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ARTICLE VALUING LAWS AS LOCAL AMENITIES

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TABLE OF CONTENTS

I. INTRODUCTION.....	1274
II. THE HEDONIC APPROACH.....	1280
A. <i>How the Equilibrating Process Works</i>	1281
B. <i>More Complex Laws</i>	1290
1. Laws that Affect Production Costs, Product Demand, and Labor Productivity or Supply.....	1291
2. Laws that Affect Supply of or Demand for Housing	1293
3. Laws that Exclusively Benefit Longtime, Pre-Law Residents.....	1297
C. <i>How Informative Is the Hedonic Measure?</i>	1298
1. Limitations.....	1298
(a) Limitations Common to the Conventional Approach	1298
(b) Limitations Addressed by Refinements	1301
(c) Fundamental Limitations.....	1307
2. Alternatives to Hedonic Measure.....	1309
3. Advantages of the Hedonic Approach.....	1311
III. EMPIRICAL EXAMPLES	1313
A. <i>Data</i>	1313
1. Housing Prices.....	1313
2. Wages	1314
3. Laws	1314
B. <i>Empirical Model</i>	1317
C. <i>Interpretation of Preliminary Results</i>	1317
IV. CONCLUSION.....	1330

VALUING LAWS AS LOCAL AMENITIES

Anup Malani*

The conventional approach to evaluating a law is to examine its effect on proximate behavior. To evaluate a new criminal law, for example, the conventional approach would look to changes in the crime rate. This Article proposes another method for evaluating laws, specifically, that they should be judged by the extent to which they raise housing prices and lower wages in the short run or raise the aggregate value of residential land in the long run. The logic is that the value of a law, much like the value of a lake or a public school, is capitalized into local housing and labor markets in the short run and residential land values in the long run. In the short run, desirable laws increase housing prices and decrease wages because more people want to live in the relevant jurisdiction; undesirable laws have the opposite effects. In the long run, more houses are built and jobs are created, so the capitalization settles into aggregate land values. Evaluating laws in this manner has several advantages over the conventional approach. First, it employs a more direct proxy for utility. Second, it accounts for all the effects of a law, including hard-to-measure outcomes, unintended consequences, and enforcement costs. Third, it permits direct comparison of different types of laws, which is important in instances where lawmakers have limited resources to invest in lawmaking. Lastly, it sheds light on the distributional consequences of a law. In particular, it makes clear that a significant portion of every law's benefits is reallocated through housing and labor markets to property owners.

I. INTRODUCTION

The value of a law to a jurisdiction can be judged by the extent to which it either raises short-run housing prices and lowers short-run wages or raises the long-run, aggregate value of residential land in that jurisdiction.¹ This may seem an odd way to assess the welfare ef-

* Professor and Aaron Director Research Scholar, University of Chicago Law School. I thank Scott Baker, Spencer Banzhaf, David Barron, Omri Ben-Shahar, Ilya Beylin, Stephanos Bibos, Amitabh Chandra, Dhammadika Dharmapala, Einer Elhauge, Charles Himmelberg, Louis Kaplow, Darius Lakdawalla, Saul Levmore, Doug Lichtman, Tom Miles, Eric Posner, J.J. Prescott, Max Schanzenbach, Fred Schauer, Matthew Stephenson, Abraham Wickelgren, Justin Wolfers, and George Zanjani; workshop participants at the University of Chicago Law School, Harvard Law School, the Institute of Government and Public Affairs at the University of Illinois-Chicago, the University of Michigan Law School, Stanford Law School, the University of Virginia Law School, and Yale Law School; and participants at the Triangle Law and Economics Conference at Duke University and the University of North Carolina for helpful discussions and comments. I am grateful to Alma Cohen, John Donohue, Jonathan Klick, Paul Rubin, and Joanna Shepherd for access to their data on legal reforms. Finally, I am indebted to Ilya Beylin, Catherine Deneke, and Alex Parker for invaluable research assistance.

¹ To be clear, I contend that the value of a law — federal, state, or local — is the sum of the increase in housing prices and the magnitude (or absolute value) of the decrease in wages. So, for example, if a law increases housing prices by \$1 and reduces wages by \$1, then the total value of the law is \$2. Moreover, by aggregate value of land I mean the total value of the land available for residential use — that is, the quantity of land available for residential use multiplied by the

fect of a law. After all, higher housing prices and lower wages are thought to be bad outcomes, not good ones. But the proper way to understand these changes is as signals of positive outcomes, not as positive outcomes themselves. They indicate that something good has happened in the community. Housing prices go up because more people want to live there. Wages go down because more people want to work there. Phrased more formally, higher housing prices and lower wages are how markets ration an attractive local public good or amenity. Indeed, the increase in housing prices combined with the reduction in wages provides a measure of how much people are willing to give up to enjoy the amenity. In the long run, the supply of houses and jobs may increase in response to the rise in housing prices and fall in wages, but the maximum amount of land available to residential development is constant. Therefore, people's willingness to pay eventually settles into the aggregate value of residential land in the jurisdiction. Conventional economic thinking recognizes this when it comes to estimating the social value of a new park or a better school. The same logic, I argue here, applies when the local public good² is anything from a better tort system to smarter rules regarding capital punishment.

This is, of course, not the standard practice. Under the conventional approach, the welfare effect of a law would be measured by evaluating the law's effect on specific related behaviors. For example, a three-strikes law would be evaluated by its effect on homicides;³ a unilateral divorce law by its impact on rates of domestic violence⁴ or divorce;⁵ and a tort reform by its impact on insurance payments⁶ and accidents.⁷ These are certainly sensible metrics for judging the laws at issue. But each has significant shortcomings relative to measuring the welfare effect of a law by its impact on housing prices and wages or on

price of that land. Because the supply of housing may change in the long run, the long-run value of a law depends on how much it increases the aggregate value of residential land.

² Obviously, if the law reduces housing prices and raises wages or reduces aggregate land values, it is a public bad. But my use of the term public "good" includes this possibility.

³ See, e.g., Thomas B. Marvell & Carlisle E. Moody, *The Lethal Effects of Three-Strikes Laws*, 30 J. LEGAL STUD. 89 (2001).

⁴ See, e.g., Betsey Stevenson & Justin Wolfers, *Bargaining in the Shadow of the Law: Divorce Laws and Family Distress* (Nat'l Bureau of Econ. Research, Working Paper No. 10,175, 2003).

⁵ See, e.g., Leora Friedberg, *Did Unilateral Divorce Raise Divorce Rates?: Evidence from Panel Data*, 88 AM. ECON. REV. 608 (1998).

⁶ See, e.g., Ronen Avraham, *An Empirical Study of the Impact of Tort Reforms on Medical Malpractice Settlement Payments* (Nw. Law & Econ., Research Paper No. 06-07, 2006), available at <http://ssrn.com/abstract=912922>; Patricia Born et al., *The Effects of Tort Reform on Medical Malpractice Insurers' Ultimate Losses* (Harvard Law Sch., John M. Olin Ctr. for Law, Econ. & Bus., Discussion Paper No. 554, 2006).

⁷ See, e.g., Paul H. Rubin & Joanna M. Shepherd, *Tort Reform and Accidental Deaths*, 50 J.L. & ECON. 221 (2007).

long-run land values, an approach I call the “hedonic” approach to valuation of a law.

First, the hedonic approach is a more direct proxy for welfare. The conventional approach tells us, for example, how much the felony-murder rule reduces robbery,⁸ but it does not tell us how much people value that reduction in robbery. Yet that is the very strength of the hedonic approach. The increase in housing prices and the decrease in wages together reveal how much the marginal resident who moves to a community is willing to pay — in terms of lower nonhousing consumption — to be subject to a new law in that community.

Second, the conventional approach often provides an incomplete picture of any given law. Frequently, relevant implications are too hard to measure or are unexpected, and are therefore left out of the empirical analysis. For example, a typical study might ignore the expressive benefits of an antidiscrimination law⁹ or the placebo effects of corporate governance reforms¹⁰ because these consequences are so hard to quantify. With respect to unexpected outcomes, until recently scholars studying abortion rights overlooked the important effect of abortion rights on crime rates.¹¹ The conventional approach also tends to ignore the enforcement costs of laws, whether direct (higher property taxes) or indirect (reduction of other government services). The hedonic approach does not suffer from these omissions. It provides a measure of the net benefits of a law, accounting for intangible benefits, unintended consequences, and enforcement costs.

Third, because the conventional approach uses setting-specific metrics for evaluating different laws, it does not permit a direct comparison of different types of laws. For example, it cannot tell us whether gay marriage,¹² capital punishment,¹³ or exceptions to employment-at-

⁸ Anup Malani, *Does the Felony-Murder Rule Deter?* (2000) (unpublished manuscript, on file with the Harvard Law School Library).

⁹ See, e.g., Michael Ashley Stein, *Under the Empirical Radar: An Initial Expressive Law Analysis of the ADA*, 90 VA. L. REV. 1151 (2004) (book review).

¹⁰ See, e.g., Amitai Aviram, *The Placebo Effect of Law* 11 (U. Ill. Coll. of Law, Law & Econ. Working Paper No. 36, 2005), available at <http://ssrn.com/abstract=784646>.

¹¹ See John J. Donohue III & Steven D. Levitt, *The Impact of Legalized Abortion on Crime*, 116 Q.J. ECON. 379 (2001).

¹² See, e.g., Thomas S. Dee, *Forsaking All Others: The Effects of “Gay Marriage” on Risky Sex* (Nat’l Bureau of Econ. Research, Working Paper No. 11,327, 2005), available at <http://ssrn.com/abstract=720413>.

¹³ See, e.g., John J. Donohue & Justin Wolfers, *Uses and Abuses of Empirical Evidence in the Death Penalty Debate*, 58 STAN. L. REV. 791 (2005); H. Naci Mocan & R. Kaj Gittings, *Getting off Death Row: Commuted Sentences and the Deterrent Effect of Capital Punishment*, 46 J.L. & ECON. 453 (2003); Joanna M. Shepherd, *Murders of Passion, Execution Delays, and the Deterrence of Capital Punishment*, 33 J. LEGAL STUD. 283 (2004).

will¹⁴ have had the largest positive impact on welfare. But the hedonic approach can. The reason is that it compares all laws by their effect on a common outcome: the increase in housing prices plus the decrease in wages. The resulting ability to compare different types of laws is quite valuable. For one thing, legislators have limited time and resources. Studies that rank legal reforms will allow legislators to determine which laws had the largest positive impact on residents and will allow voters to determine which legislators used their scarce resources to greatest effect.

Finally, the hedonic approach offers a benefit that goes beyond simply being able to effectively measure the value of a law. It provides an important insight into the distributive impact of that law. Because local housing is necessary to enjoy a local law, and because people are mobile but housing is not, a significant part of the welfare gains (or losses) from a local law accrue to the suppliers of housing — that is, the owners of local property. As a result, a law may not have the precise distributional impact that its drafters intend. In other words, labor market forces alter the assignment of gains and losses from a law, and unless lawmakers take this into account they may not achieve an important component of their objectives.

To be clear, this paper does not contend that the hedonic approach offers a perfect measure of welfare and should be the exclusive method by which laws are valued. The hedonic method has important limitations. It yields the valuation of the marginal migrant, but the marginal migrant underestimates the valuation of inframarginal migrants. It ignores individuals — such as children, prisoners, and military personnel — who do not participate in the housing or labor markets. It assigns a valuation to a law that depends on the number of jurisdictions that already have the law. And it gives weight to all preferences prevalent in a population, even if they are noxious. But, for the reasons given above, it has certain important advantages over — and is thus an important complement to — the conventional approach to valuing the net benefits of a law. Moreover, so long as the limitations inherent in the hedonic approach affect all applications equally, it can still be used to conduct relative welfare analysis or rank different legal reforms.

A natural concern is whether there is too much noise in housing and wage data to identify the (likely small) effects that any individual law has on those outcomes. That is an empirical question, and this paper offers an empirical answer. It examines the effects of five types

¹⁴ See, e.g., David H. Autor et al., *The Costs of Wrongful-Discharge Laws*, 88 REV. ECON. & STAT. 211 (2006); Thomas Miles, *Common Law Exceptions to Employment at Will and U.S. Labor Markets*, 16 J.L. ECON. & ORG. 74 (2000).

of laws (tort reforms, abortion access laws, no-fault automobile liability, unilateral divorce laws, and health insurance mandates) on local housing prices and wages. Data on housing prices and characteristics are drawn from the American Housing Survey. This survey spans the years 1974 to 2003 and includes up to 50,000 households per year. Data on wages are from the Current Population Survey. The March portion of the survey provides useful data annually from 1979 to 2003 on up to 15,000 individuals per year. Data on laws are from recent studies by Alma Cohen and Rajiv Dehejia; David Autor, John J. Donohue III, and Stewart J. Schwab; Jonathan Klick and Thomas Stratmann; and Paul Rubin and Joanna Shepherd. My results suggest that exceptions to employment-at-will and diabetes coverage mandates may reduce local welfare and that product liability reforms may raise local welfare.¹⁵ These are consistent with conclusions from conventional analyses, but my results have the advantage of directly providing a monetary estimate of welfare effects.

In order to clarify the objective of this paper, it may help to set it in its academic context. This paper relates to an extensive literature on the so-called hedonic valuation method in the fields of environmental, labor, and urban economics. That method attempts to measure the value of a given product characteristic that is bundled with other product characteristics by examining how changes in the characteristic affect product prices. The characteristics that environmental and urban economists are interested in valuing are local amenities such as lakes or schools. They have tended to focus, however, on the capitalization of these amenities into the price of housing, not wages. Labor economists are not concerned with valuing local amenities so much as using the presence of amenities to explain persistent regional variation in the price of labor, that is, wages. In these literatures, this paper most closely relates to a line of papers beginning with a 1982 article by Professor Jennifer Roback, which offered a simple general equilibrium model to demonstrate how local amenities were capitalized in both housing prices and wages.¹⁶

¹⁵ I stress, however, that these findings have not been demonstrated robust to, for example, self-selection. While this and other problems are common to both the hedonic approach and those of the papers from which they are drawn, my results should be taken as a proof-of-concept for the hedonic approach rather than as final policy evaluations.

¹⁶ Jennifer Roback, *Wages, Rents, and the Quality of Life*, 90 J. POL. ECON. 1257 (1982); see also Glenn C. Blomquist et al., *New Estimates of Quality of Life in Urban Areas*, 78 AM. ECON. REV. 89 (1988). These papers were spurred by two seminal papers by Professor Sherwin Rosen, *Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition*, 82 J. POL. ECON. 34 (1974); and *Wage-based Indexes of Urban Quality of Life*, in CURRENT ISSUES IN URBAN ECONOMICS 74 (Peter Mieszkowski & Mahlon Straszheim eds., 1979). Interestingly, three important law and economics scholars have written on this topic, although at the time they were working in the field of public finance and did not spell out the implications of their work for the empirical analysis of laws. See A. Mitchell Polinsky & Daniel L. Rubinfeld, *Property Values*

This Article also relates to the literature on Tiebout sorting, which focuses on the migration that causes the capitalization of amenities into local prices.¹⁷ It is most closely connected to, although distinct in purpose from, recent work by Professor William Fischel, which also belongs to the field of local government law. Fischel's "homevoter hypothesis" argues that, because local government policies (even those creating public goods) are capitalized into housing prices, and because homeowners vote based on the value of their homes, local governments follow policies that maximize local welfare.¹⁸ This paper agrees with the claim that local laws (as opposed to policies broadly)¹⁹ are capitalized into housing prices. However, my goal is not to explain voting but to value laws. Moreover, my analysis focuses not on local laws, but on state and even national laws. Fischel specifically rejects the homevoter hypothesis beyond the local government level.²⁰ Lastly, Fischel ignores capitalization of amenities into rental properties and wages, which he does not think motivates voting.²¹ I focus equally on renters and owners and on housing and labor markets.

Against this background, this Article makes four discrete contributions. Although it is not the first paper to examine the effect of a law on housing prices, it is the first paper that neither examines a law closely related to the housing market — such as an environmental, property or educational law²² — nor views a law as a proxy (or "instrumental variable") for an underlying neighborhood characteristic

and the Benefits of Environmental Improvements: Theory and Measurement, in PUBLIC ECONOMICS AND THE QUALITY OF LIFE 154 (Lowdon Wingo & Alan Evans eds., 1977); A. Mitchell Polinsky & Steven Shavell, *Amenities and Property Values in a Model of an Urban Area*, 5 J. PUB. ECON. 119 (1976).

¹⁷ See Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416 (1956). Professor Tiebout was responding to Professor Paul Samuelson, who argued that government could never adopt the optimal set of public goods in a heterogeneous population because it could not identify different people's valuations for the goods. Tiebout responded that what Samuelson said is true only for a national government. As long as there were different local governments adopting different laws, heterogeneous residents would reveal their preferences for public goods by their locational choices. In this way, the *market* for locational choice could lead to efficient production of public goods even in the presence of asymmetric or private information.

¹⁸ WILLIAM A. FISCHEL, THE HOMEVOTER HYPOTHESIS 1–18 (2001). So Fischel's response to Samuelson is that local government politics can provide the optimal level of goods without actual migration.

¹⁹ To see examples of the difference, consider the examples of capitalization Fischel offers. See *id.* at 45.

²⁰ *Id.* at 53–54.

²¹ *Id.* at 14, 80.

