

# **The Economic Effects of California Adopting a Split Roll Property Tax**

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## TABLE OF CONTENTS

Executive Summary .....	vii
I. Introduction .....	1
I.1. Purpose of the Report.....	1
I.2. Methodology.....	2
I.3. Organization of the Report .....	3
II. Overview of the Property Tax .....	4
II.1. The Property Tax Base.....	5
II.2. Impact of Proposition 13 on California’s Property Tax.....	5
II.3. California’s Other Property Tax .....	6
III. Taxation of Property in California .....	8
IV. Split-Roll Proposals .....	11
V. Economic Effects .....	13
V.1. Do Taxes Matter? .....	13
V.2. To What Extent Do Taxes Matter?.....	15
V.3. Expected Economic Impact of an Increase in Property Taxes.....	16
V.3.a. Impact on Land Owners .....	16
V.3.b. Impact on Capital Owners .....	17
V.3.c. Impact on the Economy .....	17
V.4. Empirical Estimates of Decreases in Business Activity.....	20
V.4.a. Dynamic vs. static estimates .....	21
V.4.b. The Dynamic Revenue Analysis Model (DRAM) .....	22
V.4.c. Quantitative Results .....	23
V.4.d. Impact on Small and Minority-Owned Businesses.....	25
V.4.d.a. Small Businesses in California.....	25
V.4.d.b. Minority-Owned Businesses in California.....	27
VI. Conclusion.....	29
Appendix A.....	30
Appendix B.....	33
Appendix C	36
Appendix D.....	37
Appendix E	42

## EXECUTIVE SUMMARY

The California Constitution governs the taxation of property within the State. The Constitution does not distinguish between residential property (where Californians live) and commercial property (where Californians work). The same property tax *rate* applies to both types of property, and the same rules are used to determine the *value* of property for tax purposes. Thus, the current system does not prevent the market from allocating land to its highest and best use.

From time to time, various individuals and groups have proposed abandoning the Proposition 13 protections for commercial property and amending the California Constitution so that commercial property can be taxed more heavily than owner-occupied residential property. Differential treatment of property in this manner is commonly referred to as a “split-roll.”

Has Proposition 13 shifted the property tax burden from commercial property to owner-occupied residential property? Many supporters of a split roll claim that it has. The evidence, however, shows that the reverse has happened. Using data obtained from the California Board of Equalization, we calculated the disparity between assessed value and market value for two classes of property: owner-occupied residential, and commercial/industrial. We found that the assessed-value-to-market-value ratio for owner-occupied residential property in the 2006-2007 roll was 53 percent, while the ratio for commercial and industrial property was nearly 60 percent. In other words, commercial and industrial property is being assessed for tax purposes at values that are closer to market values than is the case for owner-occupied residential property.

**Clearly, California’s current property tax system has not shifted the property tax burden from businesses to homeowners.**

To determine the economic impact of adopting a split-roll property tax, one must explicitly take account of how the split roll would affect the behavior of individuals and businesses who own commercial property. A wealth of economics research has demonstrated that, when confronted with an increase in state taxes, businesses seek to avoid their exposure to the higher tax. Taken together, these studies indicate that a 1 percent increase in state taxes will lead to a 0.25-0.31 percent reduction in the level of economic activity. If the reduction leads to a

corresponding decrease in employment opportunities for Californians, a 1 percent increase in taxes would result in the loss of about 43,000 jobs.

The economic impact of an increase in the taxation of business property depends on the extent to which affected businesses can pass-on the tax to their customers (through higher prices), renters (through higher rents), their employees (through lower wages), or their suppliers. If a firm cannot pass-on the tax to others, it may change its mode of operations to use less taxable property (capital goods, for example) or relocate its operations to other states. Either way, much (but not all) of the burden of higher taxes will be borne by others. Generally speaking, owners of capital are more likely than landowners to avoid the increased tax burden by shifting their investments elsewhere. Capital is highly mobile; land is very immobile, and cannot be relocated to locations with a more benign tax system.

If California voters choose to amend the State Constitution in order to relax or eliminate the limits on taxation of commercial property established by Proposition 13, widely accepted economics principles hold that the increase in taxes will have seven primary effects.

1. **More development.** Owners of undeveloped land will be more likely to develop the land, since the carrying costs of holding land as open space will go up.
2. **Increased fiscal zoning.** Localities will have a stronger fiscal incentive to favor the use of land for commercial purposes, rather than for homeownership opportunities, because they will be able to derive more revenue from this type of development.
3. **Higher rents paid by families and small businesses.** A significant portion of the increase in property taxes will be shifted to renters. In some cases, the shift will occur automatically, under the terms of “triple net leases.” In other cases, the shift will be made possible by the fact that rent levels are below market levels, as is the case for apartments subject to rent controls. In still other cases, the reluctance of landlords to raise rents because they fear losing good tenants to neighboring apartment buildings will weaken, since all apartment owners will be subject to the same increase in costs.

The burden of higher rents will tend to fall most heavily on lower-income Californians, because they are more likely to occupy rental property. (According to



the U.S. Census Bureau, the median household income of California renters was less than half the median income of homeowners.) The burden of higher rents will be felt disproportionately by small businesses, including many minority-owned businesses, because these businesses tend to rent the space their business occupies. For a small business that has owned property for many years, the increase in tax liability resulting from adoption of a split roll could be large enough to cause the business to fail or lose its property.

- 4. Reduced investment/fewer jobs.** Where it is not possible to fully shift the increased tax burden to tenants, the split-roll would reduce the after-tax returns from investment, causing a reduction in the volume of investment in rental housing and business plant and equipment within California. Less investment means fewer jobs. In the longer run, capital – and, hence, labor – will look for better opportunities outside California by migrating.
- 5. Reduced wages.** A shift in the tax burden to firms that continue to conduct business in California will reduce the after-tax productivity of labor. The after-tax productivity of labor will be further reduced because workers have less capital. Since wages are based on labor productivity, wages will fall, and workers' ability to maintain purchases of other goods and service, will drop accordingly.
- 6. Increased consumer prices.** Since the prices that businesses charge customers must cover their costs (including the costs of capital), the increase in property taxes ultimately will bring about higher consumer prices to the extent the increase is not passed-on to renters and consumers.
- 7. Decline in the value of financial assets held by public retirement funds.** Where it is not possible to fully shift the increased tax burden to tenants, employees, and consumers, the market value of commercial property will decline, and with it, the value of financial assets, such as common stocks, that are based in part on the value of real assets.

The decline in asset values is especially important in the case of CalPERS and CalSTRS – two large public retirement funds that provide retirement benefits to former government employees and teachers in California. These funds have

significant holdings of California real estate. The value of this real estate will be reduced by the capitalized value of the increased property taxes.

We have quantified some of the effects likely to result from adoption of a split-roll property tax regime, using a computable model of the California economy. This model, commonly referred to as the DRAM (for Dynamic Revenue Analysis Model), was developed jointly by the California Department of Finance and the University of California at Berkeley to capture the behavioral changes that result from changes in tax policy. Our estimates are based on several key assumptions:

- ❑ Adoption of a split-roll property tax regime would raise the assessed value of all property, other than owner-occupied residential property, to the property's market value.
- ❑ The 1 percent ceiling on the statewide property tax rate established by Proposition 13 would remain in effect.
- ❑ The net revenue generated by the relaxation of Proposition 13's limits on assessed values will reduce the amount that the State borrows to close the structural deficit in the General Fund.

With these assumptions, the DRAM estimates that adoption of a split roll property tax regime would result in the loss of 86,000-152,400 jobs.

The DRAM does not permit us to quantify the impact of a split roll on small businesses. Nevertheless, we can safely predict that this group of businesses will suffer disproportionately from the increase in property taxes. Small businesses, particularly those owned by minorities, are especially vulnerable to adverse changes in their economic circumstances. They tend to serve local, rather than regional or national markets, and are generally less able to escape an increase in the tax burden by relocating their operations to other states. In addition, many small businesses have relatively low profit margins that are easily eroded by economic adversity. In fact, businesses with fewer than 20 employees account for 95 percent of business failures.

Minority-owned businesses are even more vulnerable to economic adversity because empirical research indicates that these businesses have more difficulty obtaining credit to finance their operations.

## **I. INTRODUCTION**

The property tax is an important source of revenue for governments in California. For cities and counties, it is the primary revenue source, financing 69 percent of their expenditures.<sup>1</sup> For the state, property tax revenues allocated to school districts reduce the amounts from the General Fund needed to support K-14 education.

The properties subject to taxation in California include residential property (homes and apartments) where State residents live, as well as commercial and industrial property where Californians work. Under the California Constitution, both owner-occupied residential property and commercial property are taxed according to the same rules. Specifically, the same property tax *rate* is applied to both types of property, and the same rules are used to determine the *value* of property for tax purposes.

From time to time, various individuals and groups have proposed that the California Constitution be amended so that commercial property can be taxed more heavily than owner-occupied residential property. Differential treatment of property in this manner is commonly referred to as a “split-roll” (also known as a classified property tax).

### **I.1.PURPOSE OF THE REPORT**

At the request of Californians Against Higher Property Taxes, the authors analyzed the likely economic effects if California adopted a split-roll and raised taxes on commercial property. The purpose of our analysis is not to take sides on the question of a split-roll, but to assist interested parties determine how adoption of a split-roll property tax would affect the State’s economy. The specific research questions that our study was intended to answer are:

- How would adoption of a split-roll affect the number of jobs and personal income generated by the California economy?
- How would a split-roll affect employees, consumers, and renters?

