag{1}$$

where Q is quantity supplied (in terms of total acreage) of premerchantable timber stands, P is per-acre price, and the supply factors include stand characteristics such as species, age, land productivity, topography, potential for higher and better uses, and locational variables.

Similarly, the demand of premerchantable timber stands can be expressed as

$$Q = f(P, \text{demand factors}) \tag{2}$$

where Q is quantity demanded and the demand factors include market conditions, buyer characteristics, and the number of bidders.

Because the market price (P) and quantity (Q) are simultaneously determined through the interaction of the supply and demand equations, we can make these equations into one that only has price (P) and other variables but not the quantity variable (Q)

$$f(P, \text{supply factors}) = f(P, \text{demand factors}) \tag{3}$$

Then solve for the price (P) of premerchantable stands

$$P = f(\text{supply factors, demand factors}) \tag{4}$$

Equation 4 is called the *reduced form* of market supply and demand, which can be used to analyze the impacts of various supply and demand factors on the market price (P). When the demand factors are considered to be invariant in a particular market in a certain time period, Equation 4 focuses solely on supply factors.

Equation 4 is an intuitive and convenient and is the theoretical foundation of the hedonic pricing model. This model allows estimating implicit prices of the utility-bearing characteristics of a differentiated marked good (Rosen 1974). We assume that a premerchantable timber stand is a heterogeneous multiattribute good described by its characteristics. Let $\mathbf{X}_n$ be a vector of J attributes of the nth premerchantable timber stand ($n = 1, \ldots, N$) and $P_n = p(\mathbf{X}_n)$ is its price, where $p(\cdot)$ is a function that describes relationship between its price and its attributes, then $\hat{p}_j = \partial \hat{p}_j(\mathbf{X})/\partial x_j$ is the implicit price of an attribute j ($j = 1, \ldots, J$) (Ma and Swinton 2011).

In this study, we assume that the price of a premerchantable timber stand is determined by its production and consumption characteristics. These characteristics include land-related characteristics, **L,** timber-related characteristics **C,** recreational, esthetic, other nontimber use characteristics **R,** and demand characteristics **D.** The general specification of a hedonic property price model is thus shown as

$$\mathbf{P} = \alpha + \mathbf{X}'\beta + \varepsilon \tag{5}$$

where **P** is the $N \times 1$ vector of prices per acre for the N number of tracts (or number of observations), α is the intercept, β is the vector of coefficients, **X** is the $N \times J$ matrix of explanatory variables, including all the factors in **L, C, R,** and **D,** and ε is the vector of errors.

Spatial data, such as property sales, often exhibit spatial dependency relationships (Anselin and Bera 1998, Mueller and Loomis 2008). There could be spatial dependencies of two types: spatial lag relationship and spatial error relationship. Spatial lag relationship occurs when the sale price of a property is affected by the sale prices of properties in the neighborhood beyond the shared property characteristics. This seems to contradict the idea underlying hedonic method that the value of composite good is determined by its characteristics. However, in reality this might take place when collection of information is costly and potential buyers use comparable sales from previous time periods to determine the value of the property (Maddison 2009). The spatial lag model is defined as

$$\mathbf{P} = \alpha + \mathbf{X}'\beta + \rho\mathbf{W}'\mathbf{P} + \varepsilon \tag{6}$$

where ρ is the spatial lag coefficient and **W** is an $N \times N$ spatial weight matrix. Spatial weight matrix **W** defines the way in which observational units are believed to be influencing each other (Anselin 1988, p. 17–22, Taylor 2003). Most of the observations in our data set are not immediate neighbors. Among the approaches used to define spatial weight matrix in such cases are inclusion into the spatial weight matrix of all observations within a certain distance or using k-nearest neighbors (Kovacs et al. 2011). For our analysis we select the latter approach. Furthermore, spatial weight matrices are usually row-standardized to facilitate interpretation of the coefficients.

A spatial error relationship occurs when the errors of the model are spatially correlated due to unobserved variables related to the location of a property or due to the measurement errors in spatially distributed variables. Spatial error model is defined as

$$\begin{aligned} \mathbf{P} &= \alpha + \mathbf{X}'\beta + \varepsilon \\ \varepsilon &= \lambda\mathbf{W}\varepsilon + \mathbf{u} \end{aligned} \tag{7}$$

where λ is the spatial error coefficient and **u** is an uncorrelated error term, i.e., $\mathbf{u} \sim N(0, \sigma^2)$.