²² See David N. Figlio & Maurice E. Lucas, *What's in a Grade?: School Report Cards and the Housing Market*, 94 AM. ECON. REV. 591 (2004); J.M. Pogodzinski & Tim R. Sass, *Zoning and Hedonic Housing Price Models*, 1 J. HOUSING ECON. 271 (1991); Michael Greenstone & Justin Gallagher, *Does Hazardous Waste Matter?: Evidence From the Housing Market and the Superfund Program* (Nat'l Bureau of Econ. Research, Working Paper No. 11,790, 2005).

that is the true variable of interest.²³ Second, it is also the first paper to examine the effect of a law on both housing prices and wages; in other words, it is the first to account for the fact that the value of a law may be capitalized into multiple markets. Third, although it is not the first paper to employ a differences-in-differences estimator to value a local amenity, it is the first to apply this strategy with a large panel data set that spans many jurisdictions and a large number of years, data that are commonly used in studies that employ the conventional approach to valuing laws. Fourth, and most importantly, this is the first paper to make the general case for employing hedonic analysis to evaluate the net welfare and distributional effects of a law, a contribution to the law and economics literature.

The remainder of this Article is organized as follows. Part II explains how the value of a law is capitalized into housing prices and labor wages.²⁴ It also compares the hedonic approach to the conventional approach to valuing a law. Part III addresses the interaction between the hedonic approach and the process of lawmaking. Finally, Part IV illustrates the hedonic approach by employing it to evaluate an array of laws.

II. THE HEDONIC APPROACH

A simple example can illustrate how the value of a local law is capitalized into local housing prices and wages. Consider two contiguous states with identical laws, housing prices, and wages. Because the two states are identical, there is no migration between them. Suppose, however, that the first state passes a law that directly improves the welfare of its residents. By this I mean it is a law that people prefer for personal reasons. It might be a felon disenfranchisement law that makes a statement about felons²⁵ or a parental notification law that comforts parents of teenagers.²⁶

Residents of the second state, who also prefer the law, will begin to move to the first state, in order to enjoy the law. This movement will have two effects. First, because migrants need housing, the demand for housing will increase and housing prices will rise. Second, because migrants need jobs, the supply of labor will increase and wages will fall. The migration from the second state to the first state will continue until the increase in housing prices and the reduction in wages is

²³ For an example of this perspective, see Greenstone & Gallagher, *supra* note 22.

²⁴ A simple model of this split capitalization is provided in Roback, *supra* note 16, at 1259–64.

²⁵ See, e.g., Thomas J. Miles, *Felon Disenfranchisement and Voter Turnout*, 33 J. LEGAL STUD. 85 (2004).

²⁶ See, e.g., Jonathan Klick & Thomas Stratmann, *Abortion Access and Risky Sex Among Teens: Parental Involvement Laws and Sexually Transmitted Diseases* (Fla. St. U. Coll. of Law, Pub. Law Research Paper No. 175, 2005), available at <http://ssrn.com/abstract=819304>.

such that remaining residents of the second state are indifferent between living under the new law in the first state and enjoying the lower housing prices and higher wages in the second state. At that point there will be no net gain to an individual's welfare from living under the new law, so the second state's remaining residents will stay put. In other words, local housing prices and wages adjust to restore an equilibrium in which there is no further migration between the two states.

A useful byproduct of this equilibrating process is that we now have a measure of the value of the new law: the amount that housing prices rise plus the amount that wages fall. Economists call this the "compensating differential" for enjoying the law. That is the highest amount that the marginal resident — the resident who is indifferent between living in the first or second state — is willing to give up (or pay) to live under the law. In the abstract, if you offered that individual the ability to live under the new law at a price one cent below the compensating differential, she would accept. If you charged her one cent more, she would say no thanks.

Although this illustration provides the intuition behind the hedonic approach, it omits some important details. These details fall into three categories: how the equilibrating process works; whether the process works with more complex laws; and how much information the hedonic marginal willingness-to-pay measure provides about the total welfare effects of a law. The following sections address these details.

A. How the Equilibrating Process Works

The first bit of detail that might be useful is what happens to individuals who were living in the first state before the legal change. Where do they go? In the short run, it is reasonable to assume that there is a fixed number of houses and jobs in each state. So for each resident from the second state that arrives, a resident from the first state must leave. But who stays and who leaves? The answer lies in the recognition that different people will value the new law differently. Some in the first state will value it more than some in the second state, and vice versa. If you group all the people of the two states together, it is the people who value the law the most that will end up in the first state. If they were in the first state before it passed the new law, they will remain. If they were in the second state, they will purchase houses and take jobs from first state residents who do not value the new law as highly as they do.

Ignore jobs for a moment. Because houses are in limited supply, migrants will have to bid at least as much as the ultimately marginal resident is willing to pay to live under the new law. If they bid less, there will be another person from State Two that will be willing to pay more for each house in State One. The marginal migrant to the first

state, however, will only have to bid her valuation for the law. If she bids more, she will find there is more than one first-stater willing to sell his house. She will be able to lower her price and get at least one of the houses.²⁷ When we reintroduce jobs into the picture, the only change in the dynamic is that migrants will be bidding a combination of a higher housing price and a lower wage for space in the first state.

Does this mean that there must be actual migration due to the law in question in order to apply the hedonic approach? And is there even evidence that people actually move because of a change in law? Fortunately, there does not actually need to be migration in order for housing prices and wages to shift in response to a law. All that is required is that owners of property in State One see a law has been passed and change their reservation price for their property²⁸ in light of their personal valuation of the law and their prediction of how future marginal State One migrants will value that law. This increment in reservation prices will be observed in sales prices even in transactions involving two preexisting State One residents, transactions that are constantly taking place. It is possible that State One owners will incorrectly predict the value of the law to future marginal migrants, but competition is likely to address that concern. If a current State One property owner overestimates the incremental value of her property, she will be unable to sell her property even to another State One resident, and her reservation price will not be observed because there will have been no sale. If she underestimates the incremental value, another State One resident who values the law somewhere between the predicted value of the owner and the value of the future marginal migrant will purchase the property and then put it back onto the market.²⁹

²⁷ A simple numerical example can demonstrate how the equilibrium is restored. Suppose that residents A and B live in State One and C and D in State Two before State One passes the new law. Assume A, B, C, and D value the new law at \$4, \$2, \$3, and \$1 respectively and that each of their houses are valued the same before the passage of the new law. A, whose value is \$4, will remain in State One. C, whose value is \$3 will bid the pre-law price of a house plus \$3 for a house in State One. B, whose value is \$2, will accept the bid. (A will not accept because the law is worth more than \$3. If C bid only \$2 above the pre-law price, then B might not have accepted because she was indifferent. C could not simply offer B her house in State Two, because that house — without the law — is worth less than B's house in State One.) B will take the money from the sale and buy a house in State Two at the pre-law price. She will have made \$3 in profits. D will remain put. Note that the new market price for homes in State One is \$3 higher than before.

²⁸ The reservation price is the minimum price at which the current owner is willing to sell her home.

²⁹ Interestingly, the hedonic approach is — in the short run before there is actual migration — an application of prediction markets to value a law. The current property owner predicts through her choice of reservation how much others will value the law that has just passed. For discussions of how prediction markets might be used for public policy, see generally Michael Abramowicz & M. Todd Henderson, *Prediction Markets for Corporate Governance*, 82 NOTRE

Even if this were not the case, there is good evidence that many people move between jurisdictions each year, and there is anecdotal evidence that potential migrants consider the laws of target jurisdictions when deciding where to move. According to the U.S. Census Bureau, 39 to 40 million people moved each year from 2000 to 2005.³⁰ Of these, around 7.5 million moved between states.³¹ Averaging across states, this implies roughly 150,000 people moved per state.³² Even assuming five percent of them were motivated in part by law, this implies that 7,500 moves per state are driven by law — not a trivial number. Moreover, there are many specific cases where individuals are explicitly motivated by legal rules when making locational decisions. For instance, there are numerous examples of gay and lesbian couples' awareness of and relocation due to unfriendly home-state laws concerning the legal status of their partnerships and of their relationships with adopted children (so-called second parent laws).³³ Indeed, the importance of legal status in relocation decisions was highlighted by a cover story in *The Advocate*, a leading magazine in the gay and lesbian community, in 2005.³⁴ Moreover, Lambda Legal, a national gay and lesbian rights advocacy group, maintains a website that lists

DAME L. REV. 1343 (2007); Justin Wolfers & Eric Zitzewitz, *Prediction Markets*, J. ECON. PERSP., Spring 2004, at 107; and M. Todd Henderson et al., Predicting Crime (2007) (unnumbered working paper, on file with the Harvard Law School Library).

³⁰ U.S. CENSUS BUREAU, CURRENT POPULATION SURVEY, ANNUAL GEOGRAPHICAL MOBILITY RATES, BY TYPE OF MOVEMENT: 1947–2006, at tbl. A-1 (2007), <http://www.census.gov/population/socdemo/migration/tabc-a-1.pdf>.

³¹ *Id.*

³² Of course, actual numbers per state differ. In 2000–2004, they ranged from a net annual outward migration of 182,886 from New York to net annual inward migration of 190,894 to Florida. In rates per 1,000 population, they range from an annual net outward migration of 9.6 in New York to annual net inward migration of 23.3 in Nevada. MARC J. PERRY, U.S. CENSUS BUREAU, CURRENT POPULATION REPORTS P25-1135, DOMESTIC NET MIGRATION IN THE UNITED STATES: 2000–2004, at 6 tbl.2 (2006).

³³ See, e.g., Stephanie Innes, *2nd-Parent Curbs Driving Same-Sex Couple from Ariz.*, ARIZ. DAILY STAR, Dec. 22, 2005, at A1 (reporting that a lesbian couple moved from Arizona to California for the latter's second-parent adoption laws); Maggie Jackson, *Same-Sex Couples Face Unique Adoption Hurdles*, BOSTON GLOBE, Mar. 26, 2006, at G1 (reporting that a lesbian couple moved from Oklahoma to Massachusetts for more friendly partnership and adoption laws); Julian Sanchez, *All Happy Families: The Looming Battle over Gay Parenting*, REASON, Aug./Sept. 2005, at 30, 35 (reporting that a gay couple moved from Virginia to Massachusetts for purposes of adoption); Andrea F. Siegel & Nia-Malika Henderson, *Gay Father Wins Custody Ruling*, BALT. SUN, Mar. 29, 2006, at 3B (reporting that a gay couple moved from Virginia to Maryland because the latter had more friendly second-parent laws).

³⁴ Kelly Griffith, *Escape from the Red States*, ADVOCATE, July 19, 2005, at 42. A sidebar in that article offered “10 tips for protecting your family when moving from state to state.” *Id.* at 46. The first tip was “Assume nothing. Check everything before making a decision. Seek the advice of a gay-friendly lawyer in the state you are moving to.” *Id.*

states with and without friendly laws concerning gay partnerships.³⁵ Other examples of migration due to legal changes can be found in the medical community, where there are numerous anecdotes of doctors, in order to curb their malpractice liability costs, leaving states that do not enact tort reform.³⁶ In fact, there is some empirical support for the proposition that doctors systematically move to avoid tort liability.³⁷ As in the gay and lesbian community, there are advocacy groups — the American Medical Association, for one — that maintain websites to inform doctors of states with friendly tort law environments.³⁸

Because I illustrate the hedonic approach using state laws as examples, the reader may think the level of interstate migration is the basis on which the plausibility of the hedonic approach should be judged. This is incorrect. The hedonic approach also applies to local laws — at the city or even neighborhood level. At most, those laws require local relocation. The plausibility of the hedonic approach to valuing these local laws should be judged by the level of local moves. Anyone who has, and anyone who knows someone who has, moved neighborhoods because of schools or property taxes should have no trouble believing actual migration can justify the hedonic approach.

A second detail that would be helpful in understanding the hedonic approach is why the value of a new law is capitalized only in housing and labor markets. Why not in the price of other products or services?³⁹ Housing and labor markets are different than most other

³⁵ Lambda Legal, In Your State, <http://www.lambdalegal.org/our-work/states> (last visited Feb. 9, 2008). In addition, each issue of *The Advocate* features a section entitled “Across the Nation,” which documents legal advances or setbacks for the gay and lesbian community.

³⁶ See, e.g., Erik Brooks, *Escaping to Wisconsin: Medical Liability Crisis Sends Illinois Docs Across State Line*, BUS. J. MILWAUKEE, June 25, 2004, at A29, available at <http://www.bizjournals.com/milwaukee/stories/2004/06/28/focus1.html>; Nancy Rishel, *An Invisible Crisis: Pennsylvania’s Disappearing Doctors*, PA. MED., May/June 2001, at 12, 12.

³⁷ See, e.g., FRED J. HELLINGER & WILLIAM E. ENCINOSA, U.S. DEP’T OF HEALTH & HUMAN SERV., THE IMPACT OF STATE LAWS LIMITING MALPRACTICE AWARDS ON THE GEOGRAPHIC DISTRIBUTION OF PHYSICIANS (2003), available at <http://www.ahrq.gov/research/tortcaps/tortcaps.pdf>; Daniel P. Kessler et al., *Impact of Malpractice Reforms on the Supply of Physician Services*, 293 JAMA 2618 (2005). But see David A. Matsa, Does Malpractice Liability Keep the Doctor Away?: Evidence from Tort Reform Damage Caps (June 20, 2006) (unnumbered working paper), available at <http://ssrn.com/abstract=920846> (finding physician supply response only in rural areas).

³⁸ See, e.g., American Medical Association, Activity in the States, <http://www.ama-assn.org/ama/pub/category/7470.html> (last visited Feb. 9, 2008).

³⁹ The flip side of this concern is what happens if wages are sticky (at least downwards). See JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY 257–71 (1964) (explaining that workers care about relative nominal wages, the classic theory for sticky wages). In this case, only housing prices adjust to the adoption of a law because wages cannot be lowered. (Note that the sticky wages theory suggests the response to a law may be asymmetric. A bad law may raise wages if they are only sticky downwards.) In any case, the researcher employing the hedonic approach can be indifferent to the sticky wages theory because

product markets because houses and jobs must be locally supplied. A resident of a state needs a house and a job in that state. A house in another state or a job in another state will not do.⁴⁰ Because the supply of local housing and of local jobs is fixed in the short run, the resulting increase in demand pushes up the price of local housing and lowers the wage that local jobs must pay. Now the resident also needs a car. But that car may be produced in another state and shipped to her. Because the resident requires a car in whichever state she resides, moving from one state to another does not change the aggregate demand and thus the price for cars. A more serious complication is demand for local services, such as a haircut or automobile repair. Both the demand and supply for these services is local. Traveling to another state for a barber is not an option, and no out-of-state mechanic will fly in to repair your car. Nevertheless, there are two reasons we can probably ignore these markets without serious loss of precision. First, the incrementally higher cost of personal services is a much smaller portion of total income than either the additional amount paid for housing or the loss of wages when living closer to a preferred law. Second, even in the short run, local barbers and mechanics can more easily supply additional hours of work than local firms can supply new jobs. In technical economics jargon, the supply of personal services is much more elastic than the supply of jobs.

But what about in the long run? Won't higher prices encourage the construction of new homes? And what about jobs? Won't lower wages attract firms? Let us tackle new housing development first. It is true that in the long run, more houses can and will be built. This means that any given increase in the demand for housing in the first state will produce less of an increase in the price of housing in that state. (This is illustrated in Figure 1(A), which describes the effect of a change in demand when housing supply is fixed and the supply curve is vertical versus when new houses can be built and the supply curve is upward sloping. Note that the housing price increases less in the latter case.) The smaller increase in price does not mean that the change in housing prices does not fully capture how much the marginal resident values the new law. The reason is that the marginal resident has changed. When the housing supply is fixed, the marginal resident is the one who takes the last preexisting house. When supply can increase, the marginal resident is the one who takes the last new house. Because more State Two people move to State One in the long

there is nothing lost in regressing both housing prices and wages on a law only to find no response in wages.

⁴⁰ Many metropolitan areas, such as New York, overlap two or more states. This does not defeat my claim in general. Moreover, my empirical application will account for overlap by examining the whole metropolitan area and the laws in each overlapped state.

run than in the short run, it is necessarily the case that the marginal mover in the long run values the house less than the marginal mover in the short run. If that were not the case, the long-run marginal mover would have outbid the short-run marginal mover and taken her place in the short run.⁴¹

FIGURE I(A)

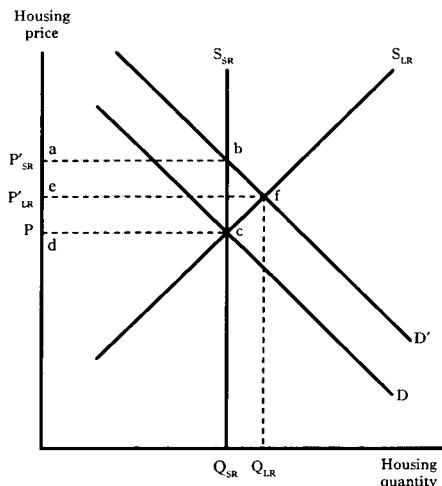
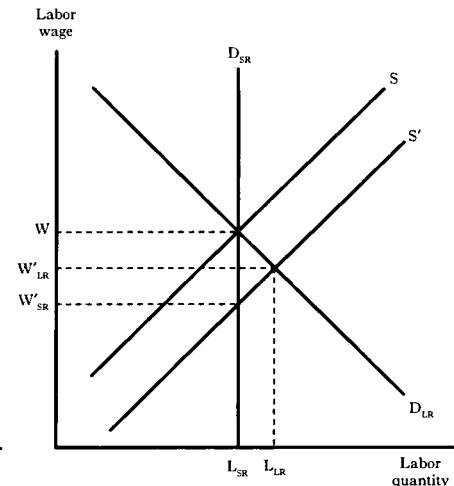


FIGURE I(B)



Nonetheless, it may appear problematic that the hedonic approach suggests the value of a law declines over time, even when we know that is not the case. Fortunately, there are two solutions. First, in most cases, the long-run supply of housing will not depend on the law one is considering. Moreover, the long-run supply curve for housing is likely smooth and relatively linear (or of constant elasticity) for small changes in demand for housing. Therefore, as long as one compares two laws — say felon disenfranchisement law and a parental notification law — after the same lag, the fall in marginal valuations due to new housing production will not alter the relative valuations of the two laws. Second, although the supply of housing may rise in the long run, the supply of land cannot. Therefore, in long-run analyses, one should examine the effect of laws on the price of land rather than the effect on the price of housing units to determine the value of a law.