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<sup>1</sup> California Legislative Analyst’s Office. 2007. *California’s Tax System: A Primer*. 2005-2006 estimate.

- How would a split-roll affect small businesses in California?
- To what extent would a split-roll have a disproportionate impact on racial minorities?
- How would a split-roll affect the fair market value of the assets held by public retirement funds in California, on which millions of Californians depend for retirement benefits?

In agreeing to prepare this study, the authors insisted on, and were given, complete control over the both the study methodology and the report's contents. Hence, this report is the product of independent and objective analysis, and its conclusions do not necessarily reflect the views of either Californians Against Higher Property Taxes or LECG, LLC.

## **1.2.METHODOLOGY**

When estimating the likely impact of a change in tax policy, it is essential that economists look beyond the initial, or *static*, effect of the change. Changes in tax systems, including modifications to the tax rate or the tax base, invariably lead individuals and firms to change their behavior, and these behavioral changes, collectively, can have a dramatic impact on the economy, jobs, and income. Consequently, *dynamic* models capable of capturing the effect of these behavioral changes must be used to estimate the economic effects of the change in tax policy.

In preparing this report, the authors used the Dynamic Revenue Analysis Model (DRAM) to estimate the effects of a split-roll property tax regime on the California economy. We used this model because it was developed jointly by the California Department of Finance and the University of California expressly for the purpose of estimating the dynamic effects of changes in State policy. The data required by the model were obtained from a variety of publicly available sources; these sources are identified in the report, in accordance with scholarly procedures.

### **I.3. ORGANIZATION OF THE REPORT**

The balance of this report is divided into six parts, as follows:

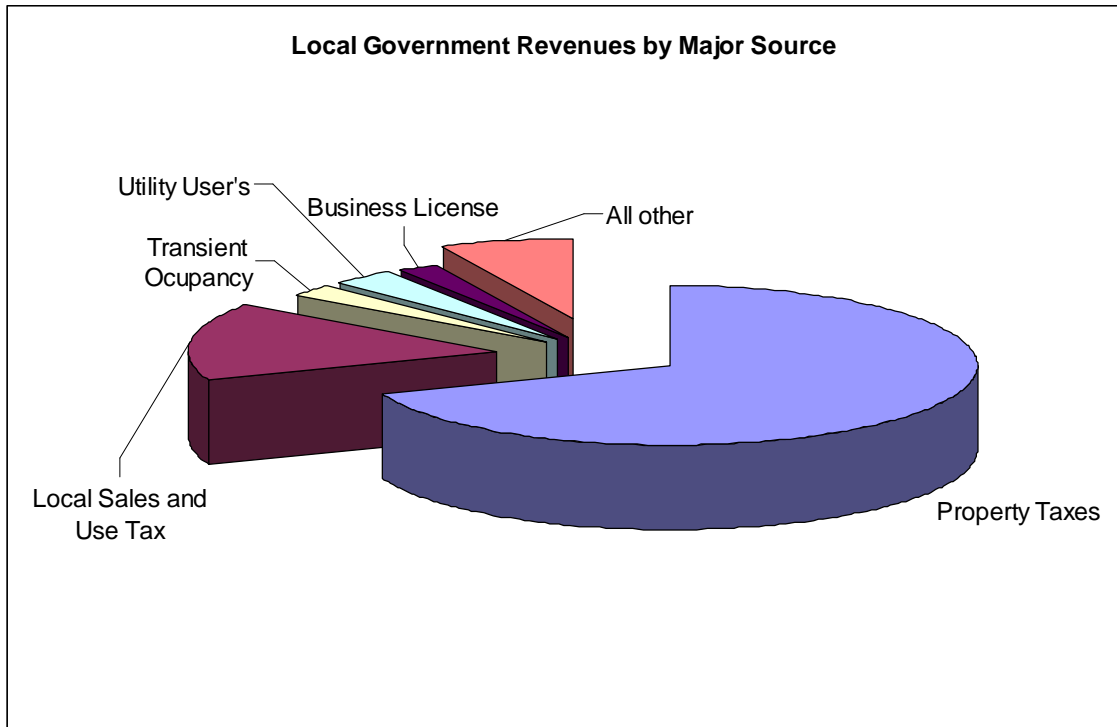
- **Part II** describes the California Property Tax system.
- **Part III** shows how the California Property Tax system taxes different categories of property relative to their estimated market values.
- **Part IV** provides a brief history of attempts to impose a split-roll property tax system in California, and describes the variant of the split-roll proposal that we have analyzed for this report.
- **Part V** examines the likely economic effects of adopting a split-roll property tax system, and provides quantitative estimates of its impact on California's economy.
- **Part VI** summarizes our findings and conclusions.

## II. OVERVIEW OF THE PROPERTY TAX

The property tax is the largest source of revenue for California's local governments. In 2006, it raised \$43.2 billion – nearly equal to the combined amount that the state and local governments raised through sales taxes, use taxes, and fees (\$45.1 billion).<sup>2</sup>

Figure 1 illustrates the tax's importance in financing programs at the local level.

**Figure 1. Local government revenue sources**



Source: California's Tax System: A Primer, LAO, 2007

<sup>2</sup> California Board of Equalization. *2006-2007 Annual Report*.

## II.1. THE PROPERTY TAX BASE

The property tax is levied on homes, apartment buildings, commercial and industrial property, agricultural lands, timberland, open space, vacant land, and certain classes of personal property. The tax is assessed on the value of land, buildings, fixtures, and mineral rights, as well as on equipment, machinery, and aircrafts. Certain types of property are exempt from the tax, such as property owned by governments or charities, household personal property, automobiles,<sup>3</sup> securities, and business inventories. Most property subject to the tax is assessed locally by county assessors, although some property, such as certain property owned by railroads and utilities, is assessed by the State.

As noted in the Introduction, the California property tax does not distinguish between property used to house owners, apartment buildings rented to tenants, and commercial property where the most jobs are located. All property is subject to the same rules regarding the maximum assessed value and the maximum tax rate, regardless of whether the property offers shelter or employment opportunities.

## II.2. IMPACT OF PROPOSITION 13 ON CALIFORNIA'S PROPERTY TAX

Prior to voter approval of Proposition 13 in 1978,<sup>4</sup> taxable property in California was assessed at its *market value*.<sup>5</sup> Tax rates, however, were locally determined and varied from jurisdiction to jurisdiction.

Proposition 13 amended the California Constitution to make two important changes to the State's property tax system.<sup>6</sup>

- First, it limited the percentage increase in the assessed value of taxable property. As amended, the Constitution limits the *maximum* annual increase in a property's

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<sup>3</sup> Motor vehicles are subject to the Vehicle License Fee, which is a type of property tax.

<sup>4</sup> Proposition 13 added Article XIII A to the California Constitution.

<sup>5</sup> For most other property (locally assessed personal property or state assessed real property), the assessment practice continues to be based on market value.

<sup>6</sup> Proposition 13 also amended the State Constitution to require that certain tax increases receive at least a two-thirds vote before they can take effect.

assessed value to two percent, unless the property has changed hands since the last assessment.<sup>7</sup> In effect, Proposition 13 shifted the property tax system from one based upon current market values to one based on the property's acquisition price (*i.e.*, the market value of the property when it was acquired by the current owner).

- Second, it limited the maximum property tax rate in all jurisdictions to one percent, plus an additional 0.25 percentage points to repay voter-approved bonded indebtedness. For 2005-2006, the average statewide property tax rate was 1.098 percent; the highest rate was 1.159 percent, imposed by the County of Alameda.

In response to voter approval of Proposition 13, the Legislature set the base property tax rate in all jurisdictions at the Constitutional maximum of one 1 percent. It also specified how revenues from the property tax are allocated among local agencies, thereby removing from local governments nearly all discretion regarding the tax. In effect, the property tax was transformed from a local tax to a state tax, with the proceeds remitted to localities and schools.

### **II.3. CALIFORNIA'S OTHER PROPERTY TAX**

It is important to take note of California's "other property tax," to which certain business property is subject.

The State taxes corporate income through the Corporation Tax (CT) – the General Fund's third largest revenue source. This tax generated \$11.2 billion in the 2006-07 fiscal year, or 9.1 percent of total state receipts.<sup>8</sup> Corporations conducting business in both California and at least one other state or country are required to *apportion* their worldwide income between California and the other taxing jurisdiction(s), based on their relative presence in California. According to the Franchise Tax Board (FTB), 51,252 corporations doing business in California were required

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<sup>7</sup> Technically, the two percent annual limit applies in relation to the base year, not to any given year. For example, if the county assessor held the assessed value of a property at its original purchase price for 9 years, the assessor could increase the assessed value in the following year by 22 percent (*i.e.*,  $1.02^{10} - 1$ ) without violating Proposition 13.

<sup>8</sup> California State Controller's Office. 2007. *State Government Annual Financial Report*.



to apportion their income to California because they maintained a business presence outside the State.<sup>9</sup> These corporations accounted for 72% of the net income reported by CT filers.

Three factors are used to determine a multi-state corporation's relative presence: sales in California as a percentage of the corporation's total sales; the corporation's California payroll as a percentage of its total payroll; and the corporation's property in California as a percentage of its total property.<sup>10</sup> Because one of the three factors used to apportion a multi-state corporation's income to California for tax purposes is "property", multi-state and multi-national corporations are, in effect, subject to a second property tax. Other things being equal, as the value of a multi-state corporation's property in California increases, its liability under the Corporation Tax increases – just as its property tax liability increases.<sup>11</sup>

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<sup>9</sup> California Franchise Tax Board, *Annual Report*, 2006.