The presence of spatial dependencies in property sales data causes bias and inconsistent estimates of the coefficients when the ordinary least squares (OLS) method is used. Spatial lag and spatial error models should be used in such cases. Because of simultaneity, spatial error and spatial lag models cannot be estimated using the OLS method; maximum likelihood or instrumental variables methods are used instead.

The hedonic pricing model has been successfully applied to analyze the relationship between the sale prices and attributes associated with many goods and services such as housing and automobiles. It has recently been extended to studies on forest lands and timber sales. Puttock et al. (1990) and Munn and Rucker (1994) use it to study stumpage prices in Southwestern Ontario and the value of information services provided by consulting foresters in timber sales, respectively. Turner et al. (1991) apply it to the forestland market in Vermont and find that the presence of road frontage, the presence of open land, population increase, proximity to major roads and ski areas, and low taxes have led to higher forestland prices. Similarly, Roos (1995, 1996) builds a Swedish forestland price model and finds that standing timber volume, land productivity, and population density have a positive impact on forestland prices. Zhang (1996) uses it to study the influence of property rights on forestland value in British Columbia. Aronsson and Carlén (2000) examine the influence of buyer and seller characteristics on forestland prices, and Scarpa et al. (2000) assess nontimber value of forests. Kennedy et al. (2002) use it in combination with geographic information systems to examine the role of tract location in determining timberland values. Snyder et al. (2007) investigate how the nontimber production factors such as means of finance, road access, and proximity to population center influence forestland prices in Minnesota. These studies help us choose the appropriate explanatory variables.

Data

Data used in this study consist of 111 sales of bare forestland and premerchantable timber stands in Southwest Alabama and Southeast Mississippi from 2001 to 2007 (Figure 1). Of these 111 sales, 57 are bare land, 42 have pine plantations, and 12 have natural regeneration. The size of these stands/tracts ranges from 20 to 3,100 acres, and no mature timber is present. The study area is heavily forested, and the timber market there is one of the most competitive timber markets in the country. We have used ArcGIS 10.0 to georeference the data using tract, township, and range information and to join data points with the spatially explicit population influence index (PII) data (Breneman 1997).

Table 1 presents variables used in this study. The dependent variable is the sale price per acre of premerchantable timber tracts in 2007 dollars (total tract price including both bare land and premerchantable timber divided by size in acres, adjusted by the monthly producer price index). The