⁴¹ It should be noted that the fall in the marginal valuation of a law is greater than the fall in the aggregate valuation of a law. The aggregate valuation of a law is the marginal valuation multiplied by the number of people who reside in State One after passage of the new law. (In Figure I(A), the aggregate valuation is "abcd" when supply is fixed and "cdef" when it is increasing.) Aggregate valuation falls at a lower rate because the new housing production that drives down marginal valuations also increases the number of people living in State One.

Such data is harder, but not impossible, to obtain. If one is concerned that the aggregate amount of land available for residential use may change due, for example, to the conversion of commercial land to residential land (perhaps through rezoning), then the hedonic approach suggests examining the change in aggregate value of land available for residential use. This requires estimating the difference between the total units of residential land multiplied by the unit price of that land before the law and the total units of residential land times the unit price of that land after the law is passed.

Let us now turn to the issue of new jobs. Just as higher housing prices lead to new home construction, lower wages may attract more companies to State One in the long run. This will increase demand for labor and raise wages, which in turn will reduce the marginal valuation of a new law over time. (Recall that a law's value is inversely proportional to its effect on wages.) The important thing to understand, however, is that the long-run labor supply problem is simply the mirror image of the long-run housing supply problem, as Figure 1(B) illustrates. Therefore, a similar analysis is possible. The valuation of the law falls because the marginal mover changes. In the long run, the marginal mover is a former State Two resident who values the law less than the short-run mover. In most cases, this fact does not affect the relative valuation of laws at any given point in time. A key difference between the housing market and the labor market, however, is that unlike the supply of land (an input into housing), there is no fixed supply of firms. The implication is that there is no substitute measure of value, like land prices instead of housing prices, that can solve the long-run supply problem in the labor market. Fortunately, this is not a fatal flaw. Because local labor markets have perfectly elastic long-run supply, the incremental willingness to pay for a law will in the long run be entirely incorporated into the price of land. It is as if the long-run supply of jobs resembled the short-run supply of cars and, like the short-run supply of cars, could be completely ignored. In other words, in the long run, one need only look at the market for land to value a law.

A natural question for any method that relies on market dynamics to value an asset is whether transaction costs get in the way. Specifically, do relocation costs — potentially including several thousand dollars in moving costs and realtor fees equal to five percent or more of a home's value — and the search costs of finding a new job limit the extent to which the value of a law is capitalized in housing or land prices and wages? In my example they would, but in real life they likely would not. In my example, a resident from State Two has to pay these costs to enjoy the benefits of moving to State One. If her valuation of the law is less than these transaction costs, she will not move. Since transaction costs can be significant, this means that a law with a smaller valuation will not affect housing prices or wages because it

will not trigger migration. In real life, however, there are individuals, such as college graduates, who are already contemplating moving to a different state. If one of the candidate states adopts an attractive law, that state will attract such individuals even if the value of the law is less than the transaction costs of moving. The reason is that these individuals are already committed to moving and would have to pay the transaction costs of moving even if they did not move to the state with the new law. Moreover, actual interstate migration may not even be required for the equilibrating process to work. As I indicated earlier, passage of a law may immediately change the reservation price of property owners in State One. This would be observed in the sales prices of transactions involving purely within-State One moves, which both are more common⁴² and have lower transaction costs.

Scholars of political economy and students of local government may wonder: why do State Two residents who prefer State One's new law move rather than simply voting or lobbying for passage of the same law in State Two? If State Two residents respond by lobbying rather than moving, then there will be no change in relative housing price or wage between States One and Two. There are two reasons, however, to doubt that State Two residents are more likely to vote or lobby than to move. First, it is cheaper for the marginal individual or family to move between states than to lobby successfully. Second, voting and lobbying are subject to collective action problems because the preferred law is a public good. Moving almost exclusively benefits the mover.

That said, the State Two resident who prefers State One's new law but prefers State Two's remaining laws — the inframarginal State Two resident — will not move and may decide it worthwhile to vote or lobby for legal change in State Two. (Indeed, it would otherwise be hard to explain voting and lobbying in particular and legal changes more broadly.) Yet the possibility of legal reform rather than migration does not affect the validity of the hedonic approach. The reason has to do with opportunity costs. Suppose enough residents of State Two decide to vote or lobby for a law so that State Two adopts the same new law that State One passed. Residents of other states (Three, Four, Five, etc.) will increase their demand for houses in State Two. The price they offer reflects their value for that new law. The residents of State Two now have a choice: stay, or move to another state whose remaining laws are more like those of State Two than of State One. If they do not value the new law as much as this market premium, they will move. But if they stay, they implicitly do because they are giving up the premium. Either way, the new market price of

⁴² See U.S. CENSUS BUREAU, *supra* note 30.

property in State Two reflects the marginal migrants' (to State Two) valuation of the new law. Therefore, the ability to change a law rather than move does not alter the fundamental point that the change in housing prices (and wages) reflects the value of the law in the eyes of the marginal migrant.⁴³

A few technical details about the equilibrating remain. One is how the process handles renters as opposed to homeowners. Homeowners pay for the right to remain in a home in perpetuity whereas renters pay for the right to remain in a home for a one-month period. The amount that homeowners are willing to pay for a law is the value they expect to draw from the law over the lifetime of their home. The amount renters are willing to pay is the value they expect to draw over a one-month period. Future value is not captured in the rent because one month's rent does not give the right to enjoy the law past the end of the month. To do that, the renter has to pay another month's rent. The best way to address this discrepancy when applying the hedonic approach is to estimate separately the effect of a law on housing prices and on apartment rents. The price effect will provide an estimate of the long-run value of the law. The rent will provide an estimate of the one-month-long value of the law.⁴⁴ The rent may seem less useful because it provides only a snippet of a law's value. But the rent may have some useful features, such as avoiding problems with valuing laws where adoption is predictable. Such laws are reflected in housing prices before they are adopted. They are not, however, reflected in rents before they are adopted, because paying rent before a law is adopted does not give a resident the right to enjoy the law after it is adopted without further fees.⁴⁵

⁴³ Things become more complicated if it is always cheaper to change the law than to move. I doubt this is the case. But even if it is, so long as some people move and the change in law is sequential, that is, State One adopts the law, then State Two, then State Three, etc., it will still be possible to value the law by examining housing prices. I explain how in section II.C.1.b, *infra* pp. 1301–07.

⁴⁴ The total welfare effect on a working individual (assuming one worker per household) is the sum of the wage effect plus either the rent effect or the house price effect. The welfare effect on a nonworking individual is simply the rent or house price effect. The investigator should not add both since no individual suffers both a rent effect and a house price effect. This strategy gives four different welfare measures: for workers and nonworkers in rental units and in occupant-owned housing units.

Since wages are measured on an hourly basis, the wage effect must be adjusted to map onto the same time interval as rents or housing prices. With rents, the wage effect must be multiplied by the average number of hours worked per month. With housing prices, one must multiply the average number of hours worked over the lifetime of the house. This is obviously a more difficult calculation.

⁴⁵ An interesting possibility is that one can, by comparing the effect of a law on rents versus on housing prices, back out either the discount rate of residents, assuming that a law's value is uniformly distributed over time, or residents' prediction about how long a law will last given a discount rate.

A final technical detail is how the process works when, for example, there is more than one working individual per household. In this case, residents stop moving to State One when the higher cost of a house plus the loss of wage for multiple members of the household is greater than or equal to the value of the law to all members of the household. The implication for the hedonic welfare measure is that individual-level valuation of a law must divide the housing price effect by the number of working members in a household.

B. More Complex Laws

So far I have focused on the case of a law that simply improves the living conditions of local residents. Does my thesis hold up in the case of more complicated laws? For my purposes, there are three types of "hard" laws:

(1) Laws that affect production costs, product demand, and labor productivity or supply. Included are laws that affect production costs, such as a law that requires cleanup of hazardous waste.⁴⁶ This category also includes laws that directly affect the demand for products, such as caps on noneconomic and punitive damages or laws that create new organizational forms, such as nonprofits,⁴⁷ and laws that directly affect the labor productivity or supply of residents, such as statutes that mandate a minimum level of maternity benefits⁴⁸ or greater parity between mental health and physical health benefits in health insurance plans.⁴⁹

(2) Laws that affect the supply of or demand for housing. Supply-side examples include zoning and land use regulations.⁵⁰ Demand-side examples include a higher homestead exemption⁵¹ or a more liberal divorce law.⁵²

(3) Laws that benefit only pre-law, longtime residents of a state. An example is an amnesty for residents with overdue taxes.

⁴⁶ See Greenstone & Gallagher, *supra* note 22.

⁴⁷ See Henry B. Hansmann, *The Role of Nonprofit Enterprise*, 89 YALE L.J. 835, 844 (1980). The theory is that the nonprofit form signals to consumers that the firm's products are of high quality. This should increase demand for the product.

⁴⁸ See Jonathan Gruber, *The Incidence of Mandated Maternity Benefits*, 84 AM. ECON. REV. 622 (1994).

⁴⁹ See Jonathan Klick & Thomas Stratmann, *Subsidizing Addiction: Do State Health Insurance Mandates Increase Alcohol Consumption?*, 35 J. LEGAL STUD. 175 (2006) [hereinafter Klick & Stratmann, *Subsidizing Addiction*].

⁵⁰ See, e.g., Edward L. Glaeser & Bryce A. Ward, *The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston* (Harvard Inst. of Econ. Research, Working Paper 2124, 2006); Edward L. Glaeser et al., *Why Have Housing Prices Gone Up?* (Nat'l Bureau of Econ. Research, Working Paper 11,129, 2005).

⁵¹ Richard M. Hynes et al., *The Political Economy of Property Exemption Laws*, 47 J.L. & ECON. 19 (2004).

⁵² See sources cited *supra* notes 4–5.

1. Laws that Affect Production Costs, Product Demand, and Labor Productivity or Supply. — Let us start with laws that affect production costs. Without loss of generality, suppose that a law reduces the production costs of a given firm. This will have three possible consequences. First, the price of the firm's product will fall, which will benefit individual consumers. Second, the firm might make greater profits, which will benefit its individual owners. Third, the firm will increase output (or new firms will open in the state) to satisfy greater consumer demand, which will increase the demand for labor and individual workers' wages.⁵³ (By assumption, firms do not have preferences and therefore do not matter to welfare calculations. How firms affect individual utility, however, does matter to welfare.) How effective the hedonic metric is at capturing these welfare gains depends on whether consumption of the firm's products and ownership of the firm are local. A good example of a business with mainly local consumers and local owners is a small restaurant. An example of a nonlocal business is a car manufacturer that ships products and whose equity owners are scattered around the world. If consumption is local, migrants will want to move to the state in order to enjoy the benefits of the new law. The amount they are willing to sacrifice — in terms of higher housing prices and lower wages — is equal to the amount of lower prices they will enjoy by residing in the state. The same logic applies to potential business owners if ownership is local. They will bid away the value of the additional profits from residing in the state.⁵⁴

What if consumption and ownership are not local? In that case the law provides a public good that is not geographically delimited. The product and ownership market-related benefits of the law are spread out across the country, and perhaps the globe. The hedonic measure of value that I propose does not capture these benefits. But it does not seek to. Rather, its goal is to provide a measure of the local, that is, within-jurisdiction, welfare effects of the law. This narrow scope does not insulate the hedonic measure from bias. That bias is proportional to the share of the total product or ownership market occupied by the state that adopts the law. To see this, start with the total nondelimited benefits of the law. The portion of those benefits that fall within the

⁵³ See, e.g., Daniel P. Kessler et al., *Impact of Malpractice Reforms on the Supply of Physician Services*, 293 JAMA 2618, 2618–25 (2005); Jonathan Klick & Thomas Stratman, *Does Medical Malpractice Reform Help States Retain Physicians and Does It Matter?* 3–5 (Nov. 3, 2005) (unnumbered working paper), available at <http://ssrn.com/abstract=870492>.

⁵⁴ This argument bears some resemblance to then-Professor Posner's argument for how firms dissipate the rents from a government monopoly in their attempts to obtain that monopoly. See Richard A. Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807 (1975). My argument is simply that one can track individuals' attempts to get locational rents by examining the housing and labor markets.

state enacting the law is the fraction of the product and ownership markets occupied by residents of that state.⁵⁵ The portion of those benefits that fall outside the state is the fraction of the product and ownership markets occupied by nonresidents. The hedonic measure cannot capture any of the nondelimited benefits of the law, but is not concerned with any benefits that accrue to nonresidents. That means the only nondelimited benefits it cares about, but cannot capture, are those that accrue to residents. And that is proportional to the size of the state's share of the product and ownership market, which is in turn roughly proportional to the size of the state's economy relative to the rest of the country or the world. In other words, the bias is large for California, but small for Georgia.

Importantly, this bias is limited by the extent to which higher productivity increases consumer demand for the product. That demand will increase demand for local workers. From this point on, then, the law can be treated as one which simply increases local wages. Residents of State Two will flock to State One to get higher paying jobs. They will stop when their movement has bid up housing prices and partially bid down wages such that the higher housing costs offset the wage gains from residing in State One. In other words, any wage gain will be completely offset by a higher housing price.

Table 1 summarizes this analysis. If consumption and ownership of firms in the affected product market are local, a law's full effect is ultimately manifest in housing and labor markets. If consumption and ownership are not local, then a portion of the law's effect is spread between the consumers (F_c , due to lower prices) and owners (F_o , due to higher profits) in the affected product market that reside in (α) and outside ($1-\alpha$) the enacting state. It is the subset of these benefits that land in the enacting state ($\alpha F_c + \alpha F_o$) that the hedonic measure fails to capture. The remaining portion of the law's effect is manifest through local housing and labor markets (F_{local} , due to increased demand). These portions are affected by the following variables: The more competitive the product market, the more the law will lower prices (F_c) rather than raise profits (F_o). The larger the size of the enacting state, the larger the in-state effects (α) of the nondelimited law, and the larger the bias.

⁵⁵ This does not lead to double counting the local consumption or ownership benefits of a law; that is, it does not mean that the second and third columns of Table 1 overlap. The reason is that my definition of local consumption or ownership is consumption or ownership that must be local to be functional. Examples include a patient who lives by a doctor to obtain treatment from her, and a doctor who must live near the medical practice she owns because she is also the service provider for the practice. By nonlocal consumption and ownership I mean ownership that need not be local, although it could be. An example is the McDonald's Corporation, which is headquartered in Oak Brook, Illinois. An Illinois resident can purchase shares of McDonald's or can purchase McDonald's hamburgers, but so can a resident of Florida. Thus the α in Table 1 refers to the fraction of not-necessarily-local consumers and owners who just happen to be local.

Finally, the more sensitive consumer demand is to price, the larger is the portion of the law's effect that is conveyed via higher labor demand to the housing and labor markets.

TABLE I. DISTRIBUTION OF BENEFITS FROM LAWS THAT AFFECT PRODUCTIVITY BY WHETHER CONSUMPTION AND OWNERSHIP IS LOCAL (BIAS HIGHLIGHTED IN GREY)

	Necessarily local consumption and ownership	Not necessarily local consumption and/or ownership	
		In-state effects (α)	Out-of-state effects ($1-\alpha$)
Product market		αF , not measured	$(1-\alpha)F$, does not count
Market for ownership		αF , not measured	$(1-\alpha)F$, does not count
Housing and labor markets	1	$F_3 = 1 - F_1 - F_2$	0

Laws that affect product demand, labor productivity, or labor supply can be analyzed just as laws that affect production costs. A law that increases consumer demand, for example, will benefit individuals in the same three ways as a law that lowers production costs. Although prices will rise, they will not rise enough to capture all the additional utility reflected in the increased demand, which will benefit individual consumers. The price rise and increased demand will raise the profits of individual owners. Finally, firms will respond with increased supply, which will increase demand for labor and thus attract nonresidents with the prospect of higher local wages.⁵⁶ As before, the extent to which these effects are captured in housing prices and wages depends primarily on the extent to which consumption and ownership are local, and secondarily on the size of the enacting state and whether supply is more or less sensitive to increases in price.

2. *Laws that Affect Supply of or Demand for Housing.* — The second type of difficult law is one that directly affects the supply or demand for housing. The supply case is easier to address, and so I take that up first. A simple example is a land use regulation that bars further residential development in order to reduce population density and

⁵⁶ A law that increases labor supply will drive down wages and lower the cost of production. This will benefit individual owners of firms and, as this reduction in costs filters into a lower price, the individual consumers of the firms' products. This demand effect will cause an increase in quantity supplied, which will raise demand for labor and thus the wage that enacting state firms offer.

drive up property values of existing residential owners.⁵⁷ A naive application of the hedonic approach might suggest that this law would be a good policy from a welfare perspective. After all, its very purpose is to drive up housing prices. However, standard economic models suggest that regulating the quantity of housing reduces welfare. The solution is to be judicious when choosing which hedonic measure to apply. Instead of examining the per-house change in price, one ought to look at the change in aggregate land values (along with wages). I previously recommended this approach for long-run calculation of a law's value because it accounts for the possibility that the supply of housing (and jobs) may change in the long run.⁵⁸ However, where a law manipulates natural housing supply in the short run, it makes sense to rely on a land-based measure immediately.

Laws that shift demand for housing appear to present more complicated cases for hedonic analysis. For example, a more liberal homestead exemption may cause residents to hide more of their worth in homes to protect that worth from creditors. Or a divorce law that divides property according to fault might encourage a cheating husband to hide assets from his wife by, among other things, not investing in their house.⁵⁹ These examples are in fact opposite sides of the same coin. They seem to "pollute" the housing component of the hedonic measure. In neither case, however, does the hedonic approach fail.