<sup>10</sup> In the apportionment formula, the sales factor is assigned a 50 percent weight, while the payroll and property factors are each give a 25 percent weight.

<sup>11</sup> Appendix A discusses the interaction of California's property tax with the Corporation tax, as well as with the federal corporate income tax.

### III. TAXATION OF PROPERTY IN CALIFORNIA

The switch to an acquisition value-based property tax system brought about by Proposition 13 weakened the link between a property's current market value and its assessed value. Because properties change ownership at different rates, some properties (*i.e.*, properties that recently change ownership) are assessed at higher percentages of their market values than identical properties that have not changed hands. One report estimates that in the fourth quarter of 2001, the median sales year for all residential property was 1994, while the median sales year for all commercial property was 1993.<sup>12</sup>

Some proponents of a split-roll cite this feature of the California property tax system as a reason to tax business property at a higher effective rate than owner-occupied residential property. They maintain that, because business property does not turnover as frequently as owner-occupied property, the gap between the assessed and market values of business properties is greater than the corresponding gap for owner-occupied residential property. As a result, split-roll proponents argue that the property tax burden has gradually shifted from businesses to homeowners.

We tested this hypothesis by calculating the *disparity ratio* for owner-occupied residential property and comparing it to the corresponding ratio for commercial and industrial property. The disparity ratio measures the percent deviation of a property's assessed value from its market value.

Data on assessed values can be obtained for certain classes of property from the California State Board of Equalization (BOE). The BOE publishes data for the following types of property:

- ❑ Single-family residential units occupied by owners claiming the homeowners' exemptions;
- ❑ Qualifying properties that claim the veterans' exemption;

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<sup>12</sup> Gordon, Tracy and Fred Silva. 2003. "Understanding California's Property Tax Roll: Regions, Property Types, and Sale Years." Manuscript, Public Policy Institute of California. The data on sales year covers only California's "urban regions."

- ❑ Commercial and industrial property; and
- ❑ Properties that are exempted from the property tax, such as property owned by non-profits, colleges, and schools.<sup>13</sup>

Unfortunately, the BOE does not report values for small rental units<sup>14</sup> and second homes.

The BOE also reports market values for the state’s commercial and industrial property.<sup>15</sup> It does not report market values for any owner-occupied property. To estimate these values, we multiplied the number of properties claiming the homeowners’ and veterans’ exemptions by the *median* housing price reported by the U.S. Census Bureau for 2006 (the most recent year available).

As expected, the assessed values for both owner-occupied residential property and commercial/industrial property deviate substantially from their respective market values. The disparity ratios for these categories are shown in Table 1.

**Table 1. Disparity ratios by property type**

Property Type	Assessed Value <sup>b</sup> (\$M)	Percent of Assessed Value	Market Value (\$M)	Disparity Ratio
Homeowners' exemption	\$1,559,370	38.3%	\$2,930,877	53.2%
Veterans' exemption	\$2,303	0.1%	\$13,532	17.0%
Non-exempt residential <sup>a</sup>	\$858,564	21.1%	N/A	N/A
Commercial/industrial	\$1,349,662	33.1%	\$2,251,541	59.9%
Nonprofit/other exempt	\$99,532	2.4%	N/A	N/A
Other	\$203,654	5.0%	N/A	N/A
<b>Total</b>	<b>\$4,073,086</b>			

<sup>a</sup> This category includes rental property and vacation homes.

<sup>b</sup> California State Board of Equalization. Data obtained via personal communications.

<sup>13</sup> Government buildings are wholly exempt; they are not assessed and are not included on the property tax roll.

<sup>14</sup> Rental properties with more than four units fall into the commercial/industrial category.

<sup>15</sup> The BOE calculates the market value of commercial properties based upon the increase over assessed value of properties that are sold in a given year, by county. This ratio is then applied to the assessed values of all commercial properties in the county and aggregated to the state level.

As the table shows, contrary to the contention of split-roll proponents, the assessed values of commercial and industrial properties are closer to the properties' market values than is the case for owner-occupied residential homes. Using our methodology, we find that the disparity ratio for owner-occupants (residential) other than veterans is 53.2 percent, while the ratio for commercial and industrial property is nearly 60 percent. Thus, the evidence does not provide support for the hypothesis that Proposition 13 has caused a shift in the property tax burden.

The disparity ratios shown in Table 1 for owner-occupied residential property almost certainly exceed the true ratios. In calculating the ratio, we used the *median* home price to estimate the market value of property in this category. It is likely, however, that the average (*mean*) home price significantly exceeds the median, since the distribution of home prices is skewed toward the high end of the price range.<sup>16</sup> Consequently, Table 1 understates the extent to which the unified property tax roll has benefited homeowners.

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<sup>16</sup> For some purposes, it is appropriate to use the median, rather than the mean, in making comparisons and drawing conclusions. In this case, however, the mean is the value that should be used, because the disparity ratio calculated for commercial and industrial property, in effect, is based on the mean market value of property in this category.

## **IV. SPLIT-ROLL PROPOSALS**

During the past three decades, numerous proposals have been offered to replace California's current single- or unified-roll property tax system with a split-roll system. Instead of treating all properties in the same way for tax purposes, regardless of whether the property is used for shelter or to provide jobs, split-roll advocates want to tax commercial property more heavily than owner-occupied residential property. While the details of these proposals differ, their common feature is that, if enacted, a large share of California property would no longer benefit from the limitations on the property tax burden established by voters when they approved Proposition 13.

Among recent proposals to adopt a split-roll regime in California, one – Proposition 167 – made it to the ballot. In 1992, this measure garnered 41 percent of the vote, with 59 percent of the voters rejecting it.

In 2003, Assemblywoman Lori Hancock, who represents part of Alameda and Contra Costa counties, offered a split-roll tax proposal that was designated ACA 16 which would have required county assessors to reassess non-residential, non-agricultural property annually. The Legislature, however, declined to send the measure to the ballot.

In 2004, the California Teachers' Association and actor-director Rob Reiner joined forces to champion a proposal that would have increased the property tax rate on non-residential property to 1.5%. Though the signature-gathering process for this initiative was completed, the sponsors abandoned the measure before it could be qualified for the ballot.

During the following year, five split-roll proposals were offered. Sponsors of the so-called Tax Fairness Act of 2005 argued that the burden of property taxes had shifted from owners of commercial and industrial property to homeowners,<sup>17</sup> and proposed that the assessed value of non-residential property not used in commercial agricultural production periodically be brought to the property's market value. Under the Act, residential property would be defined to include single-family and multi-family units intended for permanent residence. In addition, the

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<sup>17</sup> As demonstrated in Part III, this claim is not supported by the evidence.

Act would have exempted from taxation the first \$500,000 in assessed value, for all taxpayers. Two other, similar to the Act were considered in 2005 as well.<sup>18</sup>

Another proposal offered in 2005 sought to increase the tax rate on commercial, non-residential property by 0.3-0.5 percentage points. Yet another proposal called for increasing the maximum tax rate for non-residential property to three percent, with the actual rate set by each county, provided that the rate was not set at a level below 2 percent. Additionally, this proposal would have eliminated the 1 percent tax rate ceiling for residential property values exceeding \$1 million.

All of these 2005 measures were dropped without being presented to the voters.

In this report, we consider the economic effect likely to result from adopting a split-roll property tax regime with the following features:

- The Proposition 13 limits on assessed value would be removed for all property other than owner-occupied residential property.
- Property *other than* owner-occupied residential would be assessed annually at its current market value.
- The 1 percent limit<sup>19</sup> on the statewide tax rate would remain in effect for all property.

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<sup>18</sup> California Board of Equalization. 2008. *Staff Legislative Bill Analysis: AB 2461 (Davis)*.

<sup>19</sup> Plus the additional 0.25 percentage points to repay voter-approved bonded indebtedness.

## V. ECONOMIC EFFECTS

In this part, we discuss the economic consequences of adopting a split-roll property tax regime instead of California's current unified roll approach. We begin by drawing on widely accepted principles of economics to predict the likely effects of establishing a split-roll on property values, investment, wages and employment, the price of goods and services, and rents. We then use a computable general equilibrium model to quantify some of these economic effects.

To understand how the introduction of a split-roll tax regime would affect the California economy and those who depend on it for employment and income, one must first understand (a) how taxes influence business decision-making, and (b) how an increase in business property tax liabilities will affect firms' and individuals' behavior.

In brief, adoption of a split-roll regime would make the use of land and capital by businesses more expensive, while weakening their financial condition. As we shall see, these consequences manifest themselves in several ways.

### V.1. DO TAXES MATTER?

When a business makes a decision to build a new plant, relocate an existing facility, or expand production at an existing facility, it considers numerous factors. These factors can be grouped into four categories:

- **Market factors.** The first and most important group of factors that influence business location decisions pertains to the economics of the business itself. This group of factors includes, among others, the price and availability of labor, proximity to suppliers, proximity to customers, access to reliable transportation, the price and availability of energy, and the cost of business insurance (*e.g.*, workers' compensation insurance).
- **Environmental factors.** A firm's ability to attract and retain key executives and other workers depends, in part, on the relative attractiveness of the environment in which the employees must live. Housing prices, the quality of elementary and secondary schools,

the availability of public services, and even the area's climate can influence business location decisions when financial considerations have not pre-determined the outcome.