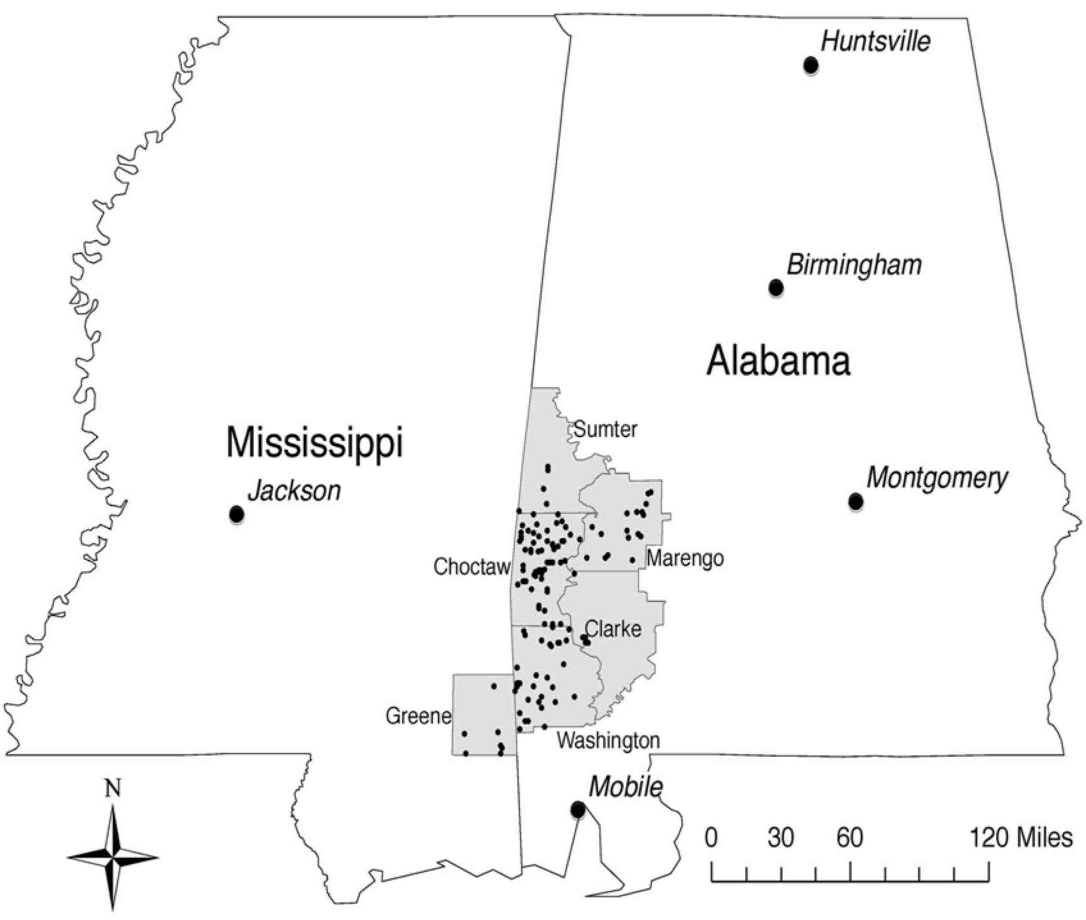

Figure 1. Map of the study area and locations of the observations.

Table 1. Definition and descriptive statistics of the variables.

Variable and expected sign	Description	Mean (SD) All parcels	Bare land parcels	Parcels with premerchantable stand
Price	Real price per acre of a tract ($)	1,442.58 (540.68)	1,286.30 (462.72)	1,607.53 (571.41)
Tract size (?)	Size of tracts (acres)	155.38 (172.72)	96.04 (95.45)	218.03 (210.96)
Frontage (+)	1 if there is road frontage adjacent to the tract; 0 otherwise	0.53	0.46	0.61
Hilly (−)	1 if the terrain is hilly or moderately hilly; 0 otherwise	0.27	0.16	0.39
Site Index (+)	Site index	86.81 (4.85)	85.18 (5.00)	88.54 (4.05)
Age of Plantation (+)	Age of a plantation (years) if exists; 0 otherwise	3.03 (5.04)	0.00 (0.00)	6.22 (5.69)
Age of Natural Regeneration (?)	Age of a natural regeneration (years) if exists; 0 otherwise	0.73 (2.26)	0.00 (0.00)	1.50 (3.08)
Higher and Better Use (+)	1 if the higher and better use for the tract is different from forestry; 0 otherwise	0.11	0.16	0.06
PII (+)		31.32 (9.67)	32.29 (10.79)	30.29 (8.29)
Trend (+)	Year of sale (2001 = 1; 2007 = 7)	4.40 (1.64)	4.53 (1.57)	4.26 (1.72)
No. of observations		111	57	54

explanatory variables include both the supply and demand factors. On the supply side, our independent variables include land-related characteristics, such as size of the tract, presence of road frontage (Frontage), land productivity (measured by Site Index), and topography (Hilly); timber-related characteristics, such as Age of Plantation and Age of Natural Regeneration; and other nontimber characteristics, such as potential for one or more identified higher and better uses that are for residential, commercial, or recreational purposes. On the demand side, we have a variable on population density (population influence index) and a trend variable, which reflects market conditions and potential demand for timberland.