Consider the exemption law first. There are two benefits of purchasing a house: a resident protects his assets from creditors and gets utility from having a house. The cost is that the resident is unable to purchase another product that provides greater utility than the house.⁶⁰ A person will buy a house in response to an increase in the homestead exemption only if the benefits outweigh the costs:

$$\text{Avoid loss to creditors} + \text{Value of house} \geq \text{Value of other product}$$

Now note three things. First, the value of the other product is greater than or equal to the price of that other product. This is the case with all purchases: the anticipated value of the product must be

⁵⁷ Another less challenging example is rent control. See, e.g., Steven B. Caudill et al., *Efficient Estimation of the Costs of Rent Controls*, 71 REV. ECON. & STAT. 154, 154–57 (1989). If rent control did not affect supply of housing and were a favorable law, then examining its effect on the per unit price of housing would be misleading. In order to capture the full effect, one would want to look at wages, which might fall. If, as predicted by economic theory, rent control reduces the supply of housing, then it is important to look at aggregate land values as well to capture this supply effect.

⁵⁸ See *supra* pp. 1286–87.

⁵⁹ I thank Doug Lichtman for this example.

⁶⁰ This other expenditure could have been savings or investments, which are just proxies for future consumption.

greater than or equal to the price of the product, or else the purchase is irrational. Second, the price of the other product is equal to the amount the resident bids on the house after the law. The reason is that the resident simply took money that was going to be used on the other product and spent it on the house. Third, before the law is passed, the most that the resident was willing to bid for the house is his value of the house. For the marginal consumer, the value of the house is equal to the pre-law price of the house. These points can be summarized as:

$$\text{Value of product} \geq \text{Price of product} = \text{Post-law bid for house}$$

$$\text{Value of house} = \text{Pre-law bid for house}$$

If we plug these equations into the first equation, we see that a rational home purchase must satisfy:

$$\text{Avoid loss to creditors} + \text{Pre-law bid for house} \geq \text{Post-law bid for house}$$

Or, to put it another way, the asset-protection value of the home purchase must be greater than the excessive amount the resident spent on the house:

$$\text{Avoid loss to creditors} \geq \text{Post-law bid for house} - \text{Pre-law bid for house}$$

But the asset protection value is only available because of the exemption law, and the change in bids is simply the change in the price of housing. For the marginal resident these values will be identical, that is, the protective value of the law is equal to the increase in housing prices. That is exactly my contention!

What about the divorce law case? How does the hedonic measure fare when, for example, a cheating husband hides assets from his wife after the state adopts a law that considers fault when dividing marital property following a divorce? An obvious way to hide assets is for the husband to reduce his investment in the couple's house because that is an asset easily traced by the wife. This will reduce housing prices. The hedonic welfare measure counts this as a loss in value, though all that seems to have transpired is that wealth has been transferred from the wife to the husband.

But appearances can be deceiving. The transaction at issue is not merely a transfer from the wife to the husband, but also a loss of utility to both from having better housing. For purposes of illustration, assume that the typical cheating husband stashes in a lock box \$100,000 that would have been spent on a house, and that after he gets divorced — say a year from now — he plans to spend the money on another house. In that case, housing demand will fall to reflect the

fact that the typical couple with a cheating husband is getting one less year of a hundred thousand dollar's worth of housing. If housing supply is fixed, the price drop will reflect exactly this loss of utility. The fall in price will not be the whole \$100,000 because the husband will reinvest the money in housing after the divorce.

What if the money is invested rather than stored in a lock box? Even assuming the alternative investment could not be traced by the wife, the investment, which would increase the husband's wealth after the divorce, merely exacerbates the wealth transfer. Either the investment gains would have been split between husband and wife under no-fault property settlement or kept by the wife under at-fault settlement. We do not expect that the investment opportunity changes the marginal propensity to consume housing, the reason being that it is available to the couple even if the husband does not hide wealth from the wife.

The possibility that the supply of housing is not fixed or that the husband might spend less than \$100,000 on housing post-divorce similarly makes little difference. If supply falls with the decreased demand, price rises. This may reflect a slight increase in marginal valuation, but will not reflect a serious change in aggregate valuation since the higher price would be offset by a lower quantity of housing. That the husband does not spend all his hidden cash on housing after the couple separated is only a problem if the wife has a higher marginal propensity to purchase housing with that money than the husband. In that case the wife's consumption would affect housing prices more than would the husband's, although there is no reason to suspect that the cash transfer offers greater welfare to the wife than the husband. I suspect, however, that the gap in marginal propensity to consume housing is a second- or even third-order effect.

It is true that laws that distort demand for housing operate as a tax on housing (as in the divorce case) or on other consumption (as in the exemptions case). This will reduce the surplus from the law. While this manipulates housing prices, it is offset in the short run by changes in the labor market. For example, the exemptions law offers protection against creditors but artificially raises the price of housing. Therefore, workers will be willing to sacrifice less wages to live in the state with the exemption. How much less? The amount by which housing prices are inflated due to the requirement that a resident buy a home to obtain the benefits of the exemptions law. What about in the long run when labor market demand becomes perfectly elastic? We cannot in the long run use wages to offset the hidden tax. In the next section I explain that an important shortcoming of using the marginal migrant's valuation of a law is that it underestimates the inframarginal resident's valuation of the law. When a law manipulates housing prices it also manipulates land prices. When there is no "outlet" market such as labor, this manipulation is not offset by wage

changes. For the reasons explained in this section, the housing price (and thus land price) remains a good estimate of the marginal migrant's value of the law. The extent to which the marginal mover's valuation is an underestimate of inframarginal residents' valuations, however, may differ depending on whether a law changes housing demand. Therefore, caution should be exercised when using the long-term hedonic measure to compare laws that have effects on housing demand.

3. Laws that Exclusively Benefit Longtime, Pre-Law Residents. — The last category of difficult laws includes those that benefit only individuals who lived in the state before the law was even anticipated. An example is a tax amnesty that absolves filers of penalties on past-due taxes. Clearly one had to have been a pre-law resident of the state in order to have owed taxes. (Moreover, if the amnesty were announced before taxes were due, then it would not be an amnesty, but rather a law that lowers penalties on future nonpayment of tax.) These laws are difficult for the hedonic measure because migrants cannot capture the benefits of the law. Therefore, they have no incentive to move to the enacting state, which would have driven housing prices up and wages down.⁶¹

These laws are reflected in a state's housing prices only to the extent that existing residents use the private proceeds from the law to increase their consumption of housing. This will drive up the demand, and thus prices, for domestic housing.⁶² Yet this effect is limited by the residents' marginal propensity to spend additional income on housing. If they spend, say, only 10% of additional income on better housing, then housing prices will pick up only 10% of the effect of the law. Yet even in this case, the effect will be offset by changes in the labor market. The benefits from the law will reduce the residents' need to work to earn any given level of income. They may respond by consuming more leisure, that is, by working less. This will drive up wages, which count as lower value under the hedonic approach. One solution is to ignore wage effects when evaluating a category-three law. But even then the estimate will be too low because people do not spend every additional dollar of income on housing. The better response is not to use the hedonic approach for laws that benefit only longtime, pre-law residents.

⁶¹ This is not the case if the law is anticipated. In that case, migrants will move to the state before the law is enacted. All that is required to value the law is to examine housing prices after the law is anticipated but before it is passed.

⁶² An implicit assumption is that, without some change in State Two's laws, a State One resident will remain in State One if she is looking for a bigger house.

C. How Informative Is the Hedonic Measure?

The crux of my thesis is that the hedonic approach approximates the marginal resident's willingness to pay for a law. In this regard it is a second-best measure of the local welfare effect of a law. The previous sections offered some explanations for why the measure is only an approximation of total welfare effects; for example, it has difficulties with laws that exclusively benefit prior residents of a state. This section provides additional reasons why the method is not a first-best measure. More importantly, however, this section describes a number of advantages that the hedonic approach has over the conventional approach. Although these do not recommend abandonment of the conventional approach, they do suggest that the hedonic approach is an important complement to the conventional approach for valuing a law. Toward this end, I first discuss the limitations of the hedonic approach, briefly examine the alternatives to the hedonic approach, and then explain the advantages of the hedonic approach over the conventional approach.

1. *Limitations.* — Limitations of the hedonic approach fall into three categories. The first includes limitations that are common to both the hedonic approach and its main competitor, the conventional approach. The second examines limitations that can be addressed through methodological refinements of the hedonic approach. The final category includes those limitations that are intrinsic to the hedonic approach. It is this last category of weaknesses that ought to be balanced against the relative advantages of the hedonic approach when judging its worth relative to competing measures of welfare.

(a) *Limitations Common to the Conventional Approach.* — In his book, *The Homevoter Hypothesis*, William Fischel argues that truly local laws — those at the municipal level — are often enacted with an eye towards local trends in property values.⁶³ His claim — not entirely uncontroversial⁶⁴ — is that property owners are more likely than renters to participate in local elections. The reason is that willingness to pay for laws is incorporated into local land prices, which impact property owners more than renters. Indeed, local property owners will “punish” local officials by voting them out of office if the latter’s policies lower the former’s asset values.⁶⁵ The implication is that local officials will formulate local laws to stem falling land prices or to raise land prices. The implication for my analysis is that statistical correlations between housing prices and local laws cannot be taken to imply

⁶³ FISCHEL, *supra* note 18, at 1–18.

⁶⁴ See Richard Schragger, *Consuming Government*, 101 MICH. L. REV. 1824 (2003) (reviewing FISCHEL, *supra* note 18).

⁶⁵ See FISCHEL, *supra* note 18, at 4–6, 73.

causation from these local laws to housing prices. There is a serious danger that, due to local politics, local land prices “cause” local laws to be adopted and that this reverse causation may cloud the sought-after effect of laws on land prices. Economists call this selection bias or endogeneity bias.

One solution is to apply the standard methods of addressing selection: testing whether falling land prices in one year predict adoption of local laws in the following year, employing political covariates to control for selection due to the homevoter hypothesis, or using an instrumental variable for the legal change. But one cannot count on these approaches working in all cases. Therefore, I accept that the hedonic approach may be less accurate when evaluating local government-level laws than when evaluating state-level laws. That said, the concern Fischel’s theory raises about endogeneity does not apply when using rental prices, because he argues that only owners vote their property interests. Moreover, I follow Fischel in drawing a line between local government laws and state laws. In his view, the political economy story behind the homevoter hypothesis does not apply at the state level because state laws have much more dispersed effects on property values, lessening the relative incentive of property owners to participate in elections, and because the connection between state laws and local representatives to the state legislature is so attenuated that local voters do not hold these representatives responsible for adverse state laws.⁶⁶ Finally, even if one is interested in using the hedonic approach to value local laws, or if one does not agree with Fischel (and me) that state laws are exogenous to property values, it should be noted that in most cases where a law is endogenous to property values, it is probably also endogenous to the outcome examined in the conventional approach. For example, if one is concerned about the value of policing, a natural outcome is crime rates. But it is well recognized that crime affects levels of policing,⁶⁷ confounding the effect of policing on crime. That housing prices affect policing is just a variant of this problem. Often, the approach used to address endogeneity in the conventional analysis — controls for selection or an instrumental variable — can be employed in the hedonic analysis.⁶⁸

⁶⁶ *Id.* at 53–54. Of course, there may be a tradeoff between endogeneity and the precision of estimates. Although state laws are not endogenous, their subject matter may be more remote from property values.

⁶⁷ See, e.g., Steven D. Levitt, *Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime*, 87 AM. ECON. REV. 270, 279–84 (1997) [hereinafter Levitt, *Using Electoral Cycles*]; Steven D. Levitt, *Using Electoral Cycles in Police Hiring to Estimate the Effects of Police on Crime: Reply*, 92 AM. ECON. REV. 1244, 1244–45 (2002) [hereinafter Levitt, *Reply*].

⁶⁸ A note of caution is that the researcher should be on guard against the instrument affecting not just the law or policy in question, but also other policies that may affect housing prices. Thus, for example, electoral cycles may not be a valid instrument for policing in the hedonic context

Another limitation of the hedonic approach that often also applies to the conventional approach is that the outcome variable depends on expectations of future laws.⁶⁹ Purchasing a home is a long-term decision. The reason is that there are transaction costs that make it difficult to sell a house and to move to another jurisdiction. When deciding where to live, therefore, forward-looking homeowners will consider not just the present state of laws, but also the likely future state of laws in the jurisdiction. Even if the current legal regime is attractive, a person is unlikely to buy a home in a location where the legal regime is trending toward worse laws. Therefore, the outcome variable in the hedonic approach — housing prices — will depend on future laws. Yet this Article regresses housing prices on current or lagged laws. Hence the hedonic approach suffers from omitted variable bias or measurement error, which can push coefficient estimates too high or too low.⁷⁰ That said, this is a limitation of most empirical legal papers that examine a “sticky” or “persistent” outcome variable such as crime, employment, or marriage.⁷¹ Moreover, there is a simple solution in the hedonic context: employ rents rather than housing prices as the dependent variable in regressions. Renting a property gives the resident a right to live in the property only for a fixed period, usually a month. Therefore, the rental price capitalizes only the value of the legal regime for that month. Because the future of the law does not affect rents, expectations of the future of the law do not matter to rents.⁷²

A final limitation of the hedonic approach that is often common to the conventional approach is spillover or out-of-state effects of a law.

because electoral cycles may change other laws (such as taxes) that also affect housing prices. These other changes do not alter crime and are thus valid for the conventional approach. See Levitt, *Using Electoral Cycles*, *supra* note 67, at 274–84; Levitt, *Reply*, *supra* note 67, at 1244.

⁶⁹ A related problem, as discussed in note 61, is that residents may anticipate a law even before it is passed. Unless the researcher knows expectations about the law, a regression of housing prices or wages on current law will obtain incorrect estimates of the value of a law. (In general the estimate will be biased toward zero because anticipation does not affect the direction of valuation, only the amount. That is, part of the value of the law is already capitalized before the law is passed, whether that value is positive or negative.) My response to this problem is the same as the response to the expectation of future laws problem in the main text: anticipation effects frequently also afflict the conventional approach, and employing rents rather than housing prices can address the problem.

⁷⁰ See Anup Malani, *Expectations of Future Laws* (July 5, 2007) (unpublished manuscript, on file with the Harvard Law Review).

⁷¹ *Id.* at 2–3.

⁷² The concern with focusing on rental prices is that renters may have different preferences than property owners. This is not a problem if rental properties and owned properties are in equilibrium, that is, if the price of a home is the future stream of rental revenues for that home. In that case, the rental price is disciplined by the alternative of being able to own and vice versa. This imports the preferences of owners into the rents paid by renters. Of course if rental prices and housing prices are not related in this way, then extrapolating from the response of renters gives an incomplete view of the welfare effects of a law.

A law in State One may have positive or negative externalities on State Two. This is true whether the outcome variable is housing prices and wages or, for example, crime.⁷³ The response in both the hedonic and conventional approach is to examine the effect of State One's law on outcomes in State Two or, equivalently, to control for State One's law when examining the State Two outcomes.

(b) *Limitations Addressed by Refinements.* — A first-best measure of welfare would tell us how much a law increased the utility of all residents in a jurisdiction.⁷⁴ The hedonic approach does not attempt to provide this sort of information. Rather, it provides information on how much the marginal migrant to a state values the law. This means that it ignores how much inframarginal residents value the law. These residents fall into two categories: post-law residents who were also residents pre-law and individuals (other than the marginal migrant) who moved to the enacting state post-law. Pre-law residents who remain in the state all value the law at least as much as the marginal migrant. Otherwise they would have sold their property to the marginal migrant and been better off in another state with the cash proceeds and no law. Even if they did not own homes, they would have been better off leaving because the rents would be sufficiently lower and the wages sufficiently higher in other states to make the law not worth these lost opportunities. All post-law migrants must also value the law at least as much as the marginal migrant. If they valued the law less than the marginal migrant, the additional cost of housing and the lower income offered in the enacting state would outweigh the private benefits they derived from the law. The implication is that the hedonic approach offers a lower bound on the first-best measure of welfare.⁷⁵ This is illustrated in Figure 2(A).

⁷³ See, e.g., Stephen G. Bronars & John R. Lott, Jr., *Criminal Deterrence, Geographic Spillovers, and the Right To Carry Concealed Handguns*, 88 AM. ECON. REV. PAPERS & PROC. 475 (1998).

⁷⁴ There is the question of whether one is interested in the welfare of residents within the state before the law or after the law. Given that homeowners who leave the state capture some of the benefits of the law as proceeds from home sales, and that all post-law migrants to the state value the law more than the residents they displace, the ex post measure provides some information on the ex ante measure. This information is confined, however, to the set of outward migrants.

⁷⁵ To obtain this bound in the short run, for example, simply multiply the marginal migrant's willingness to pay by the number of residents in the state — that is, multiply the increase in housing prices by the number of houses, the increase in rent by the number of rental units, and the increase in wages by the number of workers. The sum of these three calculations is a lower bound on aggregate welfare effects.