- **Intangible factors.** A third group of factors that may affect the location of business facilities is more difficult to quantify because it encompasses intangible considerations. For example, decision-makers may take into account the "business climate" in an area where they are considering locating, expanding, or contracting facilities. Among the factors that influence a decision-maker's perception of the business climate are the responsiveness of regulatory bodies to the firm's need for prompt (and favorable) decisions and the firm's vulnerability to what it may consider to be meritless lawsuits.
- **Tax factors.** Businesses seek to maximize their *after-tax* income, since this is the income available for distribution to owners. Hence, firms will evaluate the relative burden of state and local taxes when making decisions about business location.

The fact that all of these factors can influence business decisions does not mean that each individual factor will be crucial in all – or even most – cases when a firm is deciding where to locate, expand, or contract its operations. Market conditions will determine where most investments are made. The favorable tax policies that a state adopts will not, by themselves, cause a firm to locate a new plant in an area where skilled labor is unavailable, transportation networks are unsatisfactory, or energy supplies are uncertain.

Often, however, market considerations will not predetermine the location of the firm's operations, enabling the decision-maker to compare alternative locations based on other factors. In these cases, a state's relative tax burden may be the consideration that determines where the firm makes its investment or increases its payroll. In sum, the fact that some determinants of business location are more important than relative tax burdens does not make state tax policies unimportant in influencing business investment.

In a world where all states had the same property tax regime, a change in either the tax rate or the tax base would not effect business location decisions within the United States (although it might cause some firms to relocate offshore). Confronted with such uniformity, a firm could not reduce its tax bill by shifting operations or new investment from one state to another. In reality, however, tax rates vary across the country. As a result, differential tax



regimes can influence where a firm chooses to expand employment or invest in new plants and equipment. By shifting all or a part of its operations from a high-tax state to a lower-tax state, the firm can reduce its total tax liability, thereby increasing its after-tax profits.

If California adopted a split-roll property tax regime, the State would continue to retain some of the advantages that make it an attractive location for business investment, including close proximity to a large consumer market, a skilled workforce, world-class universities, and an attractive climate. Nevertheless, the lower after-tax returns available on investments within the State as a result of the increase in property taxes would tip the balance for some businesses, causing them to shift investment away from California. Firms make investments and hiring decisions at the margin, by comparing the expected benefit of each investment opportunity with the expected costs. Since adoption of a split-roll would increase costs without increasing expected benefits,<sup>20</sup> some opportunities will no longer be economically attractive and will not be pursued.

## **V.2. TO WHAT EXTENT DO TAXES MATTER?**

Economists have published numerous econometric studies exploring the relationship between state taxes and economic development, as measured by investment or employment. Three economists – Bartik<sup>21</sup> and Phillips and Goss<sup>22</sup> – analyzed the results of these studies using Meta-Regression Analysis (“MRA”). These analyses document the emerging consensus among economists that state tax policies have a significant impact on economic development at the state and local levels.

Bartik defined the tax elasticity of economic activity as the percentage change in local business activity caused by a one percent change in state taxes. He estimated this tax elasticity to have a mean of negative 0.25 percent. Phillips and Goss reported consistent findings; they

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<sup>20</sup> If the increase in tax burden causes the State to spend more public money of programs important to the economic success of an individual business, an increase in taxes may increase expected benefits.

<sup>21</sup> Bartik, T. J., “Who Benefits from State and Local Economic Development Policies?” W.E. Upjohn Institute for Employment Research, Kalamazoo, MI1991.

<sup>22</sup> Phillips, Joseph M. and Goss, Ernest P., “The effect of state and local taxes on economic development: A meta-analysis,” *Southern Economic Journal*, Oct 1995, 62(2): 320-333.

estimated the mean to be negative 0.32 percent. These findings imply that, if the local tax rate is increased by 1 percent from its current level, and if the reduction in economic activity takes the form of fewer jobs, employment in the state will fall by 0.25-0.32 percent. (Today, a .25 percent reduction in California employment would mean the loss of approximately 42,900 new jobs.)

### **V.3. EXPECTED ECONOMIC IMPACT OF AN INCREASE IN PROPERTY TAXES**

A split-roll property tax regime, by design, initially would increase the tax burden on commercial, industrial and non-owner occupied residential property. Generally, the increase will affect property owners in two ways that have economic significance:

- ❑ First, higher property taxes will make the use of land and capital more expensive for businesses in California.
- ❑ Second, if the property owner is not able to pass along the increased tax burden to renters, consumers, and/or employees, the owner's financial condition will weaken.

How property owners and investors respond to these changes will determine the long-run economic impact of a split-roll property tax regime on jobs, income, and investment in California.

#### **V.3.a. IMPACT ON LAND OWNERS**

In a perfectly competitive market, a land owner will not be able to escape the effect of higher property taxes on his land. Because land is immobile, the owner cannot relocate his property to a jurisdiction with a more favorable tax regime. Nor can the land owner shift the tax burden to consumers or labor under most circumstances.<sup>23</sup>

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<sup>23</sup> Some land owners will be able to shift the increased tax burden to renters. For example, many leases require the tenant to pay certain costs associated with land ownership, such as maintenance, insurance, and taxes. Tenants subject to these so-called "triple net" leases will bear 100 percent of the increased property tax burden.

Similarly, many landowners keep rents somewhat below the market level, as a means to retain good tenants. These owners believe that the cost of replacing a tenant with a good payment history would exceed the rental income they forego by setting their rents below the market level. Faced with an increase in the property tax burden, however, it is likely that these landowners would be more inclined to raise rents, knowing that all other landowners are also subject to the tax increase.

To the extent the landowner cannot shift the increased property tax burden to others, the owner's net worth will decline. Economists have demonstrated that asset values reflect the net present value of expected after-tax cash flows. Therefore, an increase in the property tax burden will be capitalized, and the land's market value will go down.<sup>24</sup>

### **V.3.b. IMPACT ON CAPITAL OWNERS**

Property consists not only of land, but also of structures, machinery, and other types of tangible capital. The price elasticity of capital is much greater than the price elasticity<sup>25</sup> of land, primarily because capital is highly mobile. New investments in capital are highly sensitive to the expected after-tax return because investments can easily be directed to more favorable tax jurisdictions. Even capital-in-place can be relocated elsewhere, as cities with rent control ordinances have learned when landlords unable to obtain a market return on their rental housing choose to withhold maintenance, thereby gradually withdrawing their capital from the market.

Having analyzed the likely impact of a split-roll property tax regime on land and capital owners, we can now explore how the split-roll would affect the California economy.<sup>26</sup>

### **V.3.c. IMPACT ON THE ECONOMY**

If California voters choose to amend the State Constitution in order to relax or eliminate the limits on taxation of commercial property established by Proposition 13, economics principles hold that the increase in taxes will have seven primary effects.

#### **1. Increased economic incentives to develop land**

By increasing the carrying costs of undeveloped land, the higher property taxes resulting from adoption of a split-roll would tend to speed-up the rate at which such land is developed. In effect, the split-roll would make it more expensive to hold undeveloped land as open space, encouraging more land owners to develop their property.

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<sup>24</sup> Appendix B discusses the impact of a property tax on land values in more detail.

<sup>25</sup> As economists use the term, "price elasticity" means the percentage change in the quantity demanded – acquired- of a good divided by the percentage change in its price.

<sup>26</sup> Appendix C discusses the impact of a property tax on capital values in more detail.

## 2. Increased local government bias in favor of commercial development

A split-roll would tend to increase the bias that now exists at the local level in favor of land development for commercial purposes, rather than for owner-occupied housing. Under the current property tax system, local governments have a fiscal incentive to make land available (through zoning) for high-revenue retail uses, in order to generate additional sales tax revenue.<sup>27</sup> Counties tend to favor hotels, auto malls, big box retailers, and shopping centers over residential uses. Adoption of a split-roll property tax system would strengthen this bias in favor of commercial land uses.

## 3. Increased rents

A significant portion of the increase in property taxes will be shifted to renters. In some cases, the shift will occur automatically, under the terms of “triple net” leases. In other cases, the shift will be made possible by the fact that current rent levels are below market levels, as is the case for apartments subject to rent controls in cities such as Los Angeles and Santa Monica.<sup>28</sup> In still other cases, the reluctance of landlords to raise rents because they fear losing good tenants to neighboring apartment buildings will weaken, since all apartment owners will be subject to the same increase in costs.

The burden of higher rents will tend to fall most heavily on lower-income Californians, because they are more likely to occupy rental housing. The U.S. Census Bureau’s American Community Survey for 2006 reveals that the median household income of California renters was \$40,248, compared with \$83,514 for homeowners.<sup>29</sup> Moreover, only 2 percent of homeowners receive food stamps, while 12.5 percent of renters receive the subsidy. Clearly, California’s renters are a significantly poorer population than homeowners. By increasing the tax burden on renters, the split-roll tax would disproportionately affect lower-income families. Increase rents would leave tenants with less money to spend on other goods and services, reducing the amount

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<sup>27</sup> Chapman, Jeffrey I. 1998. *Proposition 13: Some Unintended Consequences*. San Francisco: Public Policy Institute of California.

<sup>28</sup> Most rent control ordinances permit affected landlords to petition for rent increases when external factors reduce their rates of return below minimum levels.

<sup>29</sup> These Census data were obtained via the IPUMS database: Ruggles, Steven, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. 2008.

they contribute to the expenditure stream. The impact will be felt by those businesses that sell goods and services to renters.

Businesses – particularly small and minority businesses – will also bear the burden of higher rents. We discuss the economic consequences of this shift below.