The expected effect of parcel size on sale price is negative because large tracts limit the number of potential buyers (Turner et al. 1991, Roos 1996, Kennedy et al. 2002, Snyder et al. 2007). On the other hand, large tracts may be good for management because of economy of scale (Aronsson and Carlén 2000). The presence of road frontage is expected to have a positive impact. Site index is a measure of a forest's actual and potential productivity in terms of the height of dominant trees at age 25, and the coefficient for this variable is expected to be positive. The variable reflecting the potential for higher and better uses is a dummy variable with 1 representing the tract that has the potential for at least one identified higher and better use by the consulting forester and 0 otherwise. It is expected to have a positive sign. The variable Hilly is also a dummy variable that takes 1 for moderately hilly or hilly sites (more than 10–15° in slope, judged by the consulting forester) and 0 otherwise. The coefficient of this variable is expected to be negative because hilly terrain could be an obstacle for some silvicultural and logging activities.

To differentiate tracks with premerchantable timber from those without and find out the marginal contributions of premerchantable timber and bare land on the price of premerchantable timber stands, we create a set of three variables. Two variables, Age of Plantation and Age of Natural Regeneration, indicate the ages of, respectively, plantation or natural regeneration, if plantation or natural regeneration is present. The coefficients of these variables indicate the value added to the stand by every year of plantation growth or year of natural regeneration and are expected to be positive. A third variable, Bareland, takes the value of 1 when plantation or natural regeneration is absent and 0 otherwise. This dummy variable is mainly used in combination with other variables such as Frontage, Hilly, or Site Index to test whether effects of these factors are different for parcels with bare lands and parcels with premerchantable timber.

PII (Breneman 1997), a measure similar to a gravity index, is used to quantify the effect of population size and proximity to populated places. It is derived from the census block group population data of 2000. Greater population density or closer proximity to populated places increases the potential of higher value uses of the parcel, and the coefficient for this variable is expected to be positive. The Trend variable indicates the year in which sale occurred (2001 = 1, 2007 = 7). Combined with the use of real price for the dependent variable, this variable provides an indication of the real rate of property appreciation (Turner et al. 1991).

Results

Little theoretical basis exists to guide selection of a functional form for a hedonic price model, and various functional forms have been used in empirical studies (e.g., Rosen 1974, Cropper et al. 1988, Turner et al. 1991, Kennedy et al. 2002, Taylor 2003, Snyder et al. 2007). We have used series of the Box-Cox transformation of the sale price with the SAS v.9.2 TRANSREG procedure, which indicates that a functional form with log-transformed dependent variable is the most appropriate functional form.

As a first approximation, we have conducted an OLS estimation of the hedonic pricing model (Equation 5) using R software (version 2.13.2; R Development Core Team 2008). The results of the regression analysis are presented in the second column of Table 2. The model shows good fit (adjusted $R^2 = 58\%$). Most of the explanatory variables are significant, and all significant variables have the expected signs. We have performed Breusch-Pagan test, which indicates that the null hypothesis of homoskedasticity cannot be rejected.

Multicollinearity is often an issue with hedonic pricing models (Snyder et al. 2007). One way to detect this problem is through a correlation matrix of the independent variable. Although no definitive rules exist for determining the upper level of correlation coefficient, Turner et al. (1991) and Snyder et al. (2007) report correlation coefficients up to 0.44–0.45 for a few of their explanatory variables, and Zhang (1996) report a correlation coefficient up to 0.55. In this study, all of the correlation coefficients between any two explanatory variables are less than 0.34.

To test for spatial dependencies, we use a 4-nearest neighbor spatial weight matrix (Kovacs et al. 2011). The results of the tests are presented in Table 3. Moran's I statistic of the residuals of the OLS model indicates a statistically significant clustering pattern of the residuals. We also have performed a series of Lagrange multiplier (LM) tests for spatial lag dependence or spatial autocorrelation of the OLS model (Anselin et al. 1996). Both LM tests and robust LM tests indicate the presence of spatial autocorrelation ($P < 0.05$). However, the test did not reject the hypothesis of no spatial lag dependence in our data. Therefore, we estimate a spatial error hedonic model (7) (Anselin and Bera 1998).

The results of the estimation of spatial error model are presented in the third column of Table 2. The regression coefficients of the spatial error model are consistent with the result of the OLS model. Nonetheless, the magnitude of the parameter estimates differs between the models once the presence of spatial autocorrelation is controlled for. The spatial error coefficient (λ) is positive and significant at the 1% level, confirming the existence of spatial correlation. Akaike's information criterion (AIC) indicates an improvement of spatial error model over the OLS model (the smaller the AIC, the better the model). Therefore, in the rest of the section, we only discuss the results based on spatial error model. Marginal implicit prices and elasticities of significant explanatory variables are presented in Table 4, separately for bare land parcels and parcels with premerchantable stands.