FIGURE 2(A)

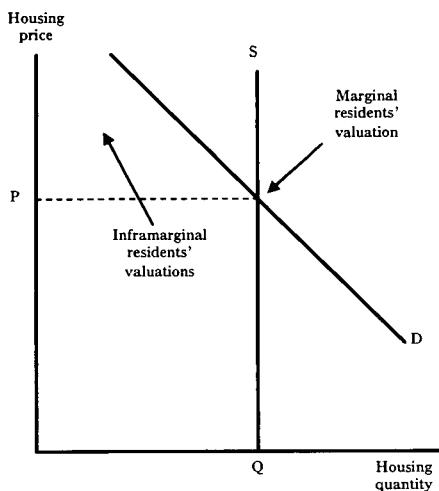
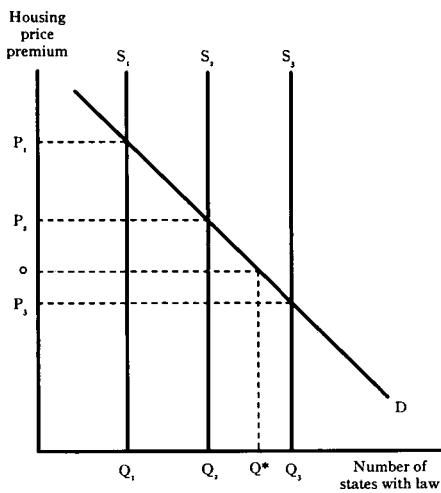


FIGURE 2(B)



A related concern is that the valuation of a law by the hedonic approach depends on the number of states that adopt the law. We might imagine that there is some implicit national demand function for a given law that has not yet been adopted.⁷⁶ This is depicted in Figure 2(B). When the first few states Q_1 adopt a law, only the individuals with the strongest preferences for that law move to those states. Ignoring wages for simplicity, the premium P_1 they pay for housing, for example, is greater than the valuations of the remaining people in the country; otherwise they would not have obtained homes in the Q_1 states. Now suppose that additional states adopt the law so that there are Q_2 states with the law. None of the residents of the first Q_1 states move; they do not need to move to enjoy the law. However, the residents with the strongest preference for the law in the remaining states move to one of the new $Q_2 - Q_1$ states with the law. But they have a lower valuation for the law than the Q_1 residents; otherwise they would have outbid those residents and been part of the first wave of movers. The result is that the marginal resident of the Q_2 states now pays a premium of only $P_2 < P_1$. What happens if an additional $Q_3 - Q_2$ states adopt the law? As shown in Figure 2(B), this means there are more states that have the law than necessary to house the people who

⁷⁶ I say implicit because in reality there is a downward sloping demand function for the law in each state given the current residents of that state. The national demand function I posit is the demand function that would prevail if we could sort residents across states in order of their preference for the law. This is the demand function that would prevail not just nationally but also per state if states sequentially (and unexpectedly) adopted the new law and those with the strongest preferences sequentially moved to states as they adopted the new law.

like the law. The reason is that when Q^* states pass the law, there will be exactly the number of homes living under the law as are required to house all the people with a positive preference for the law. If exactly Q^* states adopted the law, the hedonic method would reveal that the marginal mover's valuation is zero. But if $Q_3 > Q^*$ states have the law, then some people who would prefer not to have the law are forced to live under the law. These are not, mind you, the people who most oppose the law. Those individuals would flee the Q_3 states with the law. It is the persons with the least opposition — but opposition nonetheless — to the law who will remain in or move to the new $Q_3 - Q^*$ states with the law. As a result, however, the marginal resident's premium and thus valuation will be negative! This makes sense: too many states have passed the law, and it is doing harm on the margin. This does not mean that the law is doing harm in all states, just the last few states.⁷⁷

While this last observation does not contradict my central proposition — that the hedonic approach measures the local value of a law to the marginal resident of the state that just adopted it — it does raise questions about what is revealed by a regression of housing prices and wages on the usual indicators for a law⁷⁸ when that law was (or could have been) adopted by different states at different times. This regression does not yield the marginal valuation of the last state to adopt the law but rather the average of the marginal resident valuations across the states that adopted the law. In other words, it will give an average of P_1 , P_2 , and P_3 in Figure 2(B). Because the purpose of this Article is to provide a positive analysis of the welfare effect of a law, I do not view this average measure as fundamentally problematic.⁷⁹ It is only natural, however, that some will want to employ the hedonic method to draw normative conclusions about laws, that is, to recommend that additional states adopt or revoke a law. For these individuals, what matters is the marginal resident's valuation in the last state and in the next state that adopts a law, because it is these two marginal valuations that give the upper bound and lower bound of valuations of residents of the next state that adopts the law.

Fortunately, there is a way to obtain these marginal valuations, and also the valuations of inframarginal residents — the first limitation of

⁷⁷ This limitation of the hedonic approach is related to one of the central arguments for federalism: that residents of different states have different preferences and states (should) have the ability to enact laws tailored to the preferences of their residents.

⁷⁸ The usual indicator is a dummy variable that is set to one when a state adopts a law and remains at one until the state repeals the law or it is struck down.

⁷⁹ It is only problematic if Q_3 states adopt the law at once, in which case the average marginal valuation is negative. In other words, the average measure is not problematic so long as states sequentially adopt the law.

the hedonic approach mentioned in this section — in the process. The economically trained reader has surely noticed that Figure 2(B) could have been describing the demand and supply for widgets as well as the demand and supply for laws. It is well understood that making only one price-quantity observation on widgets does not identify the demand curve for widgets. It only reveals one equilibrium outcome. To identify the demand curve, we need equilibrium observations at two or more levels of supply and a stable demand curve. With two equilibrium observations, we observe two points on the demand curve and can construct a linear approximation. With more observations, we can fit a more curved line. The same is true of the demand curve for housing (or, with simple adjustment, the supply of labor) attributable to a law. In other words, if we could estimate the marginal resident's valuation at two different points on the demand curve for a law, we could estimate the curve itself.

Note that this is different than estimating two different *averages* of marginal valuations, as a regression of housing prices on the usual indicators for laws might reveal. We need actual marginal valuations. This is accomplished in two steps. First, recode legal variables as cumulative variables. For example, if there are three states that adopt a law in three consecutive years, then State One is coded as 1 in year 1, 2 in year 2, and 3 in year 3; State Two is coded as 0 in year 1 and the same as State One in years 2 and 3; and State Three is coded 0 in years 1 and 2 and the same as the others in year 3.⁸⁰ Second, recode this cumulative law variable as a series of dummy variables. Specifically, create an indicator variable for one state adopting the law that is set to 1 so long as only a single state adopts the law, an indicator for two states adopting the law that is set to 1 so long as only two states adopt the law, etc. A regression of housing prices or wages on the first cumulative law variable will reveal how the marginal resident's valuation changes as the total quantity of laws increases. In the general case, the result of this regression will be a negative coefficient on housing prices (or land values) and a positive coefficient on wages regardless of whether one is examining a positive or negative law — because the demand curve for housing slopes downward and the supply curve for labor slopes upward.⁸¹ To distinguish a good law from a bad law

⁸⁰ If the states are of different sizes, the usual law variable should be multiplied by the number of housing units or jobs in the states before it is converted to a cumulative measure so that it reflects the correct supply of movement opportunities in states with the law. I recommend normalizing this measure by the average or median number of housing units or jobs per state if the researcher wants to speak to the effect of an additional (average- or median-sized) state adopting the law.

⁸¹ This will not hold in two cases. One is where the law has a positive network effect, that is, the value of the law rises as more states enact it. An example is product regulation that drives manufacturers to other states. As other states enact the same regulation, manufacturers will be

— and to determine when a good law becomes a bad law — one must estimate a regression that examines the effect of the cumulative laws *indicator* variables. Where the coefficient on a cumulative indicator is positive for housing prices or land, or negative for wages, the marginal resident has a positive valuation for the law at the quantity of supply pegged by the indicator. The first indicator to have a zero coefficient reveals the point of supply where the value of the law goes from having positive value to having negative value. To calculate the total welfare effect of a law, including the valuations of inframarginal residents, plot the cumulative indicator in order of increasing adoption of the law. This approximates the demand curve estimated in the cumulative law regression. Calculating the area under this curve in the interval between zero supply of the law and the supply of the law that yields a zero valuation produces an estimate of the total positive welfare effects of the law.⁸²

There are three remaining limitations of the hedonic approach that can be addressed by refinements of the approach. The first is that it implicitly weights an individual's welfare in proportion to her wealth.⁸³ The reason is that it relies on a market measure of value — housing prices — and market prices weight individuals' preferences in proportion to their income. To see this, suppose two individuals with identical income have the same valuation (and thus bid) for a house. If the first individual is magically given a small amount of additional income, she will raise her bid for the house for no other reason than that she has more disposable income with which to bid. Because she will be able to outbid the second individual, her bid will determine the house's ultimate sale price. Therefore, any approach that employs housing prices to estimate the value of a law will give greater weight to the preferences of wealthier residents.

A partial solution is possible if one has data on the income or wealth of residents. In that case the regression analysis can weight each observation on a resident in inverse proportion to the income of that resident. This will cause the estimate of welfare effects to weight the preferences of lower income residents the same as those of higher

less inclined to flee states with the regulation. Another exception is where residents are learning about the value of a law, in which case valuations may rise with time or as more states enact the law and experience with the law reveals its positive value. An interesting implication is that the cumulative method of coding laws can identify network effects and learning from laws, whether one is employing the hedonic method or the conventional approach.

⁸² If the demand curve is increasing for reasons given in the previous footnote, the total welfare value is the area under the whole curve, including the states with negative value because they bear the cost of the network effects or learning.

⁸³ A more technical way to put this is that the hedonic approach implicitly assumes each person's weight in the social welfare function is proportional to her lifetime wealth given complete credit markets.

income residents. However, the solution is only partial if the law has a larger effect on higher income individuals: for example, a medical malpractice targeted tort reform. In that case the inverse-of-income weighting scheme may underestimate the welfare effects of the law on the higher income population.⁸⁴

A second relevant limitation of the hedonic approach is that it has difficulties with laws adopted for redistributive purposes. For example, suppose a law increases property taxes and employs the money to fund inner-city schools. This law transfers consumption from the wealthy to the poor. A naive hedonic analysis might suggest this law is a net loss. Even adjusting for income as suggested above might suggest the law is at best a wash. But if one cares for redistribution, then the law is perhaps judged unfairly by the hedonic approach. The response is that the hedonic approach is intended to measure the valuation of marginal residents, not the reader, the researcher, or the policy-maker. Unless the marginal resident values redistribution, the hedonic approach will not value it either. Therefore, the objection that the hedonic approach does not value redistribution is really a claim that the marginal resident ought not to matter. As for the question of whether the marginal resident matters, this is the realm of metaphysics, or at least one's beliefs about what the social welfare function includes. If it is simply a weighted sum of individual preferences, the hedonic analysis can measure it. If it includes bonuses for redistributive activities (beyond individual diminishing returns to income and inverse-of-income weights), then the hedonic approach will be at a loss.

That said, the hedonic approach may still be of some use to the redistribution-minded. If the winners and losers in the population can be separated in the data, and winners are geographically delimited or fixed, then it is possible to estimate the extent of redistribution. For example, if one could separately estimate the effect of the tax-for-schools law in inner-city neighborhoods and in other neighborhoods, then one should observe a positive valuation in the inner city and a negative valuation elsewhere (ignoring altruism). Any positive gap between the absolute value of losses outside the inner city and the gains to the inner city may be attributed to the transaction costs of the redistribution. Indeed, this approach to estimating the redistributive effects of a law may be insightful even if the redistribution achieved is not socially enlightened. For example, if a law simply shifts state taxpayer money to the district of a particularly powerful state legislator, the he-

⁸⁴ It is useful to note that this method of correcting for wealth bias can also be used to correct for other biases that one suspects in housing markets. For example, if one believed that minorities' or women's opportunities to move were limited, then one might positively weight observations by whether the residence in question was a minority- or female-headed household.

donic approach may be able to identify this shift. In this way it can be a useful tool for the positive analysis of why laws are adopted.

The final limitation of the hedonic approach relevant to this section concerns property taxes. One might imagine that a savvy government might pass valuable laws but tax away the gains.⁸⁵ For example, it might improve traffic regulations to ease congestion, but then increase property taxes to offset the gains to housing prices. The result is that part of the value of the law is capitalized into government coffers. Looking only at housing prices and wages will underestimate the effect of a law. If the researcher has data on tax rates or tax revenues, however, this shortcoming is easily fixed. Including tax rates or revenues as a regressor in hedonic regressions holds taxes constant in the analysis of a law's effect on housing prices and wages. It answers the counterfactual: what would have happened had the government not taxed away the gains? Even if one does not have tax data, the hedonic approach does capture the effect of a law net of taxes. That is, it calculates the after-tax benefits of a law, which is, of course, all that residents actually enjoy.

(c) *Fundamental Limitations.* — There are three limitations that are unique to the hedonic approach and that have no easy fixes. The first two limitations seem to be second-order in terms of magnitude, and the last depends on metaphysical judgments about which preferences count in the social welfare function and on priors about how common these preferences are. The first fundamental shortcoming of the hedonic approach is that it cannot capture the effect of laws on individuals who are not in the housing or labor market. This includes, for example, prisoners, members of the armed forces, and children. If these individuals reside in State Two when State One passes a law they like, they cannot move to show their preference for it. Of course, a child's parents may consider her welfare and move, and we can try to rationalize that prisoners do not deserve to be included in the social welfare function. But at the end of the day, these folks are undercounted by the hedonic method.

A second flaw of the hedonic approach is that it fails to control for what economists call income effects. Suppose State One passes a law that makes individuals happier. After the law, housing prices will rise and wages will fall. Although migrants to State One will have higher utility, they will suffer a loss of disposable income. That loss will have a second-order effect on consumption of housing and leisure. Because consumption of housing generally rises with income, that is, housing is

⁸⁵ While I doubt that this occurs very often, this hunch can be tested by regressing tax rates (not revenues) on a law. If governments are opportunistic, the analysis will reveal a positive coefficient on the law. One should not use revenues in the regression because, even with fixed property tax rates, a good law would increase property values and thus property tax receipts.

a normal good, the feedback effect will reduce demand for housing and thus the price of housing. The effect on wages is unclear. On the one hand, a decrease in wages will cause a substitution toward more productive uses of time, namely leisure. This will tend to increase wages because it lowers labor supply. On the other hand, the initial decrease in wages will reduce consumption of leisure, which is also a normal good.⁸⁶ That will increase labor supply and thus lower wages. The problem is that the hedonic approach captures these feedback effects, even though they do not reflect value from the law, but rather residents' adjustments to drawing value from the law. The consolation is that the adjustment effects on housing prices and wages will be minor relative to direct-value effects because they are mediated by residents' marginal propensity to consume housing and leisure. These propensities are significantly less than one, that is, a dollar increase in income will produce much less than a dollar change in expenditure on housing and leisure. This is not just because of the budget constraint (one cannot buy a \$2 toy with just \$1), but also because studies by economists have shown this to be the case.⁸⁷ To summarize, while the income effect will make the hedonic approach a less accurate approximation of the marginal resident's willingness to pay for a law, the additional error is not very large.

A third, serious flaw is that the hedonic approach weighs all preferences equally. Why is this a problem? Because there may be preferences that are noxious, such as racial or gender bias, and that drive preferences for laws. For example, it may be that opposition to anti-discrimination laws is driven, in part, by preference for discrimination against minorities or women. Or it may be that support for certain criminal laws is motivated, in part, by implicit bias against minorities, who are prosecuted at a higher rate under these laws. The conventional approach may avoid these problems by examining outcomes that are not tainted by such preferences, although it still may not succeed since hiring decisions or decisions to prosecute drug crimes may also be driven by racial animus.⁸⁸ The lesson for those who want to avoid giving weight to certain preferences is that they ought to exercise caution when applying the hedonic method to value laws driven or opposed in large part by the preferences they refuse to weight.

⁸⁶ A normal good is one of which an individual consumes more when her income rises.

⁸⁷ See, e.g., Janet E. Kohlhase, *Labor Supply and Housing Demand for One- and Two-Earner Households*, 68 REV. ECON. & STAT. 48, 53 tbl.2 (1986) (reporting income elasticities of 0.130 to 0.662).

⁸⁸ See, e.g., David S. Abrams & Marianne Bertrand, Do Judges Vary in Their Treatment of Race?, (Aug. 17, 2007) (unpublished manuscript), available at <https://www.law.uchicago.edu/files/AbramsBertrandJudges081707.pdf>.

2. *Alternatives to Hedonic Measure.* — Despite the discussion of limitations in the previous section, the hedonic approach remains an invaluable method for evaluating the local welfare effect of laws that has important advantages over its competitors. These alternatives include not only the conventional approach to valuing a law, which focuses on how the law affects proximate behavior, but also other willingness-to-pay measures, such as the number of post-law migrants to a state,⁸⁹ the effect of a law on GDP or stock prices, the tolerance for longer commutes to work among post-law residents,⁹⁰ and direct surveys of willingness-to-pay. Comparisons of different marginal willingness-to-pay measures can be found elsewhere in the literature.⁹¹ I briefly summarize my main concerns with these alternative measures and focus on comparing the hedonic method to the conventional approach for valuing a law.

The advantage of the hedonic approach over counting the number of migrants to the enacting state is that the latter may tell you the number of people that prefer a law, but reveals nothing about the extent to which they prefer a law. The problem with the GDP/stock price approach is that it does not capture the effect of laws that do not affect productivity. The issue with the commuting-time approach is that in the short run it may find little effect because the number of homes and the number of jobs are fixed. Moreover, the magnitude of the effect depends on where new homes are built or new factories are located. Better urban planning could lower the valuation of a law under this approach. Finally, surveys of willingness-to-pay are not merely subjective (like the hedonic approach), but they also provide respondents with few incentives to provide accurate answers (unlike the hedonic approach).⁹²

The more serious challenge to the hedonic approach is the conventional method of valuing laws. This approach looks at the effect of a law on proximate behavior. For example, the effect of truth-in-

⁸⁹ See, e.g., David E. Clark et al., *Migration and Implicit Amenity Markets: Does Incomplete Compensation Matter?*, 3 J. ECON. GEOGRAPHY 289, 289–91 (2003); Philip E. Graves, *A Life-Cycle Empirical Analysis of Migration and Climate, by Race*, 6 J. URB. ECON. 135, 135–36 (1979); Philip E. Graves & Peter D. Linneman, *Household Migration: Theoretical and Empirical Results*, 6 J. URB. ECON. 383, 383–84 (1979); Ben-Chien Liu, *Local Government Finance and Metropolitan Employment Growth: A Simultaneous-Equation Model*, 43 S. ECON. J. 1379, 1379–80 (1977).