#### 4. Reduced investment and jobs

Where it is not possible to fully shift the increased tax burden to tenants, the split-roll would reduce the after-tax returns from investment and bring-about a reduction in the volume of investment in rental housing and business plant and equipment within California. Less investment means fewer jobs.

In the longer run, capital – and, hence, labor – will look for better opportunities outside California by migrating to other states. The long-run effects of the tax increase on the factors of production will depend on their mobility. Since capital is very mobile we should expect returns to capital to eventually return to their pre-tax levels. Wage rates are likely to remain lower because labor is not as mobile.

#### 5. Reduced wages

The shift in the tax burden to firms that continue to conduct business in California will reduce the after-tax productivity of labor. Labor productivity will decline further as higher taxes on plant and equipment discourages investment, leaving workers with less capital. Since wages are based on labor productivity, wages would fall, and workers' ability to maintain purchases of other goods and service, would drop accordingly.

#### 6. Higher consumer prices

Since the prices that businesses charge their customers must cover costs (including the cost of capital), the increase in property taxes ultimately will bring about higher consumer prices.

#### 7. Decline in the value of assets held by California retirement funds

Both the California State Teachers' Retirement System (CalSTRS) and the California Public Employees' Retirement System (CalPERS) have large holdings of California real estate.

Nearly 13% of CalSTRS' portfolio and 9% of CalPERS' is invested in real estate.<sup>30</sup> Not all of this property is located in California. CalPERS reports that it has \$5.3 billion invested in California real estate. (CalSTRS does not report its California real estate holdings.) Since the effects of the higher property taxes brought about by the split roll would be capitalized, the market price of these real estate holdings will go down. The market value of the two funds' California equity holdings will also go down if the issuing corporations are not able to pass along the increased tax burden to renters, employees, and consumers.<sup>31</sup> To the extent that the asset value impairment prevents these funds from satisfying their pension promises to former state employees and teachers, the California taxpayers will have to step into the breach.

It is possible, but not certain, that the increase in property taxes resulting from adoption of a split roll would have some effects that would diminish the disincentives to business investment discussed above. If the net revenues yielded by an increase in property taxes imposed on business were used to improve the business environment in California (e.g., speeding-up regulatory approvals, increasing enrollment in vocational education classes that address critical labor shortages), some of the adverse effects of the tax increase might be mitigated. We have not assumed any such increase in spending in this study because the State has a large structural deficit that it has chosen to cover by borrowing.

#### **V.4. EMPIRICAL ESTIMATES OF DECREASES IN BUSINESS ACTIVITY**

The preceding section relies on economic theory to determine the economic impact of a shift to a split property tax roll. In this section, we quantify the likely impact, using a computable model of the California economy.

In estimating the impact, we make the following assumptions:

- Adoption of a split-roll property tax regime will raise the assessed value of all property, other than owner-occupied residential property, to the property's current

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Population Center.

<sup>30</sup> Information provided on August 1, 2008 from the Cal PERS (<http://www.calpers.ca.gov>) and CalSTRS (<http://www.calstrs.com>) websites and through contacts with the organizations.

<sup>31</sup> CalPERS reports that it owns \$10.8 billion in California public equities and \$1.9 billion in California private equity. We were not able to obtain CalSTRS's California holdings.

market value. Based on the data in Table 1, we assume that the increase in assessed value for affected properties will average 66.8 percent reflecting the fact that the disparity ratio for commercial and industrial property is 60 percent.<sup>32</sup>

- The 1 percent ceiling on the statewide property tax rate established by Proposition 13 will remain in effect.<sup>33</sup> If adoption of a split roll was accompanied by relaxation or elimination of the rate ceiling, the economic consequences of the policy change would be significantly greater than what is presented in this report.
- The net revenue generated by the relaxation of Proposition 13's limits on assessed values will reduce the amount that the State borrows to close the structural deficit in the General Fund. In other words, our estimates of the likely economic consequences resulting from adoption of a split roll do not assume that government spending will increase.

#### **V.4.a. DYNAMIC VS. STATIC ESTIMATES**

Economists distinguish the dynamic effects of a change in economic policy from the static effects of such a change. By dynamic effects, economists mean the consequences of behavioral adjustments made by individuals and corporations in response to changes in economic incentives. For example, the dynamic effects of an increase in taxes include decreases in economic activity (e.g., less business investment and fewer jobs) that both theoretical and empirical research show will occur as the result of such an increase.

A static estimate, in contrast, ignores these behavioral changes.<sup>34</sup> Because these behavioral responses typically run counter to the direction of the tax change, the incremental revenues produced by a tax increase will be smaller than "static" estimates suggest, as economic agents seek to avoid the increase or minimize its impact.

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<sup>32</sup>  $(1 - .599)/.599 = .668$

<sup>33</sup> Plus the additional 0.25 percentage points to repay voter-approved bonded indebtedness

<sup>34</sup> For example, a static estimate of the additional revenues expected from adoption of a split-roll property tax regime would be made by multiplying the change in total assessed value statewide by the (unchanged) property tax rate of 1 percent.

#### **V.4.b. THE DYNAMIC REVENUE ANALYSIS MODEL (DRAM)**

To estimate the magnitude of economic changes that would result from adoption of a split-roll, we use the Dynamic Revenue Analysis Model (DRAM). The DRAM was designed to produce dynamic estimates of the fiscal effects stemming from public policy changes, such as an increase in State taxes. It takes into account some, but not all, of the behavioral changes discussed above, and therefore is able to capture part of the decrease in jobs and business investment that would result from adoption of the split-roll. The model then solves for the new economic equilibrium that will emerge as a result of these behavioral responses.

The DRAM was developed at the University of California, Berkeley, in cooperation with the California Department of Finance. The model is available to the public at the Department's web site.<sup>35</sup> We requested and received from the Department an updated version of the model, together with updated economic data and calibrated parameter estimates.

The DRAM divides the California economy "into 75 distinct sectors: 28 industrial sectors, two factor sectors (labor and capital), seven household sectors, one investment sector, 36 government sectors, and one sector that represents the rest of the world."<sup>36</sup>

In quantifying the behavioral responses of businesses and consumers to the split-roll tax, we must consider the elasticity of demand for labor and property in California, relative to the rest of the world, as well as the elasticity of substitution in production.

A mainstay of economics is the study of changes in the demand for (or supply of) a given commodity when the price of that commodity changes. The ratio of the percent change in quantity demanded (supplied) relative to the percentage change in price is called the elasticity of demand (supply). Elasticity is nothing more than the sensitivity of a relationship. Thus, if the elasticity of demand for gasoline is estimated to be  $-0.5$ , when the price of gasoline increases by 1 percent from its current level (say, from \$4.00 per gallon to \$4.04 per gallon), consumers will lower their annual consumption of gasoline by half a percentage point (say, from 1000 gallons over a given period to 995 gallons). The elasticity of demand is negative since, as price increases, consumers demand less of a good. In contrast, the elasticity of supply is positive,

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<sup>35</sup> At [www.dof.ca.gov](http://www.dof.ca.gov).



because producers are willing to supply more of a good at higher prices. In turn, the elasticity of substitution in production measures the degree to which firms can modify their relative usage of labor to capital as the relative cost of these factors changes.

Our primary challenge is to model the policy change brought about by adoption of a split-roll property tax regime, so that the effects on California's competitive position vis-à-vis other tax jurisdictions is captured. To accomplish this objective, we use estimates of elasticities that reflect the ability of economic agents to move factors of production and sales across state borders. Obviously, the flexibility to locate or relocate economic activity – and therefore the elasticity of substitution – will vary from one sector of the California economy to another. Thus, the more detailed the model, the more reliable the estimates of how a split property tax-roll would affect the state's economy. While more detail is desirable, computational tractability and the availability of data on parameter estimates constrain the complexity of modeling. Appendix D provides information on the elasticity assumptions that we incorporated in DRAM.

Since no data exist to properly identify the value of real estate by industry or household type, DRAM identifies and treats the overall level of property tax revenue by all local governments as a per-working-household tax on the one hand, and as an excise tax on business on the other. The per-household rate is set proportionate to incomes in the base data, and is not allowed to vary in the model from these levels. The excise tax is distributed by domestic demand in the model, excluding industries not subject to the property tax. It is important to keep in mind that DRAM only considers two factors of production: labor and capital (which includes land).

#### **V.4.c. QUANTITATIVE RESULTS**

As discussed earlier in this part, the mobility of capital is a key determinant of how a tax on capital will affect the economy. Because the DRAM does not distinguish between land (relatively immobile) on the one hand, and plant and equipment (relatively mobile in the long run) on the other, we have estimated the economic impact of a split-roll property tax regime

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<sup>36</sup> Berck, P., E. Golan and B. Smith, "Dynamic Revenue Analysis for California", Summer, 1996, p.1.

using several alternative assumptions that establish a range of outcomes. We believe the likely economic impact of adopting a split roll falls within this range.

The State Board of Equalization estimates the proportion of total assessed value attributable to land -as opposed to the proportion attributable to "improvements"- at about 45 percent.<sup>37</sup> Thus we assume that 45 percent of capital is immobile – that it cannot leave the State during the DRAM’s time horizon. The rate of return on capital in the DRAM, therefore, will be lower than what the rate (the “world” rate) would be if capital were assumed to be perfectly mobile. (We elaborate on this discussion in Appendix E.) The results yielded by DRAM are presented in Table 2.