Our regression results indicate that the price per acre is not affected by property size. Granted, the average size of our tracts is small, and there is not a lot of variation in them. Thus, this conclusion, true for small tracts, may not hold if a full spectrum of property sizes were used. The presence of road frontage increases the prices of bare land tracts by an average of $436 per acre or by one-third. However, we do not find a statistically significant effect of road frontage on the tracts with premerchantable timber. PII, too, significantly affects the prices of bare land tracts. Tracts located closer to populated places are more likely to have a higher

Table 3. Test of spatial autocorrelation in the OLS model.

Test	Statistics	P value
Spatial error dependence		
Moran's I statistics	0.1456	0.0057
LM test	5.6095	0.0179
Robust LM test	5.3134	0.0212
Spatial lag dependence		
LM test	0.6912	0.4058
Robust Lagrange multiplier test	0.3951	0.5296

Table 2. Regression results of OLS and spatial error model.[a]

Variable	OLS	Spatial error model
Intercept	2.7085 (1.8771)	3.7120 (2.0145)[b]
Log(size)	0.0033 (0.0272)	−0.0139 (0.0251)
Frontage	−0.0710 (0.0709)	−0.0969 (0.0650)
Frontage × Bareland	0.3141 (0.0991)[d]	0.3393 (0.0907)[d]
Log(site index)	1.0021 (0.4257)[c]	0.7902 (0.4553)[b]
Log(site index) × Bareland	−0.1410 (0.0472)[d]	−0.1231 (0.0423)[d]
Higher and Better Use	0.5262 (0.2239)[c]	0.4577 (0.2032)[c]
Higher and Better Use × Bareland	−0.3893 (0.2404)	−0.3431 (0.2200)
Age of Plantation	0.0339 (0.0072)[d]	0.0351 (0.0065)[d]
Age of Natural Regeneration	−0.0053 (0.0137)	−0.0025 (0.0124)
Trend	0.0573 (0.0152)[d]	0.0504 (0.0135)[d]
Hilly	−0.0456 (0.0660)	−0.0280 (0.0597)
Hilly × Bareland	−.1691 (0.1078)	−0.1735 (0.0961)[b]
PII	−0.0100 (0.0062)	−0.0083 (0.0060)
PII × Bareland	0.0161 (0.0068)[c]	0.0133 (0.0062)[c]
λ (spatial error)		0.3261 (0.1129)[d]
No. of observations	111	111
R^2	0.64	
Adjusted R^2	0.58	
AIC	0.59	−2.95

[a] Response variable is natural log of sale price per acre.
[b] Significant at the 10% level.
[c] Significant at the 5% level.
[d] Significant at the 1% level.

Table 4. **Marginal implicit prices and elasticities of statistically significant variables.**

Variable	Marginal implicit prices (elasticities) at the mean of sample		
	All parcels	Bare land parcels	Parcels with premerchantable stand
Frontage		\$436 (0.40)	
Site Index		\$10 (0.67)	\$15 (0.79)
Higher and Better Use		\$147 (0.12)	\$736 (0.58)
Age of Plantation			\$56 (0.22)
Trend	\$73 (0.22)		
Hilly		−\$223 (−0.16)	
PII		\$17 (0.43)	

demand, whether they are for timber production or some other uses. The elasticity of this variable is 0.43, indicating that increase of population density by 1% or a move 1% closer to populated places increases value of a parcel by 0.43%. This finding is consistent with the effect of population density on forestland value (Wear and Newman 2004) and with the effect of population influence index on land use change (Polyakov and Zhang 2008). However, the coefficient of this variable on tracts with premerchantable timber is insignificant. This may imply that once a tract is planted with trees, it is less likely to be considered for the alternative land uses.