⁹⁰ See, e.g., Daniel J. Phaneuf & V. Kerry Smith, *Recreation Demand Models*, in 2 HANDBOOK OF ENVIRONMENTAL ECONOMICS 671 (Karl-Göran Mäler & Jeffrey R. Vincent eds., 2005); Gardner Brown, Jr. & Robert Mendelsohn, *The Hedonic Travel Cost Method*, 66 REV. ECON. & STAT. 427 (1984).

⁹¹ See, e.g., Richard T. Carson & W. Michael Hanemann, *Contingent Valuation*, in 2 HANDBOOK OF ENVIRONMENTAL ECONOMICS, *supra* note 90, at 821.

⁹² See Tomas Philipson & Anup Malani, *Measurement Errors: A Principal Investigator-Agent Approach*, 91 J. ECONOMETRICS 273, 273–75 (1999).

sentencing laws on violent and property crime rates⁹³ or the effect of no-fault and compulsory auto insurance laws on traffic fatalities.⁹⁴ This approach is far more common than alternatives, as citations throughout this paper attest.⁹⁵ It also has two important benefits, although these are offset by the advantages of the hedonic approach outlined in the next section.

One advantage of the conventional approach is that it can provide an objective measure of the effects of a law, since the outcomes, such as changes in crime rates or mortality, are objective. In contrast, because migration is driven by individuals' perceptions about the effect of a law, the hedonic approach only captures an objective manifestation of individuals' subjective valuations of a law.⁹⁶ In response, economists would argue that welfare is driven by subjective valuation; otherwise the expressive effect of a law has no value. Moreover, subjective valuations are based on residents' observations and thus partly reflect objective realities. One can be as confident in the objectivity of the hedonic approach as one is confident in rational expectations.

Another benefit of the conventional approach is that it can identify the pathway through which a law operates. For example, it has been reported that wrongful-discharge laws have had a small but significant effect on the level of employment.⁹⁷ But perhaps more significant is the fact that they have changed the nature or terms of employment, by causing an expansion of employment at temp agencies.⁹⁸ The conventional approach was used to tease out these effects. The hedonic approach, in its simplest form, would simply lump these different effects together.

Nevertheless, the hedonic approach has certain advantages over the conventional approach that make it a critical tool in evaluating laws. It is important to clarify, however, that I do not argue for abandoning the conventional approach in favor of the hedonic approach. The two approaches are not mutually exclusive. Indeed, they are stronger when used together than either is when used apart. For example, to discover how much of the welfare effect of a wrongfult-

⁹³ See Joanna M. Shepherd, *Police, Prosecutors, Criminals, and Determinate Sentencing: The Truth About Truth-In-Sentencing Laws*, 45 J.L. & ECON. 509, 515–16 (2002).

⁹⁴ See Alma Cohen & Rajeev Dehejia, *The Effect of Automobile Insurance and Accident Liability Laws on Traffic Fatalities*, 47 J.L. & ECON. 357, 373–82 (2004); J. David Cummins et al., *The Incentive Effects of No-Fault Automobile Insurance*, 44 J.L. & ECON. 427, 444–54 (2001).

⁹⁵ See, e.g., *supra* notes 3–7 and accompanying text.

⁹⁶ Perhaps more problematic, hedonic valuation in the short run before migration depends on homeowners' predictions of potential migrants' subjective valuations.

⁹⁷ See David H. Autor et al., *The Employment Consequences of Wrongful-Discharge Laws: Large, Small, or None at All?*, 94 AM. ECON. REV. PAPERS & PROC. 440, 445 (2004).

⁹⁸ See David H. Autor, *Outsourcing at Will: The Contribution of Unjust Dismissal Doctrine to the Growth of Employment Outsourcing*, 21 J. LAB. ECON. 1, 1–4 (2003).

discharge law is mediated by effects on temporary employment, simply regress housing prices and wages once on the wrongful-discharge law, and once on the law and the temporary employment level in the state.⁹⁹ The coefficient on the law in the first regression would provide an estimate of the welfare impact of the law, including all effects of the law. The coefficient on the law in the second regression would provide an estimate of the welfare impact of the law excluding its effect on temporary employment. The difference in the coefficients on the wrongful-discharge law across the two regressions would provide an estimate of the welfare implications of changes in temporary employment. Likewise, to determine how much of the welfare effect of a three-strikes law is due to deterrence effects on crime¹⁰⁰ and how much is due to either misperceptions of the deterrence effect or to expressive benefits of the law, regress housing prices and wages on the three-strikes law once without and once with controls for violent crimes. The difference in coefficients on the three-strikes law yields the welfare effect of the law sans its effect on crime.

3. *Advantages of the Hedonic Approach.* — The hedonic approach enjoys three advantages over the conventional alternative. First, the hedonic approach provides a better estimate of welfare. Although the conventional approach tells us that wrongful-discharge laws provide insurance against arbitrary dismissal at the cost of reducing the level of employment, it does not tell us how important those effects are to welfare. What are people willing to pay for greater job security once they have a job if such a benefit means a lower probability of getting a job in the first place? The conventional framework offers no insights. But the hedonic approach can answer this question. It is able to identify the amount that the marginal resident is giving up to have the protection of a wrongful discharge law by examining how much more she is willing to pay for housing plus the decrease in earnings she is willing to accept.

Second, the conventional approach only captures objectively those effects that investigators can identify and measure. It does not capture, for example, benefits that are either unpredictable or difficult to observe or quantify. The hedonic approach can. Unpredictable benefits can be very important. A good example is the connection between abortion and crime. For quite some time, people did not examine the effect of permitting legal abortions on crime rates.¹⁰¹ The reason was that until a few exceptionally creative scholars thought about it, the

⁹⁹ It is true that the first regression suffers omitted variable bias, but that is its intent: to capture the full effect of a law.

¹⁰⁰ See Marvell & Moody, *supra* note 3, at 106.

¹⁰¹ While I do not mean to justify abortion rights on this ground, it would be hard to contend that the fall in crime is not a benefit in some sense.

theoretical connection was not made. An advantage of the hedonic approach is that creativity would not have been required for abortion rights to be credited for their effects on crime. Lower crime rates would have driven up housing prices. The fact that this would have occurred in states with more liberal abortion rights means that housing prices would have been positively correlated with such liberal abortion policies.

Benefits that are difficult to measure include expressive effects and enforcement costs. An example is Megan's Law, which requires sex offenders to register with a state when they move there. Such a law might deter sex offenders from moving to a state or allow the state to assign police to monitor offenders, which in turn will reduce sex offenses. These effects might plausibly be estimated via the conventional approach.¹⁰² But a registration law might also make other residents less anxious about sex offenders in their community or allow these residents to express their outrage against sex offenders. These effects are very hard to quantify and estimate under the conventional method; I know of no variable that captures placebo effects or expressive values.¹⁰³ Moreover, the law might be very costly to administer in both obvious and nonobvious ways. Registration may require costly computer systems and public notices. Enforcement of the registration obligations may eat up scarce police resources; so might the fact that knowing one's neighbor is a sex offender cause one to file more police complaints about suspicious behavior by that neighbor for any given level of sex offenses he commits. Any criminologist will tell you that all these costs are very hard to measure directly.¹⁰⁴ But that is not a problem for the hedonic approach. Housing prices and wages will capture placebo effects, expressive values, and enforcement costs because people take these factors into account when they move.

Third, the hedonic approach has the ability to compare different types of laws. Whereas the conventional approach would have trouble

¹⁰² See, e.g., ELIZABETH LOVELL, NPSCC, MEGAN'S LAW: DOES IT PROTECT CHILDREN? (2001). For an updated summary of findings, see KATE FITCH, NPSCC, MEGAN'S LAW, DOES IT PROTECT CHILDREN? (2) — AN UPDATED REVIEW OF EVIDENCE (2006), available at http://www.nspcc.org.uk/Inform/publications/Downloads/meganslaw2_wdf48102.pdf. See also Thomas John Miles, Three Empirical Essays in the Economics of Crime 46–78 (June 2000) (unpublished Ph.D. dissertation, University of Chicago) (on file with the Harvard Law School Library).

¹⁰³ Perhaps one could use levels of happiness from the General Social Survey, but that is a very rough measure and the outcomes are hard to interpret. For example, what does it mean for welfare to find that people are more likely to say they are "very happy" as opposed to merely "happy" in states with Megan's Law?

¹⁰⁴ See, e.g., Leigh L. Linden & Jonah E. Rockoff, There Goes the Neighborhood?: Estimates of the Impact of Crime Risk on Property Values from Megan's Laws (2006) (unnumbered working paper, on file with the Harvard Law School Library), available at <http://ssrn.com/abstract=903178>.

comparing, for instance, a law banning concealed weapons and a school choice law (how would one compare a law that affects mortality rates with a law that affects test scores?), the hedonic approach would have no difficulty doing so. The reason is that the hedonic approach examines the effect of all laws on the same two outcomes. This permits a direct comparison of laws that have entirely different objectives, let alone means of achieving them. A ban on concealed weapons would have been better for welfare than a school choice law if, on net, it had raised housing prices and lowered wages more.

III. EMPIRICAL EXAMPLES

There are two significant remaining bases for skepticism about my proposal to value laws as we do other local amenities such as lakes or schools. The first is that housing price and wage data are too noisy to permit identification of the effect of a legal change. The second is that, even if we were to find a correlation between a law and housing prices or wages, this correlation is spurious — the result of unmeasured aspects of the local economy or political culture. The purpose of this Part is to take a step toward easing these concerns. What follows is an evaluation of a series of laws according to the hedonic approach. Each of the laws has previously been evaluated employing conventional methods, and I reference prior studies in order to highlight the potential practical contributions of the hedonic method.

Readers should not, however, view my findings as definitive. The narrow purpose of the exercise below is to demonstrate that excess noise or spurious correlation does not handicap the hedonic methodology relative to the proximate behavior methodology employed in prior studies, and not to correct statistical problems such as sample selection bias or spillover effects common to both methodologies. Therefore, the reader should focus not on the exact value of coefficients, but rather on their significance and the differences between my coefficient estimates and those from prior studies.

A. Data

i. Housing Prices. — Data on housing prices were drawn from the national and metropolitan versions of the American Housing Survey (AHS). This survey is conducted by the Department of Housing and Urban Development (HUD). It includes roughly 50,000 housing units per year. The survey has been conducted annually since 1973.¹⁰⁵ My

¹⁰⁵ The national survey was conducted annually from 1973–1981 and biannually after that. In interceding years after 1981, HUD conducted a metropolitan version of its survey. Although both versions confine their sample to metropolitan statistical areas (MSAs), the metropolitan version focuses on a narrower set of the most populous MSAs so as to enable more precise inferences

sample excludes the year 1973 because the data on numerous covariates are missing for that year.

The AHS survey provides three measures of housing price. For housing units that are owned by the occupant, one measure is the occupant's subjective estimate of a housing unit's value.¹⁰⁶ Another is the price at which (and the date on which) the occupant acquired the housing unit. For housing units that are rented by the occupant, the AHS reports the monthly rental price. My analysis employs only the owner's subjective assessment of value as a proxy for housing prices. I do not use purchase price because the survey does not report housing characteristics for the year a property was acquired, but rather for the year that the occupant was surveyed. The housing characteristics I extract from the AHS are those typically employed in environmental or urban economic studies that attempt to value environmental amenities such as clear air or urban amenities such as a professional sports stadium.¹⁰⁷

2. *Wages.* — Data on wages were drawn from the March version of the Current Population Survey (CPS). The CPS gathers data on roughly 200,000 workers per year. These workers are interviewed once a month for four consecutive months, then left alone for eight months, then interviewed again once a month for four consecutive months. Only twice, in the fourth and eighth interviews, are workers asked about their hourly or weekly wages. If the fourth or eighth interview happened to occur in March, it is included in my current sample. For some reason, some workers are asked their hourly wage and others are asked their weekly wage. The worker characteristics I extract from the CPS are those typically employed in labor economics studies examining disparities in wages. Because the CPS asked workers about their weekly or hourly wage only starting in 1979, my wage sample starts with that year. Because certain crucial worker characteristic variables have not been released for 2004 data, my wage sample ends in 2003.

3. *Laws.* — In order to facilitate a comparison of the hedonic approach with the conventional approach, I gather data on state laws from prior studies that employ the conventional method. These include data on:

about the nature of housing in those MSAs. Therefore, the sample covers a smaller number of states in even years.

¹⁰⁶ Prior to 1984, this assessment was recoded into \$5,000 bins. For these years, I assign to each house a value equal to the midpoint of the bin to which the owner's subjective valuation is assigned.

¹⁰⁷ See, e.g., Gerald Carlino & N. Edward Coulson, *Compensating Differentials and the Social Benefits of the NFL*, 56 J. URB. ECON. 25 (2004).

- Compulsory and no-fault automobile insurance laws.¹⁰⁸
- Laws concerning exceptions to employment-at-will.¹⁰⁹
- Health insurance mandates.¹¹⁰
- Tort reforms.¹¹¹

Detailed descriptions of the relevant laws can be found in the articles cited. The law data are merged with housing and wages data by state. Since the housing data are sorted by metropolitan statistical area (MSA) and an MSA may cover more than one state, I match MSAs to states based on which state has the largest population within the MSA. I should clarify that, although my empirical analysis focuses on state laws, the hedonic method is also applicable to local or federal laws. The tradeoff when working with local laws is that, although there is likely to be less noise in the relationship between local laws and local housing prices and wages, there is more likely to be bias from endogeneity or reverse causality.¹¹² The trade-off when working with federal laws is that, although there is less likely to be a problem with endogeneity, there is more likely to be noise and also difficulty in separating the effect of the law from underlying time trends since there is no concurrent control jurisdiction.¹¹³

Table 2 provides summary statistics for the housing and wage data sets. Statistics are computed separately for each dependent variable because there may be different numbers of homes and workers with nonmissing observations on the dependent variable in the AHS and the CPS data sets.

¹⁰⁸ Cohen & Dehejia, *supra* note 94.

¹⁰⁹ Autor et al., *supra* note 14.

¹¹⁰ Jonathan Klick & Sara Markowitz, *Are Mental Health Insurance Mandates Effective?: Evidence from Suicides*, 15 HEALTH ECON. 83 (2006); Klick & Stratmann, *Subsidizing Addiction*, *supra* note 49; Jonathan Klick & Thomas Stratmann, *Diabetes Treatments and Moral Hazard* (Fla. St. U. Coll. of Law, Pub. Law & Legal Theory Working Paper 159, Law & Econ. Working Paper No. 05-21, 2005)[hereinafter Klick & Stratmann, *Diabetes*].

¹¹¹ Rubin & Shepherd, *supra* note 7.

¹¹² See *supra* pp. 1298-99.

¹¹³ But see Greenstone & Gallagher, *supra* note 22 (using locations near hazardous waste sites as treatments and locations without such sites as controls to evaluate a federal environmental cleanup law).

TABLE 2. SUMMARY STATISTICS

	Rent regression			Housing regression		
Variable	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Rent/Value (\$)	312222	666	331	434068	172375	125128
Age (years)	312222	31.30	20.39	434068	29.52	19.51
New construction (o/1)	312222	0.01	0.08	434068	0.01	0.10
Full baths (#)	312222	1.15	0.39	434068	1.58	0.69
Bedrooms (#)	312222	1.91	0.85	434068	3.01	0.88
Garage/parking (o/1)	312222	0.32	0.47	434068	0.76	0.43
Low rise (o/1)	312222	0.84	0.36	434068	0.95	0.21
Holes in floor (o/1)	312222	0.02	0.15	434068	0.01	0.08
Kitchen (o/1)	312222	0.99	0.11	434068	1.00	0.07
Rooms (#)	312222	4.31	1.30	434068	6.37	1.67
Rent controlled (o/1)	312222	0.03	0.25	—	—	—
Married (o/1)	312222	0.35	0.48	434068	0.68	0.46
Children (#)	312222	0.70	1.13	434068	0.75	1.11
Black head of hhd (o/1)	312222	0.20	0.40	434068	0.09	0.29
	Hourly wage regressions			Weekly wage regressions		
Variable	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Wage (\$)	98798	13.65	7.88	156310	673.67	492.16
Age (years)	98798	35.82	13.30	156310	37.37	12.87
Union member (o/1)	98798	0.18	0.39	156310	0.17	0.37
Job has pension (o/1)	98798	0.40	0.49	156310	0.47	0.50
Employer's contribution to health ins. (\$)	98798	1592	1920	156310	1925	2085
High school grad (o/1)	98798	0.69	0.46	156310	0.61	0.49
College grad (o/1)	98798	0.12	0.33	156310	0.25	0.43
Married (o/1)	98798	0.52	0.50	156310	0.57	0.50
White (o/1)	98798	0.96	0.20	156310	0.96	0.20
Hispanic (o/1)	98798	0.12	0.32	156310	0.10	0.31
Veteran (o/1)	98798	0.12	0.32	156310	0.13	0.33

B. Empirical Model

The basic empirical model I employ resembles the standard model in empirical law and economics studies:

$$y_{ijt} = \beta X_{ijt} + \mu_i + \lambda_t + \gamma t_j + \alpha L_{jt} + \delta P_{jt} + \varepsilon_{ijt} \quad (1)$$

where i , j , and t index individuals, MSAs, and time, respectively; y is housing price, rent, hourly wage, or weekly wage; X is a vector of housing or wage characteristics as appropriate;¹¹⁴ μ_i is an MSA-fixed effect; λ_t is a time-fixed effect; t_j is a vector of MSA-specific time trends;¹¹⁵ L is a vector of state law variables;¹¹⁶ and P is a vector of control for the political culture of a state.¹¹⁷ This model implements a differences-in-differences estimator to identify the longitudinal effect of state laws on housing prices or wages as compared to states that do not have the laws during the same period.