<b>Table 2</b>	
<b>Estimated Impact of the introduction of the Split-roll Tax</b>	
<b>On the California Economy</b>	
<b>Immobile Capital = 45%</b>	
<b><u>Variable</u></b>	
Jobs Loss	152,400
Migration (number of families)	(48,700)
Change in the Wage Rate (%)	-0.4%
Return to Capital	-0.7%
Net Private Investment (billions)	(2.0)

*Source: DRAM (1999).*

As the table shows, the DRAM estimates that, given these assumptions about the mobility of capital, adoption of a split-roll property tax would result in the loss of 152,400 jobs.

<sup>37</sup> [http://www.boe.ca.gov/annual/pdf/2007/table4\\_07.pdf](http://www.boe.ca.gov/annual/pdf/2007/table4_07.pdf)  
[http://www.boe.ca.gov/annual/pdf/2007/table7\\_07.pdf](http://www.boe.ca.gov/annual/pdf/2007/table7_07.pdf)

#### **V.4.d. IMPACT ON SMALL AND MINORITY-OWNED BUSINESSES**

Small businesses are a vital source of new jobs in the California economy, as they are in all states. The U.S. Small Business Association reports that over one-half of all new jobs in the last decade were created by small businesses.

As a group, small firms are highly vulnerable to changes in the economics of their business. They achieve lower profit margins than larger firms, have less access to capital, and are less able to relocate because they tend to serve local markets.<sup>38</sup> These attributes make small businesses particularly susceptible to failure when the burden of government regulation or taxation increases. Thus, small businesses will be disproportionately affected by the increase in the tax burden that would result from adoption of a split property tax roll.

##### **V.4.d.a. SMALL BUSINESSES IN CALIFORNIA**

The U.S. Census Bureau's County Business Patterns (CBP)<sup>39</sup> provides county-level statistics on employment by industrial sector. For each county-sector pair, the CBP also reports the number of firms, by level of employment. Using this data, we are able to determine how many small businesses exist in the California, by sector.

Consistent with the State's small business preference program, we define a "small business" as a firm with fewer than one hundred employees.<sup>40</sup>

Table 3 shows the number of both small businesses and all businesses, by macro-industry (consistent with the two-digit NAICS code industries). As the table indicates, over 97 percent of all firms in California are small businesses. The table also indicates that small businesses are heavily concentrated in sectors that tend to serve local markets, such as "Real Estate and Rental and Leasing," and "Accommodation and Food Services." Small businesses in California employ more than half of the State's workers. Clearly, the health of these firms is essential to the state's economic well-being.

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<sup>38</sup> There are also likely to be significant relocation fixed costs that small businesses may not be able to afford, compelling them to either accept the tax increase or to close their doors.

<sup>39</sup> The most recent CBP available is from 2006. U.S. Bureau of the Census. 2008. *County Business Patterns 2006*; <http://www.census.gov/epcd/cbp/view/cbpview.html>. Washington, DC.

<sup>40</sup> <http://www.pd.dgs.ca.gov/smbus/sbcert.htm#sbelig>

**Table 3. Small businesses and total firms by sector.**

<b>Industry</b>	<b>Small*</b>	<b>Total</b>
Agriculture, Forestry, Fishing and Hunting	1,968	2,010
Mining, Quarrying, and Oil and Gas	837	873
Utilities	1,001	1,120
Construction	76,298	77,785
Manufacturing	41,586	44,474
Wholesale Trade	58,739	59,935
Retail Trade	110,225	113,30
Transportation and Warehousing	20,031	20,776
Information	20,059	20,954
Finance and Insurance	52,961	53,985
Real Estate and Rental and Leasing	50,787	51,094
Professional, Scientific, and Technical	111,290	112,69
Management of Companies and Enterprises	4,046	4,617
Administrative and Support and Waste	40,226	42,546
Educational Services	10,314	10,752
Health Care and Social Assistance	93,044	95,048
Arts, Entertainment, and Recreation	18,998	19,434
Accommodation and Food Services	71,392	72,849
Other Services (except Public	70,080	70,593
Other	3,285	3,285
<b>All products</b>	<b>857,167</b>	<b>878,12</b>

\* Firms with less than 100 employees

Recent research indicates that larger firms, with better access to financing, have better chances of survival. Data from the Office of Advocacy, U.S. Small Business Administration,

and the Bureau of the Census clearly indicate that over the period 1989-2005, more than 95% of all firms that failed had less than 20 employees.<sup>41</sup>

For a small business that has owned property for many years, the increase in tax liability resulting from adoption of a split roll could be large enough to cause the business to fail or lose its property.

#### **V.4.d.b. MINORITY-OWNED BUSINESSES IN CALIFORNIA**

We can also determine the number of minority-owned businesses in California, and the number of jobs offered by these firms. Minority-owned businesses tend to be small businesses, giving them the added vulnerability to adverse economic changes that comes with relatively small size.

Every five years, the U.S. Census Bureau conducts the Economic Census, which is a comprehensive survey of American businesses.<sup>42</sup> The latest Economic Census released by the Census Bureau was for 2002. Among other questions, the census asks whether the owner of the firm is white, black, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and if the firm is publicly-held.<sup>43</sup>

Table 4 shows the number and employment of both minority-owned firms and all firms. Approximately 5% of the State's employment and corporate receipts are generated by minority-owned businesses. Furthermore, minority owned business are concentrated in service sectors (health care and social assistance, accommodation and food services among others), sectors in which survival rates are smaller.<sup>44</sup>

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<sup>41</sup> Brian Headd, "Redefining Business Success: Distinguishing Between Closure and Failure", *Small Business Economics*, **21**: 51-61, 2003.

<sup>42</sup> U.S. Bureau of the Census. 2008. *Economic Census Survey of Business Owners 2002*; [http://factfinder.census.gov/servlet/IBQTable?\\_bm=y&-geo\\_id=D&-ds\\_name=SB0200A1&-\\_lang=en](http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=D&-ds_name=SB0200A1&-_lang=en). Washington, DC.

<sup>43</sup> It also asks, independently of racial identification, whether the owner is of Hispanic origin. Since there is overlap in identification of Hispanic origin and race (i.e., an owner could be both black and Hispanic), we do not include this category in our analysis. We also ignore the gender of the owner.

<sup>44</sup> Bruce D. Phillips and Bruce A. Kirchoff "Formation, Growth and Survival; Small Firm Dynamics in the U.S. Economy", *Small Business Economics*, **1** (1989) 65-74.

Recent research indicates that the factor having the greatest impact on a small business's viability is its access to financing.<sup>45</sup> A firm without access to capital cannot ride-out a period of economic adversity. Minority owned businesses tend to have a more difficult time accessing credit – one of the key variables linked to business survival.<sup>46</sup>

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<sup>45</sup> Richard Carter and Howard Van Auken, "Small Firm Bankruptcy", *Journal of Small Business Management*, October 2006; 44, 4.

<sup>46</sup> Ken S. Cavalluzzo and Linda C. Cavalluzzo "Market Structure and Discrimination: The Case of Small Businesses", *Journal of Money, Credit and Banking*, Vol. 30, No4 (November 1998).

## **VI. CONCLUSION**

Adoption of a split-roll property tax in California will reduce the after-tax return on investment within the State. The lower returns will discourage investment within the State, causing a loss of jobs and income. Using what we consider reasonable assumptions regarding the mobility of capital, the Department of Finance's DRAM estimates that job losses of 152,400.

Small and minority-owned businesses will be disproportionately affected by the increase in property taxes brought about by the split roll, because their small size and difficulties in obtaining credit make them much more vulnerable than larger businesses to adverse changes in their economic circumstances. The incidence of higher property taxes will tend to fall on these businesses either directly (if they own their place of business) or indirectly (if they rent from others).

In addition, where market conditions permit, firms and individuals subject to higher property taxes will attempt to recoup the lost income caused by the property tax increase by charging higher prices to consumers, by raising rents, and by reducing their operating costs through wage and benefit cuts.

The increase in rents will disproportionately affect lower-income families, because renters tend to be poorer than homeowners.

## APPENDIX A

### STATE AND FEDERAL CORPORATE INCOME TAXES AND THE SPLIT-ROLL PROPERTY TAX

Establish the following notation:

$T$	is a firm's total tax burden
$T_C$	is a firm's California Bank and Corporation Tax (BCT) burden
$t_C$	is California's BCT rate
$T_P$	is a firm's California property tax burden
$t_P$	is the California property tax rate
$T_O$	is a firm's tax burden in other states (both corporate and property)
$T_F$	is a firm's federal corporate income tax burden
$t_F$	is the federal corporate income tax rate
$\pi$	is the firm's profits gross of all income and property taxes
$S$	is the firm's total sales; a C subscript indicates California sales
$P$	is the value of the firm's total property; a C subscript indicates the value of California property
$A_C$	is the assessed value of the firm's California property
$W$	is the firm's total wages; a C subscript indicates wages paid in California

The total tax burden is the sum of the state and federal levies:

$$T = T_C + T_O + T_F + T_P.$$

Now consider a firm that operates across state lines. The Corporation Tax (CT) is calculated using a formula that apportions profits to California as follows<sup>47</sup>

$$\alpha = w_S \frac{S_C}{S} + w_P \frac{P_C}{P} + w_W \frac{W_C}{W}.$$

Property tax payments are deductible from profits when a corporation calculates its CT liability. Hence, the firm's CT bill is

$$T_C = t_C \alpha (\pi - t_P A_C).$$



The property tax, the CT, and taxes paid in other states can be deducted from profits when calculating the federal corporate income tax. Combining these facts and results and substituting them into the total tax burden equation, we get

$$T = t_C \alpha (\pi - t_P A_C) + T_O + t_F (\pi - t_P A_C - T_C - T_O) + t_P A_C .$$

Grouping terms and simplifying yields results in the following equation:

$$T = [t_C \alpha (1 - t_F) + t_F] \pi + (1 - t_F) (1 - t_C \alpha) t_P A_C + (1 - t_F) T_O .$$

This equation reflects the fact that the introduction of a split-roll property tax (an increase in  $A_C$ ) will increase a firm's tax burden ( $dT / dA_C > 0$ ), but the increased burden will be partially offset by the fact that the property tax is deductible from:

- the federal corporate income tax (so a significant proportion of the tax will be exported – up to 35%); and
- from the CT ( $t_C \alpha$ ) (up to 8.84%).