The coefficient for the Higher and Better Use variable is positive and statistically significant at the 10% level, indicating that higher and better uses have a positive impact on the price of premerchantable timber stands. The coefficient for Higher and Better Use interacted with Bareland dummy is negative and significant at the 12% level, indicating that the effect of higher and better use is lower for parcels with only bare land than for premerchantable timber stands. With the possibility of one or more alternative uses other than timber production, the price of a parcel with premerchantable timber is \$736 per acre or 45% higher than that without. For bare land parcels, this effect is \$147 or approximately 12% increase in value. An identified higher and better use has clearly had a big impact on both parcels with only bare land and parcels with premerchantable timber.

As expected, the coefficient for the Site Index variable is significant, implying that land productivity positively affects the prices of premerchantable timber stands. Because this variable is log transformed, its coefficient is its elasticity. The elasticity is higher for the tracts with premerchantable timber (0.79) than for the bare land tracts (0.67). This is one of the variables for which coefficient estimated by the spatial error model is sufficiently different from the coefficient estimated by the OLS model. In this case, use of coefficients obtained from the OLS hedonic model would yield inflated prediction results. A possible reason is that Site Index is spatial by its nature and possible measurement errors are spatially correlated.

Another variable that is related to natural features and is spatial in nature is the variable describing topography. The results indicate that hilly topography has a negative impact on the prices of bare land tracts, as expected. The value of a tract on hilly or moderately hilly terrain is \$223 per acre less than the value of a tract on rolling or flat terrain. However, we do not find a statistically significant effect of terrain on the tracts with premerchantable timber. A possible explanation is that this effect is related to reforestation cost: for the tracts with plantation, hilly or not is not important in the near future. As with Site Index, ignoring spatial relationships leads to overestimated value of the regression coefficient.

Finally, the coefficients of two variables used to distinguish the composition of premerchantable stands (bare land only, land with plantation, and land with natural regenerated timber) shed some light on the value of premerchantable trees. The coefficient of age of plantation was positively and significantly related to premerchantable timber stand prices at the 1% level. One more year's growth of planted pine drives the per-acre premerchantable timber stand prices up by \$56. The premerchantable timber value from natural regeneration does not contribute to forestland values as the coefficient we get from the spatial error model is insignificant.

Summary and Conclusions

In this article, we have used a spatial hedonic pricing model to study the determinants of premerchantable timber stand prices in Southwest Alabama and Southeast Mississippi. After controlling for spatial correlations, we have found that road frontage, potential for higher and better use, land productivity, and age of the pine plantation as well as population density and trend have a significant impact on the prices of premerchantable timber stands. In particular, road frontage and potential for higher and better use have the largest impacts, followed by ages of the plantation and land productivity. The premiums on premerchantable stands that have road frontage and potential for higher and better uses are quite high, indicating that there might be a speculative motivations when buyers purchase these premerchantable timber stands.

The spatial hedonic pricing model used here is an extension of the traditional hedonic pricing model that many others have used to value forests and forest lands, often using the OLS regression method. Because the spatial dependencies often exist in property sales data, using the OLS method might yield biased, inefficient, and inconsistent estimates of the coefficients. Thus, we suggest researchers to test whether spatial dependencies exist in the data before proceeding with estimation. In our case, using the maximum likelihood method to control for spatial error correlation presents a marked improvement in fitness in our model.

Premerchantable timber stands are goods with multiple attributes. As we have shown, the hedonic price model can be applied to value or appraise premerchantable stands in regions where private forestry is important and where adequate market transactions exist. Practitioners who have data of more than a hundred observations can follow the steps shown in this article and use this method as an alternative to the cost approach and income approach they often use. More applications of the hedonic pricing models can enrich forest economic literature and help identify better ways in valuing premerchantable stands and other forest assets. The challenge is to collect and compile data from various sources in a consistent manner. Here lies the largest deficiency of applying the hedonic approach: one often has to rely on a relatively small sample size for a short period of time under the current timber market structure and conditions. It is perhaps time for a public agency or private entrepreneur to establish a database of forestland and premerchantable timber stands in various parts of the country. Such a database would be useful for studying the market value of forestland and premerchantable timber stands over time and space, for analyzing the financial characteristics of forest investment, and for establishing a forestland index that is comparable with urban and agricultural land indices. It would also facilitate market transactions and appraisals of all timberlands in the country.

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