C. Interpretation of Preliminary Results

Tables 3 through 5 present the results of the regression analyses. Before I discuss my findings, I would like to comment once more on the problem of endogeneity, that is, the concern that correlation might pick up the effect of welfare on laws rather than laws on welfare. Although it may appear that I have a plausible argument for why my analysis does not suffer from endogeneity (it seems unlikely that the laws I examine were adopted because of shifts in housing prices or wages), that impression is incorrect. Whatever causes the conventional analysis to suffer endogeneity bias also causes the hedonic approach to suffer endogeneity bias, because the hedonic approach calculates the welfare effect of changes in proximate behavior identified by conven-

¹¹⁴ These are generally indicated in Table 2. The rent and value regressions include log of all non-indicator variables. The wage regressions also include the worker's age squared and indicators for major industry and occupation.

¹¹⁵ λ_t and t_j control for, among other things, the effect of inflation on logged versions of the outcome y_{ijt} .

¹¹⁶ Obviously, this does not include all laws that might affect housing prices, rents, and wages. This is not a concern if omitted laws do not co-vary with included laws. Nor is it a concern if the omitted laws are fixed over time or have a linear trend over time, as those features are captured by jurisdiction-fixed effects and jurisdiction-specific time trends. Finally, there is also no concern if the omitted laws are captured by the political culture variables. If more of these conditions are satisfied, however, there is the risk of omitted variable bias in estimates of the coefficient on L_{jt} . While conventional analyses, which use the same methods to address omitted variable problems I do, also face this residual risk of bias, it may be smaller because there are fewer laws that affect any specific proximate behavior than that affect housing prices, rents, and wages.

¹¹⁷ These include the fractions of each state's delegations to the Senate and House and the fractions of the upper and lower houses of each state's legislature that are Republican. I thank John Klick for these data.

tional analysis. If that behavior causes changes in the law and not just the other way around, then changes in housing prices and wages are correlated with something that causes changes in law, which produces endogeneity bias just as surely as if housing prices and wages directly caused changes in laws.¹¹⁸ Because my purpose is only to compare the hedonic approach to the conventional approach, I will not tackle the problem of endogeneity in my empirical work. To keep things fair, however, I will compare hedonic results to conventional results that do not account for endogeneity.

Table 3 presents results of a regression where the dependent variable was monthly rent. The table examines two calibrations of rent, one in straight dollar terms and one in log dollar terms. Coefficients in the latter regression can be interpreted as percent changes in rent. For the log rent calibration, I also estimate a number of models to check how robust the results are to some of the limitations discussed in Part II. I address these in a moment. More importantly, I estimate each model under two assumptions about the law that yield different standard errors for coefficient estimates. The first assumption is that the law in question is a true public good in the sense that its consumption is nonrival: my consumption of it does not preclude your consumption. Thus I can treat each individual (or at least each metropolitan area) as consuming the law separately. This implies clustering standard errors at the city (statistical metropolitan statistical area, or SMSA) level. Alternatively, one might suppose that although the law is adopted statewide, its consumption is rival: like a fixed monetary handout shared by all in the state, the more people there are in the state, the less each individual gets. In this case the proper level for clustering is the state level. Because most coefficients that are significant with SMSA clustering are also significant with state clustering, and because this issue is more technical than necessary for proof-of-concept empirical analysis, I focus the remaining discussion on the SMSA-clustered estimates.¹¹⁹

¹¹⁸ A partial solution is to add the conventional outcome that raises concerns about the endogeneity of a law as an explanatory variable to the housing and wage regressions. This would estimate the effect of the law on welfare exclusive of endogenous channels. This is valuable so long as one does not suspect that welfare effects through nonendogenous channels are negatively related to welfare effects through endogenous channels.

¹¹⁹ While on this topic, I should note that estimation with robust White standard errors does not materially change the results as compared to clustering at the state level. Robust standard errors address, for example, serial correlation in errors. See Marianne Bertrand et al., *How Much Should We Trust Difference-In-Differences Estimates*, 119 Q.J. ECON. 249 (2004).

TABLE 3. RENT REGRESSIONS

Dependent variable		Rent (\$)		Log rent						
Model		Base	Base	Base	Base	Lag 2	Lag 2	Income	Income	
Level of clustering		SMSA	State	SMSA	State	SMSA	State	SMSA	State	
Auto	Compulsory insurance	-22.89** -2.32	-22.89** -2.53	-0.0425*** -2.76	-0.0425*** -2.99	-0.0531*** -3.26	-0.0531*** -3.29	0.0762 0.90	0.0762 0.93	
	No-fault	21.24** 2.22	21.24** 2.22	0.0278** 1.98	0.0278** 2.55	0.0273** 2.40	0.0273** 2.54	0.0185 0.22	0.0185 0.21	
Employ- ment	Implied contract	-12.32 -1.20	-12.32 -0.99	-0.0160 -1.02	-0.0160 -0.81	-0.0215 -1.46	-0.0215 -1.18	0.0977 0.84	0.0977 0.81	
	Public policy	-42.17*** -3.29	-42.17*** -3.53	-0.0648*** -3.12	-0.0648*** -3.37	-0.0734*** -3.45	-0.0734*** -4.01	-0.139 -1.52	-0.139 -1.61	
	Good faith	-74.88*** -3.79	-74.88*** -3.48	-0.119*** -3.16	-0.119*** -2.85	-0.123*** -2.91	-0.123*** -2.64	-0.144 -1.16	-0.144 -1.10	
Insur- ance	Diabetes mandate	11.23 0.92	11.23 0.91	-0.00165 -0.093	-0.00165 -0.092	-0.0114 -0.65	-0.0114 -0.62	0.0540 0.55	0.0540 0.47	
	Mental health parity	-3.589 -0.33	-3.589 -0.32	-0.00105 -0.063	-0.00105 -0.058	-0.00633 -0.34	-0.00633 -0.32	-0.216** -2.39	-0.216** -2.40	
Tort	PL reform	37.79*** 3.08	37.79*** 2.77	0.0443** 2.46	0.0443** 2.11	0.0396** 2.39	0.0396** 2.01	0.103 1.28	0.103 1.36	
	Evidence for punitives	-22.49* -1.68	-22.49* -1.71	-0.0311 -1.43	-0.0311 -1.33	-0.0301 -1.34	-0.0301 -1.11	-0.144 -1.08	-0.144 -1.07	
	Admit CS evidence	-2.441 -0.17	-2.441 -0.15	0.000868 0.042	0.000868 0.036	-0.00375 -0.19	-0.00375 -0.17	-0.290** -2.05	-0.290** -2.02	
	Offset CS awards	-0.537 -0.038	-0.537 -0.034	0.00843 0.40	0.00843 0.36	0.0175 0.96	0.0175 0.86	-0.0857 -0.95	-0.0857 -1.31	
	Non-economic cap	-7.687 -0.60	-7.687 -0.53	-0.0193 -1.08	-0.0193 -0.93	-0.0152 -0.94	-0.0152 -0.80	0.263*** 2.68	0.263*** 3.51	
	Punitive cap	-24.31 -1.63	-24.31 -1.43	-0.0324 -1.41	-0.0324 -1.19	-0.0365* -1.73	-0.0365* -1.41	0.104 0.90	0.104 0.96	
Observations		312222	312222	312222	312222	305594	305594	307168	307168	
R-squared		0.47	0.47	0.36	0.36	0.35	0.35	0.59	0.59	

Notes: Dependent variable is monthly rent from the AHS during 1981–1999. PL stands for product liability and CS for collateral source. All regressions include apartment features, occupant demographics, a rent-control indicator, MSA and year fixed effects, MSA-specific time trends, and controls for local politics. T-statistics clustered at the level indicated in the third row are reported below coefficients. ***/**/* indicate $p < 0.01/0.05/0.1$.

There are five laws that appear to have a statistically significant effect on rent, whether calibrated in dollars or in log dollars. Compulsory insurance laws tend to decrease rents — a bad thing — by \$22.89 per month or about 4%, while no-fault automobile liability laws tend to increase rents — a good thing — by \$21.24 per month or almost 3%. The public policy and good faith exceptions to employment-at-will seem to lower rents and thus welfare by \$42.17 (or over 6%) and \$74.88 (or nearly 12%) per month. Finally, product liability reform that is distinct from the other tort reforms listed in Table 3 appears to raise rents by \$41.06 (or roughly 4%).

These findings are largely consistent with those from regressions examining the effect of these laws on house prices, that is, the price of owned properties. The two exceptions are that compulsory no-fault insurance laws seem to have an insignificant negative effect on home values and that diabetes coverage mandates seem to have a significant negative effect (\$15,280 or roughly 9%) on home values. Although, strictly speaking, one ought to separately consider the effect of laws on renters and owners (because the two groups may have different preferences and there may be imperfections in real markets that prevent rents and home values from being in joint equilibrium), I focus my analysis on the results from the rent regressions. One reason is that there is substantial overlap in the results. Another is that the home values reported in the AHS data set are subjective appraisals by home owners, not actual sale prices of homes. This implies a serious risk of measurement error. Although it is true that measurement error in the dependent variable does not lead to inconsistent coefficient estimates, it may cause one to underestimate standard errors because the measurement error is an omitted source of variation in the estimated model. So it is possible that compulsory automobile insurance has no significant effect on housing prices.

There are two obvious questions about the rent regressions results. First, are the results robust to some of the limitations discussed in Part II? To check, I first estimated the model with the law variables lagged one, two, or four years.¹²⁰ The idea is to see whether changes in the supply of jobs alter the capitalization into rental properties. I found, however, that the capitalization of compulsory automobile insurance and no-fault automobile liability laws, the public policy and good faith exceptions to employment-at-will, and product liability reform is remarkably stable over time. Next I checked to see if the effect of laws on land prices is comparable to their effect on housing prices. The motivation is to see if the elasticity of housing supply alters the results. The method for estimating effects on land prices is a bit indirect be-

¹²⁰ The two-year lagged law results are reproduced in Table 3.

cause I do not have data on the square footage of all apartments (or homes). Therefore, I was unable to simply divide rents by area to get a price per unit of land. Instead I estimated a model similar to equation (1) but with log square footage as the dependent variable in the log rent regression.¹²¹ If my specification of both is correct, then the effect of a law on the log of land price, or equivalently the log of rent minus the log of area, is simply the difference of the α coefficients from both regressions. In order to calculate standard errors properly, I had to estimate both models simultaneously. I found that the no-fault liability law and the good faith exception to employment-at-will have similar effects on land prices as on rents — roughly a reduction of land prices by 2.5% and 3.6%, respectively, although the results are marginally insignificant.¹²² My third check on robustness examined the effect of income. Specifically, I reran the regressions weighting each observation in inverse proportion to the income of the tenant. The goal is to estimate welfare effects while eliminating the market's tendency to give higher-income individuals greater weight in setting prices. The results can be found in the last two columns of Table 3. The public policy and good faith exceptions to employment-at-will have significant negative effects of roughly 14% each and product liability reform has a positive effect of 10.3% on rents. These results are only marginally significant.

My fourth check of robustness was to estimate the full demand curve for each law. I did this by regressing rents on cumulative law variables as described in section II.C.1.b, except that I interacted the law variables by the number of residential housing units in states that adopted a law to adjust for the fact that different states are of different sizes. I found two statistically significant and interesting results. First, the demand for a diabetes mandate is well behaved, that is, downward sloping. In dollar terms, the curve starts at \$25.85 for the first average-sized state that adopts the law, and then in each subsequent, average-sized state that adopts the law, the marginal valuation falls by \$1.10. (The average-sized state has roughly two million housing units during the period 1980–2005.) This suggests that the law has a positive value for the first twenty-three average-sized states that adopt it, and then begins to have negative welfare effects. This jibes with the \$11 estimate from the first column of estimates in Table 3. Roughly a quarter of states in my sample have a diabetes mandate,

¹²¹ I only include units in low-rise buildings in the regression results I report in the text. The area of a unit is not the same as land area. Land area depends on the number of floors in a building and number of floors per unit. I do not have data on number of floors, so I proxy this with indicators for low-rise and high-rise buildings.

¹²² By marginally insignificant I mean the range between the 75% and 90% confidence levels for a two-sided test.

implying the average state had roughly \$12¹²³ of positive value for marginal residents. Second, the demand curve for the public policy and good faith exceptions to employment-at-will are positively sloped. They start at -\$50 and -\$290, respectively, and then rise by \$0.69 and \$24.17, respectively, for each average-sized state that adopts the laws. This implies average marginal valuations that are, for the public-policy exception, similar to (-\$41.89 v. -\$42.17) and, for the good faith exception, more negative than (-\$228.57 v. -\$74.88) those I report in the first column of estimates in Table 3, although any difference could be explained by the order of adoption — bigger states followed by smaller states. The more interesting feature is that the law has less detrimental impact as more states that adopt it. It is tempting for an economist to suggest that this is reasonable: exceptions to employment-at-will drive employers away. The more states adopt the law, the fewer places employers have to flee and thus the smaller the detrimental effect on jobs. But endorsement of this explanation for my finding requires more work and is beyond the scope of this paper.

The second big question about the rent results is whether the coefficient estimates for the employment laws are implausibly large. Before answering this question, it is important to get the full picture. Tables 5(A) and 5(B) present the results from the wage regressions. Three versions of the dependent variable were used. The first is the directly reported weekly wage, the second is the directly reported hourly wage, and the third is an hourly wage estimated from the weekly wage and the number of hours workers reported they worked. It is not uncommon in the labor economics literature to focus on the weekly wage number.¹²⁴ I do so because it is more commonly reported than hourly wage and does not require use of an hours figure that may be reported with error and with the knowledge — see the last four columns of Table 5(B) — that other wage measures yield similar results as the weekly wage measure. The weekly wage regressions suggest that compulsory insurance has a robust significant and positive effect on wages (roughly 2%). The public policy exception has a significant positive effect on hourly wage (roughly 2.5%). The diabetes mandate frequently has a significant positive effect on weekly wages (nearly 3%).

¹²³ $12.65 = 25.85 - (12 \times 1.1)$.

¹²⁴ See, e.g., John Bound & Richard B. Freeman, *What Went Wrong?: The Erosion of Relative Earnings and Employment Among Young Black Men in the 1980s*, 107 Q.J. ECON. 201, 203 (1992); David Card & Thomas Lemieux, *Can Falling Supply Explain the Rising Return to College for Younger Men?: A Cohort-Based Analysis*, 116 Q.J. ECON. 705, 715 (2001); Lawrence F. Katz & Kevin M. Murphy, *Changes in Relative Wages, 1963–1987: Supply and Demand Factors*, 107 Q.J. ECON. 35, 38 (1992).

TABLE 4: HOME VALUE REGRESSIONS

Dependent variable		Value (\$)		Log value						
Model		Base	Base	Base	Base	Lag 2	Lag 2	Income	Income	
Level of clustering		SMSA	State	SMSA	State	SMSA	State	SMSA	State	
Auto	Compulsory insurance	-17146 -1.47	-17146** -2.19	-0.0957** -2.02	-0.0957** -2.09	-0.0953** -2.21	-0.0953** -2.32	0.0205 0.11	0.0205 0.17	
	No-fault	-3222 -0.45	-3222 -0.54	-0.00748 -0.19	-0.00748 -0.20	-0.00733 -0.22	-0.00733 -0.21	0.131 0.49	0.131 0.89	
Employment	Implied contract	9692 1.33	9692 1.24	0.0316 0.93	0.0316 0.80	0.0158 0.32	0.0158 0.27	-0.0764 -0.54	-0.0764 -0.55	
	Public policy	-17101** -2.27	-17101** -2.14	-0.0737* -1.82	-0.0737* -1.84	-0.106** -2.37	-0.106** -2.41	-0.207 -1.40	-0.207 -1.35	
	Good faith	-36804*** -3.11	-36804*** -2.82	-0.158*** -2.67	-0.158** -2.38	-0.152** -2.44	-0.152** -2.12	-0.475** -2.02	-0.475** -2.31	
Insurance	Diabetes mandate	-15280* -1.73	-15280* -1.75	-0.0916** -2.08	-0.0916** -2.18	-0.131*** -3.35	-0.131*** -3.64	-0.00775 -0.032	-0.00775 -0.036	
	Mental health parity	-2941 -0.35	-2941 -0.38	-0.0330 -0.79	-0.0330 -0.79	-0.0371 -0.90	-0.0371 -0.89	-0.0967 -0.54	-0.0967 -0.60	
Tort	PL reform	18224** 2.42	18224** 2.66	0.0534 1.58	0.0534 1.61	0.0723** 2.01	0.0723** 2.33	-0.682*** -3.09	-0.682*** -4.43	
	Evidence for punitives	-6395 -0.63	-6395 -0.56	-0.0723 -1.56	-0.0723 -1.52	-0.0841* -1.88	-0.0841* -1.82	0.182 0.89	0.182 0.91	
	Admit CS evidence	-8360 -0.80	-8360 -0.78	-0.0577 -1.14	-0.0577 -1.05	-0.0463 -0.98	-0.0463 -0.93	-0.224 -1.20	-0.224 -1.17	
	Offset CS awards	-2426 -0.21	-2426 -0.21	0.0315 0.60	0.0315 0.58	0.0400 0.78	0.0400 0.76	0.515** 2.44	0.515*** 3.70	
	Non-economic cap	-12368 -1.24	-12368 -1.20	-0.0611 -1.31	-0.0611 -1.20	-0.0443 -0.92	-0.0443 -0.86	0.559*** 3.17	0.559*** 3.33	
	Punitive cap	-5188 -0.59	-5188 -0.60	-0.000308 -0.0071	-0.000308 -0.0070	-0.0227 -0.57	-0.0227 -0.53	0.0142 0.087	0.0142 0.081	
	Observations	434068	434068	434068	434068	423006	423006	430652	430652	
	R-squared	0.52	0.52	0.51	0.51	0.51	0.51	0.67	0.67	

Notes: Dependent variable is owner's subjective valuation of property from the AHS during 1981–1999. All regressions include home features, occupant demographics, MSA and year fixed effects, MSA-specific time trends, and controls for local politics. T-statistics clustered at the level indicated in the third row are reported under coefficients. ***/**/* indicate $p < 0.01/0.05/0.1$.