What is the result of the split-roll tax? The assessed value of commercial property will increase. The equation for  $T$  reveals that this will produce an increase in the firm's tax burden. Part IV.1.a describes how commercial properties will fall in value and firms will be prone to move facilities out-of-state. Hence, the ratio of California property values to total property values will fall. This implies that the apportionment factor will fall as well. This causes the total tax burden to go down.<sup>48</sup>

Thus, the split-roll has three competing effects on the tax burden that a firm faces:

1. The property tax increases directly.

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<sup>47</sup> For most firms, the weight on California sales is one-half, while the weights on property and wage fractions are each one-quarter. The BCT rate is 8.84%, the property tax rate is approximately 1.098%, and the federal corporate income tax rate is between 15 and 35%.

<sup>48</sup> This result holds so long as profits gross of taxes are greater than the property tax levy. Since firms cannot get rebates for having low or negative profits, we assume that this assumption holds. Additionally, we assume that reductions in California property holdings do not affect wages paid, sales, profits, or taxes in other states. Lastly, it should be noted that the assessed value of property is appropriately conceived as a function of the market value of the property.

2. The apportionment factor falls as a result of reduced property values and capital investment.
3. An indirect reduction in the property tax due to disinvestment.

The net effect of these three factors depends upon how willing a firm is to leave the state. We examine two polar cases. First, consider a firm that is largely based outside the state and owns only one piece of property in California. Upon the imposition of the split-roll, assume that the firm sells its lone piece of California property, sending its property tax burden to zero and its apportionment factor goes down as well. Its total tax burden has fallen.

Now consider the opposing case of a ski resort owned by a multi-state corporation. The owner may reduce its property holdings in response to the split-roll tax increase, but it cannot move the resort to another state. This implies that the corporation's apportionment factor will not fall very much nor will its holdings. Combined with a significant increase in its property tax bill, the owner's overall tax burden increases.

## **APPENDIX B**

### **EFFECT OF THE SPLIT-ROLL TAX ON PROPERTY VALUES**

While land in total is supplied inelastically, land allocated for non owner-occupied residential properties (non-OOR properties) is supplied elastically. If, for example, businesses are willing to pay more for property than homeowners, more land will be allocated to businesses and less to homeowners. While the total amount of land does not vary, the supply of land for a given use depends on the price offered for it.

Imagine that a piece of land has a market value of \$100,000 and is purchased by a business. The value of the land as residential property must be below this amount; if it was not, the land would have sold for a higher price. In the real world, property can be easily converted from commercial to residential use. It is more difficult to make the conversion in the opposite direction because of zoning restrictions, but some conversion is possible. The substitutability of uses generates elastic supplies for each use separately, despite the inelastic supply for all uses taken together.

When a tax is imposed only upon non-OOR property, the value of the land to these owners will fall, because it will be subjected to higher levels of taxation in the future, and thus cost more to own. Hence, the amount that participants in the market are willing to pay for the land will fall. The value of the land as OOR property prevents the market price from falling very far. Indeed, if residential buyers value our hypothetical piece of land at \$99,999, the price of the land will only fall by \$1, and its use will change from commercial to OOR. Notice that the price of land falls for both non-OOR and owner-occupied properties.

Specifically, the value for non-OOR uses will fall by the present value of the tax increases in the future. To continue our example, assume that the business values the property at \$100,000. Put differently, the property increases the productivity of the business by \$100,000 net of its current costs. Now, we increase taxes, which are simply one type of cost, by \$1,000 per year.

A dollar today is not the same as a dollar tomorrow. The value of \$1,000 next year in today's dollars is the amount of money that we would need to save today in order to have \$1,000 next year.<sup>49</sup> This is called discounting.

With an interest rate of 8%, the sum of all future tax payments in today's dollars is 13.5 times \$1,000, or \$13,500. Now the value of the property to the business is only \$86,500.<sup>50</sup> Increasing the tax liability lowers the net value of the property for non-OOR uses. Since property can be used for any purpose, the values of all properties will fall. When the price of a substitute to a good falls, so does the price of the good itself. This result arises because an individual's willingness to pay for a good goes down when an alternative becomes cheaper. Note that, while the value of the property for non-OOR use has fallen by the full amount of the tax, the actual market price will not fall by the full amount because the value of the property to owner-occupants has not changed. It acts as a backstop, preventing a full drop in price. The tax, then, is borne both by current landowners through lower property values and by non-OOR owners through higher, tax-inclusive land prices.

Under a split-roll property tax regime, the demand for non-OOR land will fall by precisely the present value of future tax payments, reducing its market price and quantity. Because the supply of land in total is inelastic, the supply of OOR land increases, increasing the quantity of residential land, while lowering its price. The magnitudes of these effects depend upon the elasticities of demand for each property type.

When there are no zoning restrictions on property use, the result of a split-roll regime on land values is to lower land prices and bias land-use decisions toward owner-occupied homes and away from businesses and rental properties. The split-roll induces an inefficient allocation of land between OOR and non-OOR uses because it places different taxes on each. The prices do not fall a great deal because sustained owner-occupied residential values act as a backstop to falling values for other uses. Hence, businesses and landlords will pay a higher tax-inclusive

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<sup>49</sup> We would need to save  $\frac{\$1000}{(1+r)^t}$  to have \$1,000 in  $t$  years with an annual interest rate of  $r$ .

<sup>50</sup>  $\$100,000 - \$13,500 = \$86,500$ .

price for land and landowners will get lower prices for the land that they currently have; the tax burden is shared by current and future landowners.

Now let us examine the situation in which zoning laws perfectly restrict land to either owner-occupied residential use or non-OOR use. As a result of these laws, non-OOR land is now supplied perfectly inelastically (as is OOR land); a certain amount of land is allocated solely for that purpose regardless of market conditions. When the tax increases for non-OOR uses, demand for this land falls by the present value of the stream of future tax payments, just as above. In our example, the value of the land to the business is now \$86,500. In the previous scenario, the landowner could sell the land to a prospective homeowner for \$99,999, but now zoning prevents this transaction from occurring. Instead, the landowner has no option but to sell to the business for \$86,500. Since the land is supplied inelastically, land prices fall fully by the present value of future taxes—this is known as capitalization of the tax. Notice here that OOR land prices do not fall as a result of the tax increase on non-OOR properties because the supply of OOR property is independent of the supply of commercial properties; the homeowner is not able to buy this property and benefit from lower prices.

In the presence of perfect zoning segregation of property uses, full capitalization lowers the price of non-OOR land and the buyers pay the same post-tax price under this scenario and in the situation of the unified roll. Here, the tax is paid fully by current landowners. This result arises from the fact that land is supplied inelastically for a specific use as a result of the zoning laws. Notice that the tax change does not change the allocation of properties, as this is restricted to zoning, and this mandated allocation is likely inefficient itself.

## Appendix C

### EFFECT OF THE SPLIT-ROLL TAX ON CAPITAL

The tax change alters the incentives for investing in new capital in California. Capital can be used for a variety of purposes. More importantly, capital facilities can be established in other places. Rather than locate a factory in California, a firm can locate it in Colorado or even Calcutta. In essence, “capital” is investment funds that can be moved around the world to buy land, plant, and equipment of any kind with little difficulty. As a result of the mobility of capital, its supply to California is very elastic: if Californians are not willing to pay the country or world prevailing rate of return on investment *net of taxes*, capital will be deployed to other locations.

The increase in property taxes will reduce the value of capital to businesses, lowering their demand for capital. Since the supply of capital is very elastic, the price of capital cannot fall very far. Instead, the quantity of capital in California will fall and the tax will be borne by the owners of businesses that remain within the state’s borders. Consider, too, that rental properties are one kind of investment and capital will be supplied as elastically to this purpose as any other; rather than invest in rental units in Los Angeles, the investor may buy stock of General Electric. Hence this analysis applies equally well to commercial and rental capital.

While the supply of capital can migrate to any state or country, the demand for capital may be California-specific. A retailer may be able to close its brick-and-mortar storefront and establish an online presence with an out-of-state warehouse, but a bakery and a beauty shop do not have this option. The more mobile a factor, the more elastically it will be supplied. If commercial capital is reluctant to leave California or to be transformed into other types of capital, then the quantity supplied in the state will not fall that much, but the quantity of mobile factors in the state will fall more.

## APPENDIX D

### Statistical Estimation of Behavioral Responses of Economic Agents and Computable General Equilibrium Models

Even though Computable General Equilibrium (CGE) models are widely used as a tool for policy analysis, they are often criticized for fragile functional underpinnings, particularly with respect to parameters that capture how consumers and firms react to relative prices in four core decision processes:

1. How much more (or less) work individuals will supply to the market when wage rates go up (or down);
2. How migrants flow into or out of California as wages and spending on education varies;
3. How aggressively firms, both California-based and “foreign,” change their sales patterns when prices in California weaken; and
4. How willing firms are to modify their investment behavior and location choices when profitability changes.

While statistical research has tried to estimate these behavioral coefficients, there are ranges of acceptable values for many variables used in CGE models. Even sophisticated micro-econometric studies have difficulty capturing the complex behavior of agents at the disaggregated level. Parameter estimation from statistical studies frequently runs into difficulties, due to problems both with data sources and conceptual difficulties in determining the specific methods and procedures needed for obtaining reliable estimates. The precision of statistical analysis is directly related to the number of observations: the more observations, the narrower the estimated parameter range. One way to increase the size of the database, and thus the accuracy of the procedure, is to use data for several years. As several leading scholars have observed, however, the sectors being analyzed, as well as the economy as a whole, often have “undergone structural changes during this period, which may or may not be appropriately reflected in the estimation procedure.”<sup>51</sup>

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<sup>51</sup> Arndt, Channing, Sherman Robinson, & Finn Tarp. 2002. "Parameter estimation for a computable general equilibrium model: a maximum entropy approach," *Economic Modelling*, Elsevier, vol. 19(3), pages 375-398.

By necessity, statistical estimation imposes constraints and assumptions on the theoretical model of the economy and uses different mathematical and statistical tools to see if the data reject these hypotheses. A CGE model is much more disaggregated than a standard econometric model, which generally estimates aggregate behavior using what is referred to as "reduced form" equations. According to Arndt, Channing, and Tarp, "while the estimated parameters might provide a highly plausible description of historical production and consumption data sets, the estimated values will not be fully compatible with the general equilibrium system they are designed to represent."<sup>52</sup>

CGE models are commonly used to analyze changes that are expected to occur over the medium or long term—say three-to-five years. There is a mismatch between estimation that uses annual data for broad categories and the requirements of a CGE model; standard econometric models estimate parameters that measure the reactions of economic agents to changes in important variables using short-run (i.e., annual) data. These measures are called short-run elasticities. The CGE model attempts to estimate changes over a longer timeframe, however. As a result of this mismatch, the coefficients in the model "are likely to understate the response capacity of agents over the longer time frame".<sup>53</sup>

The problem is even greater in the case of one-period models, such as the DRAM. Economic agents adjust to different policy measures in a cumulative fashion over time. In the DRAM, for example, the capital stock is expected to last 15 to 20 years. Most econometric estimates cannot accommodate these long-term effects due to the paucity of data. Thus, changes in investment that occur "today" as a result of a policy change will have implications for nearly two decades. However, the parameters estimated by the usual econometric techniques identify short-run responses.

For the DRAM model to accurately reflect the likely cumulative effects a policy change, elasticities have to be larger than the short run elasticities estimated with standard econometric techniques (that is, responses used in these models are larger than those that reduced-form econometric techniques suggest). To compensate for this bias, we incorporated the following

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<sup>52</sup> Ibid.

<sup>53</sup> Ibid.



elasticities in the DRAM for purposes of estimating the economic impact of a shift to a split-roll property tax.<sup>54</sup>

## **A. TRADE**

### a. ETA(E)\*, THE EXPORT ELASTICITIES WITH RESPECT TO DOMESTIC PRICE

In the low elasticities scenario, set to -3.5 for all sectors with the exception of sectors that may be thought to have a domestic bias for which it is set to -1.5: wholesale [WHOLE], retail [RETAI], Health Services [HEALT], Entertainment [ENTER], and Other Services [OSERV].

### b. ETAM(I)\*, THE IMPORT ELASTICITIES WITH RESPECT TO DOMESTIC PRICE

Set to 1.5 for all sectors with the exception of domestically oriented sectors mentioned in 1. above for which it is set to 0.5

## **B. MIGRATION**

### a. ETAED(H), THE SENSIVITIY OF MIGRATION TO PUBLIC EDUCATION SPENDING

0.1 to 0.5

### b. ETAYD(H)\*, THE RESPONSIVENESS OF INward bound MIGRATION TO AFTER TAX EARNINGS

Ranges from 1.0 to 6.0 in the low elasticities scenario.

### c. ETAU(H)\*, THE RESPONSIVENESS OF INward bound MIGRATION TO UNEMPLOYMENT

Ranges from -0.2 to -0.8 as in the DOF version.

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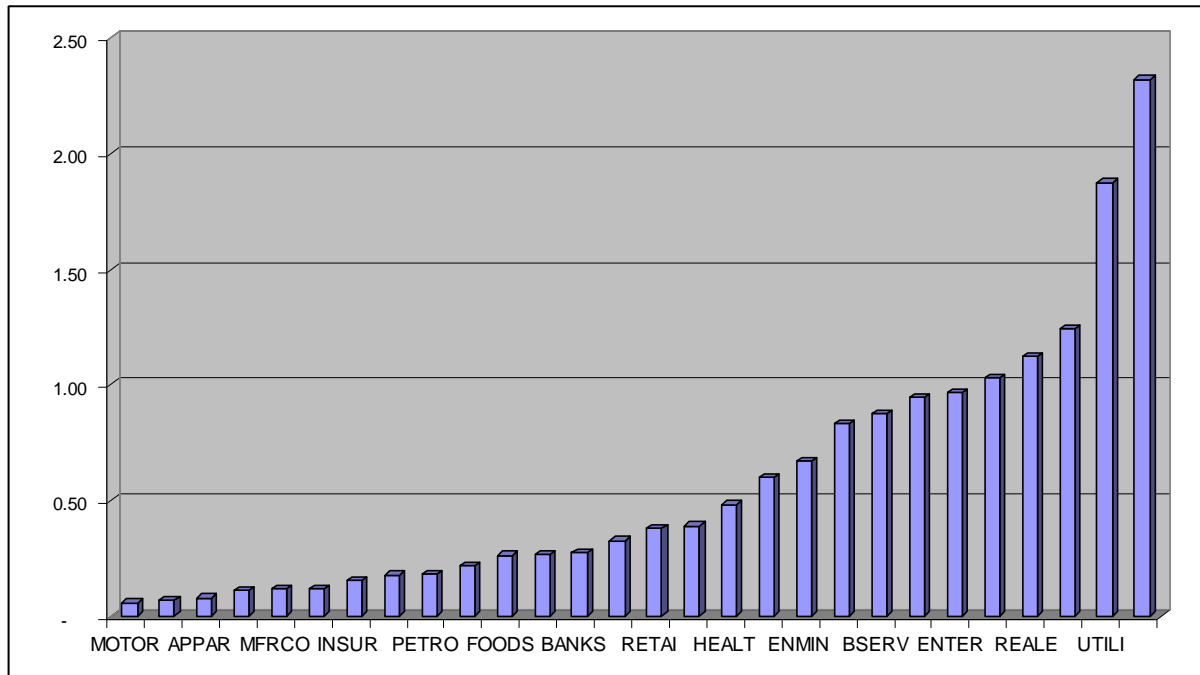
<sup>54</sup> The entire set of parameters is contained in pages 185-220 of the DRAM 1995 document on the DOF web

The immigration parameters  $MI0$  (H) and  $MO0$  (H) were set at 0.09 as in the DOF version to reflect the fact that net migration has been negative since 2004-2005 contrary to the significant net inflow during the period 1999-2003.

### **C. ELASTICITIES OF SUBSTITUTION IN PRODUCTION**

The DRAM does not consider land as a separate factor of production and subsumes it as part of “capital”. While there is some econometric evidence that the elasticity of substitution between labor and capital may be equal to .8 or .9, as discussed in section V, the supply of land is inelastic and it is therefore likely that the elasticity of substitution between labor and land is much smaller than those values. Furthermore, as can be seen in the following graph almost half of the industries considered have very small capital-labor ratios (smaller than .3) suggesting again that the elasticity of substitution in production between labor and land/capital is likely to be smaller than .8 or .9.

### Capital-Labor Ratios in DRAM



Thus we have set the elasticity of substitution in production to .5 for the following 13 sectors:

1. Food Manufacturing
2. Apparel
3. Construction Oriented Manufacturing
4. Paper Printng; Publishing
5. Chemicals/Rubber/Plastics
6. Petroleum
7. Electronic Techonology
8. Aerospace
9. Motor Vehicles
10. Other Manufacturing
11. Transportation
12. Banks and other credit institutions
13. Insurance

## APPENDIX E

### Land Immobility and the return to Capital in the DRAM model

Assume that the “world” rate of return –net of taxes- is  $R$

Given that the average property tax rate in California is 1.098 and that it is deductible for Federal Income Tax purposes, the gross rate in California has to be

$$R + (1.098 * 2/3) \%$$

The split-roll tax amounts to a 66.8% increase in the differential

$$1.098 * 1.66 = 1.83$$

Thus the new gross rate in California has to be

$$R + (1.82 * 2/3) \%$$

If 100% of capital was mobile, it would leave the State until the California rate of rate reached that level ( $R + (1.83 * 2/3) \%$ ) thus equalizing it with the “world” rate of return net of taxes. If however a certain proportion  $p$  of capital cannot migrate even over the horizon of the DRAM model (because it is land), the net of taxes rate of return for the sum of land and capital will be lower than the “world” rate of return net of taxes.

The new gross rate in California would be

$$10\% + (1.83 * 2/3) * (1-p) \%$$

We model this in DRAM under two assumptions:  $p = 25\%$  and  $p = 33\%$