TABLE 5(A). WEEKLY WAGE REGRESSIONS

Dependent variable		Weekly wage (\$)		Log weekly wage			
Model		Base	Base	Base	Base	Lag 2	Lag 2
	Level of clustering	SMSA	State	SMSA	State	SMSA	State
Auto	Compulsory insurance	-14.75*** -2.65	-14.75*** -4.45	-0.0277*** -2.90	-0.0277*** -2.77	-0.0248*** -2.93	-0.0248*** -2.82
	No-fault	-3.207 -0.47	-3.207 -0.52	0.0184 0.94	0.0184 1.30	0.0205 1.17	0.0205* 1.91
Employment	Implied contract	11.16 1.56	11.16 1.52	0.00709 0.56	0.00709 0.54	0.000181 0.014	0.000181 0.013
	Public policy	-12.91 -1.53	-12.91** -2.08	-0.0181 -0.96	-0.0181 -0.93	-0.0238 -1.50	-0.0238 -1.38
	Good faith	13.25 0.85	13.25 0.75	0.0513 1.48	0.0513 1.29	0.0315 0.91	0.0315 0.77
Insurance	Diabetes mandate	-10.15 -1.29	-10.15 -1.43	-0.0298*** -2.63	-0.0298** -2.35	-0.0193* -1.72	-0.0193 -1.58
	Mental health parity	-10.28 -1.44	-10.28 -1.55	-0.00675 -0.50	-0.00675 -0.49	0.000838 0.067	0.000838 0.068
Tort	PL reform	5.989 0.97	5.989 1.09	0.00858 0.68	0.00858 0.60	0.00384 0.32	0.00384 0.27
	Evidence for punitives	-5.511 -0.71	-5.511 -0.77	-0.0234 -1.63	-0.0234 -1.41	-0.0219* -1.67	-0.0219 -1.40
	Admit CS evidence	-7.696 -0.69	-7.696 -0.79	-0.0210 -0.90	-0.0210 -0.75	-0.0266 -1.07	-0.0266 -0.88
	Offset CS awards	9.052 0.86	9.052 0.94	0.0166 0.87	0.0166 0.65	0.0107 0.57	0.0107 0.40
	Non-economic cap	-5.836 -0.67	-5.836 -0.68	0.00223 0.12	0.00223 0.12	0.0198 1.34	0.0198 1.32
	Punitive cap	-12.07 -1.53	-12.07 -1.49	-0.0217 -1.28	-0.0217 -0.97	-0.0306* -1.92	-0.0306 -1.39
Observations		156310	156310	156310	156310	159485	159485
R-squared		0.49	0.49	0.51	0.51	0.51	0.51

Notes: Dependent variable is wages from the March CPS between 1981 and 1999. All regressions include worker and job characteristics, MSA and year fixed effects, MSA-specific time trends, and controls for local politics. T-statistics clustered at the level indicated in the third row are reported below coefficients. ***/**/* indicate $p < 0.01/0.05/0.1$.

TABLE 5(B). HOURLY WAGE REGRESSIONS

Dependent variable		Weekly wage (\$)		Log hourly wage		Log hourly wage (est.)	
Model		Base	Base	Base	Base	Income	Income
Level of clustering		SMSA	State	SMSA	State	SMSA	State
Auto	Compulsory insurance	-14.75*** -2.65	-14.75*** -4.45	-0.0176*** -2.95	-0.0176*** -2.89	-0.0154** -2.45	-0.0154*** -3.54
	No-fault	-3.207 -0.47	-3.207 -0.52	0.00305 0.18	0.00305 0.24	0.0134 1.19	0.0134 1.22
Employ- ment	Implied contract	11.16 1.56	11.16 1.52	0.00753 0.73	0.00753 0.57	0.0140 1.42	0.0140 1.49
	Public policy	-12.91 -1.53	-12.91** -2.08	-0.0266** -2.10	-0.0266** -2.37	-0.0235* -1.92	-0.0235** -2.27
	Good faith	13.25 0.85	13.25 0.75	0.0579*** 2.60	0.0579** 2.41	0.0267 1.06	0.0267 0.99
Insur- ance	Diabetes mandate	-10.15 -1.29	-10.15 -1.43	-0.00366 -0.42	-0.00366 -0.52	-0.0102 -1.03	-0.0102 -1.04
	Mental health parity	-10.28 -1.44	-10.28 -1.55	-0.0104 -1.10	-0.0104 -1.06	-0.00851 -0.95	-0.00851 -1.00
Tort	PL reform	5.989 0.97	5.989 1.09	0.0255** 2.20	0.0255* 1.77	0.0131 1.28	0.0131 1.42
	Evidence for punitives	-5.511 -0.71	-5.511 -0.77	-0.0182 -1.44	-0.0182 -1.30	-0.0140 -1.16	-0.0140 -1.20
	Admit CS evidence	-7.696 -0.69	-7.696 -0.79	-0.00629 -0.33	-0.00629 -0.28	0.00597 0.32	0.00597 0.32
	Offset CS awards	9.052 0.86	9.052 0.94	-0.00387 -0.21	-0.00387 -0.17	-0.00328 -0.18	-0.00328 -0.17
	Non-economic cap	-5.836 -0.67	-5.836 -0.68	0.00127 0.10	0.00127 0.10	0.00916 0.74	0.00916 0.73
	Punitive cap	-12.07 -1.53	-12.07 -1.49	-0.0204 -1.54	-0.0204 -1.30	-0.0274** -2.10	-0.0274* -1.83
	Observations	156310	156310	98798	98798	148671	148671
	R-squared	0.49	0.49	0.47	0.47	0.48	0.48

Notes: Dependent variable is wages from the March CPS between 1981 and 1999. All regressions include worker and job characteristics, MSA and year fixed effects, MSA-specific time trends, and controls for local politics. T-statistics clustered at the level indicated in the third row are reported below coefficients. ***/**/* indicate $p < 0.01/0.05/0.1$.

Table 6 completes the hedonic picture of the welfare effects of the different laws I examine. The first two columns of estimates replicate the dollar effects of laws on rents and weekly wages, although instead of reporting t-statistics below coefficients, I now report p-values. The last column reports the implied welfare effect, again with p-values below coefficients. Because there are four weeks in a month, the total effect (per month for a full time worker) is the effect on monthly rent minus four times the effect on weekly wage. P-values for the total effect are calculated assuming that the rent and weekly wage effects do not co-vary.¹²⁵ This is likely an underestimate of p-values and thus an overestimate of significance because the economic theory behind the hedonic method assumes that the smaller the reduction in wage, the larger the increase in housing prices given a fixed marginal willingness to pay for a law.

Before turning to the results, it is necessary to comment on the fact that in many instances the sign of the effect of a law on rent is the same as the sign of its effect on wages. In describing the hedonic approach, however, I argue that a good law should increase housing prices and lower wages — oppositely signed effects — as residents move to the jurisdiction with the law, driving up the demand for housing and the supply of labor. Do the same signed results in Table 6 cast doubt on the theory? The short answer is no. All the laws I examine affect the production function of firms. Therefore they may directly affect wages in a manner that is independent of the effect they have on welfare. But migration will account for this. For instance, even if the direct wage effect of a good law is negative, workers may tolerate this because the welfare benefit of the law offsets this loss. Indeed, they may bid down wages further or bid up housing prices if they value the law even more than the direct cost in terms of reduction in wages. An example is mental health parity laws, which increase firms' costs and lower wages. We shall see that workers may tolerate this because this law has beneficial health effects. But the value of health benefits is just about the loss in wages, so home prices are not significantly bid up.

¹²⁵ It is difficult to calculate covariances of the coefficients in the rent and wage regressions. In part this is because the two data sets are already so large. More importantly it is because the units of observation for the two regressions are not the same: households for the rent regression and workers for the wage regression. Thus one cannot be confident that, for example, stacking the two regression equations yields meaningful estimates of covariances of coefficient estimates.

TABLE 6. TOTAL WELFARE EFFECTS

		(1) Rent (\$)	(2) Weekly wage (\$)	(3) Total (\$)
Auto	Compulsory insurance	-22.89 0.02	-14.75 0.01	36.11 0.14
	No-fault	21.24 0.03	-3.207 0.64	34.07 0.24
Employment	Implied contract	-12.32 0.23	11.16 0.12	-56.96 0.06
	Public policy	-42.17 0.00	-12.91 0.13	9.47 0.79
	Good faith	-74.88 0.00	13.25 0.40	-127.88 0.05
Insurance	Diabetes mandate	11.23 0.36	-10.15 0.20	51.83 0.12
	Mental health parity	-3.589 0.74	-10.28 0.15	37.53 0.22
Tort	PL reform	37.79 0.00	5.989 0.33	13.83 0.62
	Evidence for punitives	-22.49 0.09	-5.511 0.48	-0.45 0.99
	Admit CS evidence	-2.441 0.87	-7.696 0.49	28.34 0.55
	Offset CS awards	-0.537 0.97	9.052 0.39	-36.75 0.41
	Non-economic cap	-7.687 0.55	-5.836 0.50	15.66 0.67
	Punitive cap	-24.31 0.10	-12.07 0.13	23.97 0.49
Notes: Total is rent effect - (4 x weekly wage effect). P-values (assuming no correlation between rent and wage effects) are provided below coefficients. Because the theory motivating the hedonic approach predicts a negative correlation between rent and wage effects, and the total effect takes the difference between the rent and wage effects, the reported p-value likely overstates the significance of total effects.				

Table 6 reports two notable results. First, the good faith exception to employment-at-will has a significant, net negative effect of nearly \$128 per month on welfare. Surprisingly, when we account for the significance of the net effect, it is the implied contract exception and not the public policy exception that also has a significant negative effect, of almost \$57 per month. Second, when we loosen our definition of significance to include results that have a 75% chance (as opposed to a 90% chance) of differing from zero, we find that both compulsory automobile insurance and no-fault automobile liability improve the welfare of renters by around \$35 per month and that diabetes mandates and mental health parity laws improve welfare by almost \$52 and \$38 per month, respectively.

These hedonic results are not always consistent with the results from conventional analysis, which are reproduced in Table 7. Alma Cohen and Rajiv Dehejia find that no-fault automobile liability significantly increases fatalities by more than 0.25 per 10,000 population.¹²⁶ I find, however, that the net effect may be positive. The difference could be due to the reduction of administrative costs from fault-based liability schemes. David Autor and colleagues find that the public policy and good faith exceptions to employment-at-will reduce employment, although the results are not significant.¹²⁷ These are consistent with my findings. Jonathan Klick and Thomas Stratmann find that diabetes mandates lead to increased obesity as measured by body-mass index¹²⁸ (BMI) and that mental health parity laws increase alcohol consumption.¹²⁹ They attribute the results, which are significant, to moral hazard.¹³⁰ The hedonic results, in contrast, suggest that these laws have positive welfare effects. In other words, the immediate health benefits may outweigh the moral hazard effects, at least in the eyes of residents. Conventional analysis by Paul Rubin and Joanna Shepherd suggests that product liability reform decreases accidental (non-motor vehicle) deaths by nearly 4%.¹³¹ I find that tort reforms have generally positive effects, but that the effects of specific reforms are never statistically significant.

¹²⁶ Cohen & Dehejia, *supra* note 94, at 378–82 & tbl.7.

¹²⁷ Autor et al., *supra* note 14, at 216–19 & tbls.1–2.

¹²⁸ Klick & Stratmann, *Diabetes*, *supra* note 110, at 14–22 & tbls.3–6.

¹²⁹ Klick & Stratmann, *Subsidizing Addiction*, *supra* note 49, at 180–94 & tbls.2–4.

¹³⁰ *Id.* at 177–78, 180–82, 194; Klick & Stratmann, *Diabetes*, *supra* note 110, at 6–11, 22–23.

¹³¹ Rubin & Shepherd, *supra* note 7, at 227–35 & tbls.3–4.

TABLE 7. RESULTS OF THE CONVENTIONAL APPROACH

Outcome		(1)		(2)	(3)	(4)	(5)	(6)	(7)
		Fatalities	Fatalities	Employ- ment	Hourly wage	BMI	Alcohol consump- tion	Accidental non-motor vehicle deaths	
Units		per 10,000	per 10,000	100 x log (employment / pop.)	100 x log (hourly wage)		Gallons per capita	Log per capita	
Auto	Compulsory insurance	-0.013 -0.282							
	No-fault		0.258 3.613						
Employ- ment	Implied contract			-1.440 -3.200	0.490 0.681				
	Public policy			-0.100 -0.217	-0.250 -0.431				
	Good faith			-0.730 -1.177	-0.010 -0.006				
Insur- ance	Diabetes mandate					0.401 3.085			
	Mental health parity						0.025 2.500		
Tort	PL reform							-0.039 -3.545	
	Evidence for punitives							-0.026 -2.889	
	Admit CS evidence							0.024 1.846	
	Offset CS awards							0.046 3.538	
	Non-economic cap							-0.036 -2.769	
	Punitive cap							-0.005 -0.455	
Source		Cohen & Dehejia 2004	Cohen & Dehejia 2004	Autor et al. 2005	Autor et al. 2005	Klick & Stratmann 2005	Klick & Stratmann 2003	Rubin & Shepherd 2007	
Table (col.)		6 (6)	7 (6)	2 (A:4)	2 (B:4)	5	4(iii)	3	

This finally returns us to the question of whether the hedonic results are implausibly large. The estimated welfare effect of, for example, the good faith exception to employment-at-will is too high to be believable. (Even the other notable effects are not minor, ranging from roughly -\$648 per year for the implied contract exception to employment-at-will to \$408 per year for no-fault automobile liability.) Part of the concern is that the empirical model in equation (1) may be misspecified so that my estimates are due to spurious correlation. Misspecification may be due to functional form, estimation method, or omitted variables. However, the functional form and estimation methods I employ are fairly standard in hedonic analysis of environmental amenities such as lakes. Moreover, the richness of the data from the American Housing Survey and the Current Population Survey permits me to employ a large number of controls for the quality of housing units, the demographics of both residents and workers, and features of a job. The nature of the data also permits inclusion of not just city (actually, metropolitan statistical area, or MSA) and year-fixed effects, but also city-specific time trends. Each of these helps mop up the effects of omitted variables. Perhaps the worry is that it is not the laws examined that affect rents and wages, but rather the political culture that generates the laws. However, the regressions include controls for the political party in control of each state's legislature and its delegates to Congress. Moreover, I estimate the effects of multiple laws on housing prices and wages at the same time. Each law controls for political culture for every other law, spreading out or diluting cultural effects over multiple laws. Therefore, I think it is unlikely that the problem is misspecification.

The other possible concern is that the significant results are due to chance: if one does a regression on 100 variables unrelated to housing prices or wages, one can expect to find at least five of the coefficients are statistically significant at the 95% confidence level. Yet, I doubt chance is an explanation for the large coefficients on the good faith exception because the coefficient is significant across multiple specifications and in both rent and wage regressions. The only conclusion left is that good faith laws simply have larger than expected effects on welfare. If nothing else, this addresses the original worry that there is too much noise in the housing and wage data to find significant effects of laws.

IV. CONCLUSION

This Article proposes employing the hedonic method used to value such local amenities as lakes and schools to value the local welfare effects of laws. As with lakes and schools, a person has to live "near" a law — that is, in the jurisdiction to which a law applies — to enjoy the law. Therefore, like lakes and schools, laws are local public goods

and should be valued as such. The primary insight of this Article is not the idea of using hedonic analysis to value a local amenity, but rather the idea that laws are simply local amenities. Together this insight and the literature on hedonic valuation suggest the thesis of this paper.

Although they are not strictly relevant to comparing the hedonic and conventional approaches, there are two lessons from the hedonic approach that warrant discussion. These lessons do not concern any particular law to which the approach is applied, but rather our understanding of the general welfare effects of all laws. First, the logic behind hedonic pricing of local amenities suggests that laws have two unintended distributive effects. One is that it is not preexisting residents of a state that enjoy a law, but instead the residents that live there after the law is enacted. The two sets of residents are not likely to be the same when people move to laws they like and flee laws they do not. Thus, one should not expect a law to benefit a fixed group of people, but rather a geographic area. The other — and more interesting — unintended distributive effect is that part of the welfare benefits of a law always accrue to current property holders in a state. The reason is that the value of their property has risen and, even if they do not enjoy the law, they can enjoy the proceeds from selling the property to another person. (This is true even when the law seeks to avoid redistributing wealth to the rich.) One cannot help but sound a bit Marxist when drawing this conclusion. But it is correct: property owners are residual claimants of good laws. For those who prefer not to favor property owners, a solace is that these residual claimants do not only benefit when laws are good, but they also suffer when laws are bad.

The second benefit of hedonic analysis is perhaps a bit more upbeat. Because people are free to move between jurisdictions, laws have more positive or less negative effects than one might expect. Good laws have more positive effects when people who like a law can move to it and bad laws have less negative effects when people who dislike a law can move away from it. This is not true, of course, when a law seeks to redistribute wealth or to regulate a preexisting group of residents, because the disadvantaged residents will flee the jurisdiction. But this movement will make other laws better than static welfare analysis might suggest.